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Analysis of the impact of Croatia's accession to the EU on the agri-food sectors

A focus on trade and agricultural policies

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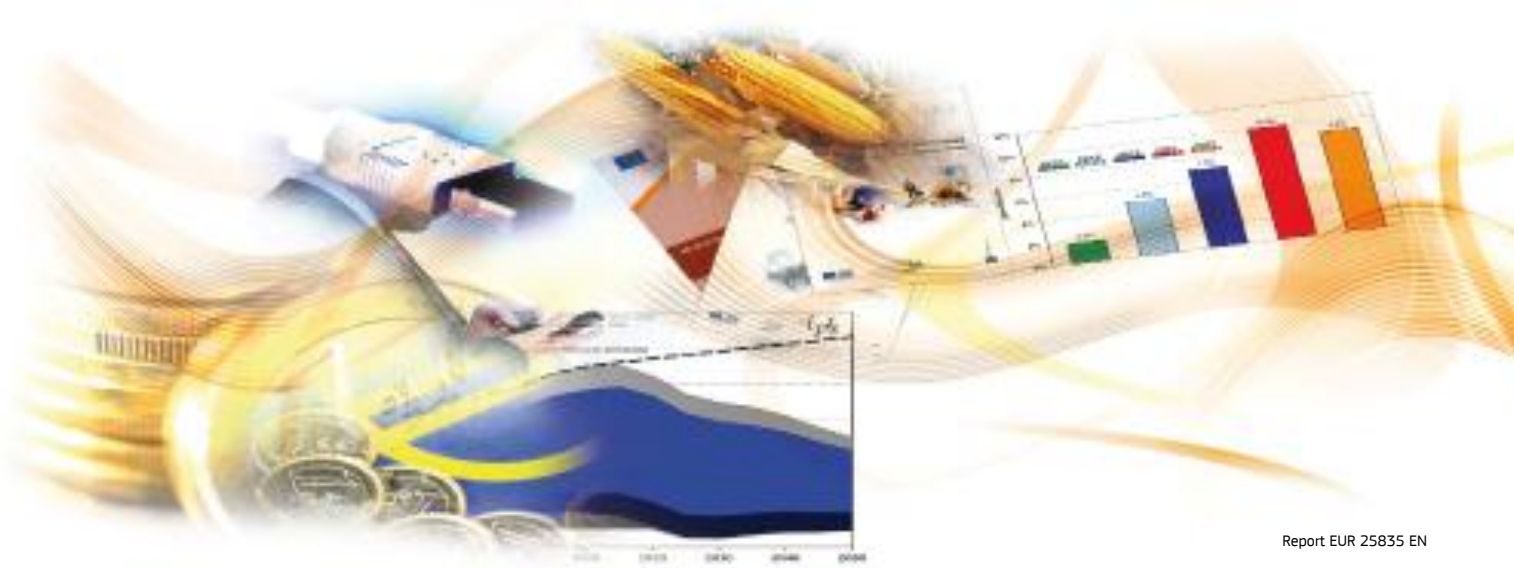

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Executive Summary

Croatia joined the European Union (EU) on July 1st, 2013. This report assesses the likely effects of this accession on the agricultural and food sectors, and analyses the impact on the EU, Croatia and their main trading partners, such as the Western Balkans and Mercosur countries. It considers both the harmonization of Croatia's trade instruments with those applied in the EU, and the adoption of the Common Agricultural Policy (CAP). The analysis is carried out using MAGNET, a global recursive dynamic CGE model.

Results show that Croatia slightly benefits from its accession to the EU with an increase in both GDP and jobs. The impact on the EU-27's GDP is insignificant while in terms of jobs it is slightly positive for the agri-food sectors.

Considerable discrepancies in the pattern of protection in the agri-food sectors applied in Croatia and the EU-27 prior to Croatia's EU accession, combined with the differently structured tariffs faced by exports of Croatia and EU-27, suggest a significant potential for trade effects. Total exports of Croatian agricultural products increase by 7.4% and those of food products decrease by 2%.

By adopting European trade and agricultural policy, Croatia will face some changes in its production structure. At constant prices, agricultural production benefits (increasing by 1.1%), whereas food production contracts (decreasing by 5.5%). This result sheds some light on competitiveness limitations of the Croatian food processing industry.

Croatia will experience strong price effects. As a result, the value of production at real prices decreases in both the agricultural and food processing sectors. The most affected sectors in value are vegetable and fruits, meat of pork and poultry, beverage and tobacco, wheat and other cereals. The sugar sector is especially affected with a sharp decrease in production *volume* on the one hand, but with an increase in production *value* at real prices on the other hand.

The scope of this report is to model both European trade and agricultural policies. It is worth mentioning that other EU policies such as the structural or cohesion policies, and additional gains resulting from the accession such as a less risky investment environment or a more efficient regulatory framework, are not modelled. Thus outcomes from Croatia's accession presented in this report are not exhaustive and may underestimate the benefits of such an accession.

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1. Introduction

Croatia became the 28th member of the European Union (EU) on July 1st, 2013. It was an official candidate, with the full benefits associated with this status, since 2004. As with any other Member State (MS), the agricultural sector and food processing chain have been core issues within the negotiation process. Croatia's trade with the EU has been gradually liberalised through the Stabilisation and Association Agreement (SAA) which entered into force in 2005. Prior to accession, Croatia already benefited from duty-free access to the EU for most of its agricultural exports (with some exceptions, notably for sugar, beef and wine). As the SAA was an asymmetrical trade agreement, EU agricultural exports to Croatia faced border protection that has been removed as of the date of accession.

Given that trading blocs are linked through international price systems, trade relations, capital flows, etc., a comprehensive analysis of the economic consequences of Croatia's accession to the EU for the agricultural and food sectors in both regions can be a rather complex and therefore difficult exercise. Harmonisation of Croatia's trade instruments – both tariff and non-tariff measures – with those applied in the EU is expected to affect not only both regions but also their trading partners.

Specifically, Croatia's EU accession necessitates harmonization of trade instruments in the following areas:

1. Abolition of all external tariffs, subsidies and taxes on traded commodities, products and services between Croatia and the EU.

2. Full harmonization of all external tariffs, taxes and subsidies on traded commodities, products and services applied previously by Croatia to its non-EU trading partners – i.e. Western Balkans, OECD (non-EU), Mercosur and Rest of the world (ROW) which includes China, India, Russia, etc. – with those applied by the EU.

3. Adjustment of tariffs, taxes and subsidies previously applied by Croatia's non-EU trading partners – i.e. Western Balkans, OECD (non-EU), Mercosur and ROW – in relation to trade with Croatia to those valid for the EU.

Clearly, with Croatia's EU accession, some Croatian agricultural sectors will gain via an expansion of trade (through a decrease of trade costs). For example, sectors, which before accession faced some protection on the EU side – e.g. beef – may expand with the abolition of EU tariffs, unless they become restricted by other newly introduced policy measures – e.g. by production quotas in the case of sugar. On the other hand, harmonization of tariffs applied to Croatian exports by non-EU partners with those applied to the EU may lead to an increase of some tariffs faced by Croatian exporters and therefore will reduce some trade flows with non-EU partners (trade reduction). Furthermore, trade diversion effects may occur both for Croatia as well as EU, should

imports from more efficient non-EU producers be substituted by imports from less efficiently producing countries within the European Union. [1]

As all these adjustments, depending on scale and direction, may affect not only trade but also the level of production, employment, and GDP in Croatia and all involved regions, it is understandable that the net effect of tariff harmonisation can only be derived in a comprehensive empirical analysis.

Given the accession, Croatia has to adopt the Common Agricultural Policy (CAP). The scope of this report is to model both common trade policy and CAP. It is worth mentioning that other policies exclusively designed for EU members such as the structural or cohesion policies, and additional gains resulting from the accession such as a less risky investment environment and expected increases of Foreign Direct Investments (FDIs) or a more efficient regulatory framework are not modelled. Thus outcomes from Croatia's accession presented in this report are not exhaustive.

There are several studies that assess the impact of Croatia's integration, for example Sosic et al. (2005) or Bussiere et al. (2008), both of which analyse the effects of Croatia's trade integration with the use of a gravity model. The main weakness of these approaches is their incompleteness. Both of them miss the full picture of the impact of Croatia's integration as they do not include the entire economic system for all the regions/trading blocs involved. This is important when examining the overall impact of policy changes on the agri-food sectors, which necessitates consideration not only of direct effects but also of the accompanying impacts throughout the rest of the economy. However, this is feasible with a multi-country computable general equilibrium (CGE) model.

Lejour et al. (2009) uses *WorldScan,* a global CGE model to assess the impacts of Croatia's accession to the EU. They estimate that Croatia's GDP and consumption would increase by 1.1% and 2.6% respectively. The agriculture and food processing sectors would contract by 1.1% and 3.1% respectively. The main limits of their analysis are however that (i) the data used were from 2001 (the base year that was used to calibrate their model), (ii) the study did not consider the direct impacts of the CAP and other EU funds, and (iii) the sectors were highly aggregated, therefore, the agri-food sectors were not well represented.

By contrast to previous studies, our report focuses on the impact on the individual agri-food sectors. Moreover, our study specifically contributes to the analysis by including the CAP budget, with differentiated policy measures (i.e. First pillar and Second pillar disaggregated by 5 different measures) within a CGE context. This is in strong contrast to a number of other studies which assess the impact of Croatia's access to the CAP budget without using any economic modelling tools (such as Kumric et al., 2005 or Möllers et al., 2009).

[1] See Viner (1950) for the economic theory of regional integration arrangements (customs unions).

Key features of Croatia's economy

The Republic of Croatia is a relatively small country, with a population of 4.4 million (Eurostat 2012). Currently Croatia's GDP is 45000 million Euros (Eurostat 2012), which makes up approximately 0.36% of the EU-27 total. In per capita terms, Croatia's wealth is 60% of the EU-27 average, which is well above the current level of Bulgaria and Romania (around 47%) which accessed the EU in 2007 (Eurostat 2012).

Croatia's share of agriculture in GDP is about 5.1% in 2011 (Eurostat 2012). For comparison, the share of agriculture in GDP of the EU-27 amounts to 1.7%. In Croatia, as much as 13.8% of the working population is employed in the agricultural sector while in EU-27 only 4.7% in 2010 (Eurostat 2011).

From an agricultural trade perspective, the EU is Croatia's most important trading partner by far, followed by the Western Balkans treated as a single region[2] and Brazil. In 2011, the EU accounted for 60% of Croatia's exports and imports value. By contrast, Croatia captured only 0.5% of both EU exports and imports. Western Balkan countries accounted for about 10% of Croatia's trade value. In 2008, the main export markets for Croatia's agricultural and food products were the Western Balkan countries and the EU. The structure of Croatian imports is less concentrated, with Brazil being the main foreign provider of agricultural and food products after the EU.

An extension of CAP to Croatia implies substantial EU budgetary transfers. Once it will be fully implemented in 2022, CAP budgetary support for Croatia will reach approximately 995 million USD per year.[3] CAP captures about 25% of total EU budget transfers to Croatia in 2013 (European Commission, 2011).[4] Furthermore, from 2013 onwards Croatia will benefit from other EU payment appropriations, especially those growth and employment programs, which include structural and cohesion funds of approximately 1900 million USD per year (not modelled in this report).

In this report, a global recursive dynamic CGE model, MAGNET (described in the model section), is used to analyse the impacts of Croatia's accession to the EU on the main macroeconomic variables such as trade, GDP, production and employment in Croatia, the EU and their main trading partners while focusing on the agri-food sectors.

The second and third sections of this report present the model and data used for the analysis. Then, the baseline that covers the period 2008-2018 is explained in the fourth section, as well as the scenario performed. Results on agri-food sectors are presented in the sixth section. The last section provides some concluding remarks.

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[2]Western Balkan countries include Albania, Serbia, Bosnia-Herzegovina, Montenegro, FYR Macedonia, and Kosovo.

[3] See European Commission (2009) and European Commission (2011).

[4]US dollar (USD) is the currency of this study and results are provided in 2007 USD. When applied, exchange rate is established at 1 euro = 1.37 USD (average exchange rate for the year 2007).

2. Model

The model used to analyse the economic consequences of Croatia's accession to the EU is Modular Agricultural GeNeral Equilibrium Tool (MAGNET).[5] MAGNET is a recursive dynamic CGE model. It is a global (worldwide) economic simulation model that consists of a set of single-country CGE models linked by their trading relationship. The model can be used to study the impact of changes in trade, agricultural and renewable energy policies on international trade, production, consumption, prices and use of production factors around the world.

MAGNET is based on the GTAP[6] model (Hertel, 1997), a widely used tool for global trade analysis. The behavioural relationships used in MAGNET are standard GTAP: firms maximize profits using technology characterized by Constant Elasticity of Substitution (CES) production functions over primary inputs and Leontief production functions across intermediate inputs. This implies constant returns to scale technology in production. The elasticities of substitution are commodity-specific. Domestic demand is satisfied by composite commodities that are constructed in two stages. In the first stage, consumers decide on the quantity of each commodity in their consumption basket by maximizing a modified Stone-Geary utility function (where all subsistence shares are equal to zero). In the second stage, consumers minimize the cost of their commodity bundle by deciding on the shares of domestic and imported varieties that comprise each commodity. This decision is governed by an Armington import aggregation function. All commodity and activity taxes are expressed as *ad valorem* tax rates, while income taxes depend on household income.

The price systems are linearly homogenous and thus only changes in relative prices matter. Consequently, the model has a global numeraire (world price index of primary factors), which is a benchmark of value against which changes in all other prices can be measured. All tax rates, including import tariffs, are modelled as *ad valorem* rates. This means that specific tariffs have to be converted to their *ad valorem* equivalent. Prices and quantities of all non-endowment commodities and regional incomes are endogenous variables.

In general, closure rules adopted in this version of MAGNET follow the modified standard neo-classical assumptions, namely:

1. There is a fix rate of savings and the investment variable is savings-driven so that investment is forced to adjust in line with regional changes in savings.

2. The current account surplus is fixed on a regional basis, so that each region's share in the global pool of net savings is fixed.

[5] MAGNET is part of the integrated Modelling Platform for Agro-economic Commodity and Policy Analysis (iMAP) hosted by the European Commission's Joint Research Centre, Institute for Prospective Technological Studies (M'barek et al., 2012).

[6] Global Trade Analysis Project, see https://www.gtap.agecon.purdue.edu/

3. Stocks of factors of production, skilled labour, capital and land, are exogenously given in the base year while unskilled labour is endogenously determined to allow for unemployment.

    3.1. Capital is updated at the end of each period with the investment taking place within the period minus the depreciation of the existing stock, following the usual recursive dynamic approach.
    3.2. The stock of skilled labour grows in the baseline and simulation period following the population growth rate.
    3.3. Skilled labour and capital are fully mobile between sectors in the same region and fully employed in all regions (wages for skilled labour and return of capital are endogenously determined, i.e. they are allowed to vary to assure that the sum of demands from all activities equals the quantity supplied).
    3.4. Unskilled labour is not fully employed but is assumed to be fully mobile between sectors in the same region. For the unskilled labour real wages are exogenously fixed while the supply of unskilled labour is endogenous and adjusts so as to equate labour demand. In the EU and OECD wages for unskilled labour are fixed at their initial level while for the other regions they grow at the GDP growth rate. Both types of labour are immobile between countries (immigration is not modelled).
    3.5. Land is fully employed, but its ability to freely move between sectors (imperfect mobile factors are usually called sluggish in GTAP-based models) is limited by the introduction of a CET function, which transforms one use of the endowment into another. Contrary to labour and capital, sluggish endowment commodities can exhibit differential equilibrium rental rates across uses. Land is by definition immobile between regions.

4. Technical change is exogenous to the model.

An innovative feature of MAGNET is its modular structure. MAGNET was extended in different directions with the use of various sub-modules, which can be switched on and off. This allows tailoring of the model structure to the research question at hand. For example, MAGNET has a module that can be applied to analyse land use which includes a sophisticated land supply function, and it also has a biofuel module which allows for a detailed analysis of this sector with the inclusion of by-products.

Of particular interest, for this report, is the CAP module which allows the inclusion of a CAP budget (i.e. Croatia will receive 788 million USD in 2018, see Table 3). It is worth mentioning that we focus on agricultural and rural development expenditures and not on the contribution side of the CAP budget. Effects of transferring financial resources between EU-28 and related budgetary trade-offs are not taken into account.

In this report the CAP budget is defined by the sum of first and second pillar payments. Decoupling of factor subsidies is handled in such a way that first pillar subsidies are linked to land (broad definition of decoupled payments), and the same is done for the agri-environmental payments of the second pillar, as they are considered subsidies to land (similar assumptions were set in the Scenar 2020 II study using LEITAP (Nowicki et al., 2009)). The other four second pillar measures are assumed to increase the overall

productivity (e.g. output augmenting technological change) and the input productivity (intermediate input augmenting technological change). The increase depends *interalia* on four coefficients which are determined exogenously (the latter are borrowed from Nowicki et al., 2009) and capture the technology effects of the types of second pillar subsidies which have already been defined.

In order to reflect sugar policies, we impose a sugar production quota for the EU and Croatia which is modelled by fixing the sugar production volume in these two regions/countries and endogenizing the tax on the production of sugar.

3. Database

The data used in this study are based on the most recent GTAP database version 8 (Aguiar et al., 2012) released in March 2012 and contains data for 2007[7]. This database contains complete bilateral trade information, transport and protection linkages. It includes 57 commodities and 129 regions, aggregated for the purpose of this study to 22 commodities of which 20 are part of the agricultural and food sectors (Appendix, Table A1) and 6 regions (Appendix, Table A2). The EU-27 and Croatia have been specified separately, as have their main trading partners, i.e. Western Balkans, non-EU-OECD countries, Mercosur and the rest of the world. Furthermore, each region's economy was disaggregated according to nine accounts[8].

In order to construct a baseline, projections of GDP, population and other key indicators are used and obtained from various sources. First, data on GDP and population are sourced from the USDA-ERS projections[9]. Projections by the World Development Indicators (WDI) are the main source of data for labour force. Last, data for capital stock projections are taken from the OECD[10].

The following types of CAP support are distinguished within MAGNET: (i) First pillar measures which include Single Farm Payments (SFPs), other direct payments and market measures, (ii) Investment in agriculture, (iii) Investment in human capacity, (iv) Investment in technology, (v) Support to Less Favoured Areas (LFAs), and (vi) Agri-environmental measures. Data used in the CAP module come on the one hand from the European Agricultural Guarantee Fund for first pillar measures, and on the other hand from the European Agricultural Fund for Rural Development for second pillar measures. For second pillar measures, both European and national contributions are taken into account. Data for Croatia come from the IPARD Programme 2007-2013 and financial package for the accession negotiations (European Commission, 2009a).

[7] The database documentation for GTAP8 is not yet fully available at the date of writing this report. Documentation of database GTAP 7 is available in Narayanan and Walmsley (2008).

[8] Activities, intermediate inputs, factors, households (regional and private), government, savings & investment, taxes, margins (trade costs and transport), and rest-of-the-world (trade, transfers, etc.).

[9] http://www.ers.usda.gov/Data/Macroeconomics/#BaselineMacroTables

[10] http://www.oecd.org/home/0,2987,en_2649_201185_1_1_1_1_1,00.html

4. Baseline

One of the crucial aspects in any analysis of policy impacts (both at micro- as well as at macro-levels) is an appropriate modelling of the baseline (reference scenario). Given that the EU, Croatia and their main trading partners are linked through international price systems, trade relations, capital flows, etc., the baseline should, as closely as possible, reflect the expected changes in the *global economy* between 2007 (base year) and the period at which the anticipated results of a given policy scenario are expected to occur, all these *without* harmonization of Croatian and EU policies. As this study is interested in an analysis of impacts over the 5-year period after Croatia's accession on July 1st, 2013, a cut-off time for our analysis is the year 2018 and our baseline covers the period 2008-2018.

In MAGNET, similarly to in other recursive dynamic CGE models, important key macro-economic variables are modelled exogenously[11], i.e. GDP projections, population growth, etc. Because some statistical data for those variables was available for a period beyond the base year, i.e. years 2008-2010, the whole baseline period (2008-2018) was divided into three sub-periods:

1. 2008-2010 in which statistical data are available on GDP, population and capital stock – for all regions modelled. These data already reflect the outbreak of the global economic and financial crisis which started in this period;

2. 2010-2014 in which some preliminary data (until 2012) and short-term forecasts (e.g. post-crises GDP) were utilized;

3. 2014-2018 (after Croatia's accession) in which the most recent external projections of further development of the main trading blocs were used (see: sub-section GDP and population, below).

Furthermore, to reflect the most recent developments of EU trade policies in the baseline we (i) updated the level and the structure of EU-27 policy instruments (i.e. model exogenously determined variables) from 2007 to those observable in sub-period 2008-2010, and (ii) made additional assumptions concerning further developments of specific policy instruments that are not directly related to Croatia's EU accession (e.g. abolition of EU export subsidies applied to trade with third countries, continuation of sugar quota, abolishment of milk quota) – for sub-periods 2010-2014 and 2014-2018.
Other important assumptions concerning the baseline were those which reflect changes in the EU-27 budget in the years 2008-2018 (see below).

[11] In order to obtain policy results, which include GDP as one of the model's endogenous variables, two further steps were needed. First, projections of GDP growth were translated into the growth of technological progress (the latter was endogenously calculated by the model for all three sub-periods). Second, given calculated rates of technological progress from the first step (now considered exogenous) the values for GDP growth were endogenously generated by the model separately for the baseline and policy scenarios.

4.1 Bilateral tariffs and duties, export taxes and subsidies

In the baseline, concerning the main policy instruments applied in bilateral trade relations between the EU, Croatia and third countries, it was assumed that the level and structure of tariffs and taxes imposed by all parties on imports of selected agricultural products in 2007 will prevail over the period of 2008-2018. On the other hand, the export subsidies and equivalent measures provided by the EU and OECD in 2007were assumed to be abolished in the period 2014-2018.

4.2 GDP and population

Basic assumptions concerning the real and projected rate of GDP and population growth for the EU, Croatia and their main trading partners in the periods 2007-2010, 2010-2014 and 2014-2018 are shown in Table 1.

Table 1: GDP and population growth rate in baseline (percentage change)

	GDP			Population		
	2007/10	2010/14	2014/18	2007/10	2010/14	2014/18
EU	-2.2	7.1	8.5	0.9	0.8	0.7
Croatia	-5.1	11.5	15.7	-0.1	-0.4	-0.6
OECD	-0.1	9.4	10.3	2.3	2.9	2.7
Western Balkans	13.3	17.5	19.4	-1.9	-1.7	-1.6
Mercosur	13.4	19.8	18.7	3.6	4.4.	3.9
ROW	17.5	28.4	26.9	3.9	5.1.	4.8

Source: USDA-ERS, and WDI

As shown in Table 1, the GDP in the EU, OECD countries and Croatia between 2007 and 2010 decreases due to the current economic crisis. According to projections, the GDP should recover during the rest of the baseline period. The Croatian GDP annual growth rate between 2010 and 2018 is projected to be approximately 70% higher than the EU annual growth rate reflecting the tendency for middle income countries to catch up with the more developed countries in the EU. Croatia's population is projected to shrink in the same period, causing GDP per capita to increase even more compared to the rest of the EU.

4.3 Employment

The GTAP database contains detailed information about the structure of employment per activity (unskilled and skilled labour) and region in the base year 2007 (in value terms). In our baseline, the *total* level of labour supply in each region is linked directly to the share of the workforce in total population (fixed shares are applied). Allocation of total employment *among* individual sectors is generated by the model (employment by activity/sector of unskilled and skilled labour is an endogenous variable). As real wages of unskilled labour are fixed exogenously, an unskilled labour is allowed to be not fully employed.

4.4 CAP

For the purpose of this study we used data on the EU-27 budget allocation between 2008 and 2011, as well as forecasts for the CAP in 2014-2020 financial framework and CAP reform proposals. It is assumed that the shares of CAP expenditures within the first pillar (SFPs, other direct payments and market measures), and the allocation of second pillar measures across various types of support programmed for the period 2007-2013 will remain unchanged until 2018. Both European and Member States' financial contributions are taken into account for second pillar measures (Table 2).

Table 2: Projected allocation of CAP budget in EU-27 (million USD in nominal terms)

	2010	2013	2018
Pillar 1	59421.7	62987.1	63266.6
Pillar 2			
Investment in agriculture	7247.9	7818.4	7818.4
Investment in human capacity	2920.3	3150.2	3150.2
Wider rural development	5862.0	6323.5	6323.5
LFAs	4408.4	4755.4	4755.4
Agri-environmental measures	9351.5	10087.6	10087.6
Total	**84803.5**	**90366.8**	**90646.3**

Note: See Table 3 for projected allocation of CAP budget in Croatia.
Source: authors' calculations on the basis of EAGF Financial Report (2008 financial year), financial plans per Member State for the programming period 2007-2013 as reported by EAFRD, and the MFF proposals and the CAP reform proposals presented in COM(2011) 628 final/2.

Beyond the CAP budget, special attention has been paid to the sugar quota applied in the EU-27. It was assumed that the EU-27 quota for sugar which in 2006/2007 amounted to 17,594,327 tonnes (16,907,591 tonnes for sugar and 686,736 for isoglucose, as reported in European Commission (2009b)) will be reduced by 2015 to 12,735,000 tonnes (-28% approximately) and thereafter (2015-2018) will stay at the same level.

5. Scenario

The policy scenario was constructed by assuming that Croatia's accession to the EU takes place in 2013 and effects are assessed for the year 2018. All policy results presented in this report are obtained by comparing the effect of policy shocks (Croatia's EU accession) with the derived baseline on selected variables, i.e. exports, imports, production, etc. in the EU, Croatia and their main trading partners i.e. Western Balkans, OECD, Mercosur and ROW (i.e. China, India, Russia…).

5.1 Cumulative shocks

The following shocks are run simultaneously.

1. Abolition of all external tariffs, subsidies and taxes on traded commodities, products and services between Croatia and the EU.

2. Full harmonization of all external tariffs, taxes and subsidies on traded commodities, products and services applied previously by Croatia to its non-EU trading partners – i.e. Western Balkans, OECD, Mercosur and ROW – with those applied by the EU.

3. Adjustment of tariffs, taxes and subsidies previously applied by Croatia's non-EU trading partners – i.e. Western Balkans, OECD, Mercosur and ROW – in relation to trade with Croatia to those valid for the EU.

4. Allocation of the CAP budget to Croatian agri-food sectors according to the accession financial package as agreed in 2009. The breakdown of rural development measures for the period 2011-2018 remains the same as for the period 2007-2010. Both European and Croatian financial contributions are taken into account (Table 3).

Table 3: Projected allocation of CAP budget in Croatia (million USD in nominal terms)

	2010	2013	2018
Pillar 1	0.0	127.8	306.6
Pillar 2			
Investment in agriculture	8.7	92.5	115.7
Investment in human capacity	15.2	161.0	201.3
Wider rural development	12.0	127.3	159.1
LFAs	ns	ns	ns
Agri-environmental measures	0.5	4.9	6.1
Total	**36.3**	**513.4**	**788.8**

Source: authors' calculations on the basis of the IPARD Programme 2007-2013 for Croatia, and financial package for the accession negotiations (European Commission, 2009a).

5. Sugar quota in Croatia

The European sugar regime is currently experiencing significant reforms, especially with the present production quota system that will expire in 2014/2015. Consequently, it was assumed that upon EU accession (in 2013) Croatia's level of sugar production (230,000 tonnes in 2007) will be reduced by 16% (in order to meet the sugar quota 192,877 tonnes). This amount was agreed during the accession negotiations with Croatia (European Commission, 2009a). We also assumed that in consequent periods (until 2018) the sugar quota in Croatia would remain at this level.

5.2 Changes in the level and structure of tariffs

The analysis of bilateral protection levels applied between the EU and Croatia shows that in 2007 most of Croatia's agricultural products could enter the EU market at zero or very low tariffs (Table 5). Major exceptions to this are: "beverages and tobacco" with an applied tariff rate of 1.2%, "cattle meat" with a tariff rate of 2.1%, and "sugar" which faced a skyrocketing ad valorem protection of 106%.[12]

By contrast, the level of tariff protection applied by Croatia to imports from the EU was in general much higher than those applied by the EU to Croatian products (Table 4 & Table 5). The differences in the bilateral tariffs applied on imports of livestock and meat products were especially striking, e.g. live cattle, sheep and goats from the EU could enter the Croatian market at a high tariff rate of 20.3%, pork meat and poultry at 30.0%, cattle meat at 15.2%, dairy products at 16.6%, beverages and tobacco at 11.6%, vegetable and fruits at 9.5%, while the same products could be exported from Croatia to the EU almost duty free. Sugar exports from the EU-27 to Croatia faced an ad valorem protection tariff of approximately 22%.

Data also show that the level and structure of tariffs applied in Croatia on agri-food imports from *third countries* in 2007 were very different from those applied by the EU, which implies some trade creation and diversion effects. This was especially true in the case of Western Balkan countries (one of Croatia's main trading partners) where many agricultural products could enter Croatian markets at almost zero or a very low tariff rate (Table 4, Western Balkans column). For example, the EU tariff rate on imports of cattle, sheep and goat meat from the Western Balkans was set to 12.0%, while the same products could enter Croatian markets at zero tariffs. The levels of protection of wheat and other cereals imported by Croatia from the Western Balkans were also lower than EU levels. In the case of sugar imports from the Western Balkans, the differences were even higher; in the EU, out-of-quota tariffs for sugar from the Western Balkans were set to 120% while sugar imports from the Western Balkans to Croatia were duty free. In contrast, some of the tariffs applied to other agricultural imports, e.g. fruits and vegetables, from the Western Balkans were much higher in Croatia (13.7%) than in the EU (1.0%).

A similar picture arises when comparing the structure and level of tariffs applied by Croatia and the EU to OECD countries on agricultural imports. Here, the biggest differences concern products such as rice (22.3% in the EU vs. 2.0% in Croatia), dairy products (37.6% in the EU vs. 22.2% in Croatia) or plant-based fibres (36.4% in the EU vs. duty free in Croatia) (Table 4, OECD column). Even bigger discrepancies could be observed between the pattern of tariff protection applied by the EU and Croatia for agricultural imports originating from the rest of the world such as for rice (10.1% in the EU vs. 1.4% in Croatia), milled rice (24.8% in the EU vs. 1.8% in Croatia), sugar (67.4% in the EU vs. 43.5% in Croatia), wheat (8.1% in the EU vs. 0.1% in Croatia), dairy

[12] Sugar trade remains highly distorted. Exports from Western Balkan countries benefit from preferential access to the EU through tariff rate quotas (TRQs) mainly filled by Croatia and Serbia. One may bear in mind that TRQs replace duty-free access for Croatian exports of sugar to the EU since January 1st 2007.

products (9.2% in the EU vs. 0.9% in Croatia) and cattle, sheep and goat meat (9% in the EU vs. duty free in Croatia) (Table 4, ROW column).

Tariffs in the EU on primary agricultural sectors are generally either low or close to the previous tariff imposed by Croatia. In the food sector, after the accession, there are significant trade diversion effects as Croatia imposes a higher tariff on beef coming from Mercosur and ROW, and a higher tariff on pork and poultry meat and dairy products from the OECD countries and ROW. After the enlargement, Croatia imposes higher tariffs on sugar cane and beet originating from other regions, i.e. OECD and Mercosur (Table 4). For raw sugar, the increases in tariff that Croatia imposes on its trading partners are significant; they are most noticeable for Western Balkans and Mercosur where they reach up to 136% (Table 4). Lastly, tariffs imposed by Croatia on manufactured goods change slightly after the accession (a small increase for OECD and a slight decrease for Mercosur and ROW).

Now, turning to import tariffs faced by Croatia (Table 5), can be seen that after the accession, Croatian goods face a generally increased level of tariffs to enter OECD, Mercosur and ROW. This increase is significant for primary agricultural goods, food and, to a lesser extent, manufactured goods, for which Croatia used to enjoy free access. For example, with Croatia's accession it will face much higher import tariffs for cereals and live cattle from the OECD members (Table 5, OECD column). In the same way, Croatia will face higher import tariffs for wool coming from ROW (Table 5, ROW column).

There are considerable discrepancies in the pattern of protection in the agri-food sectors applied in Croatia and the EU-27 prior to Croatia's EU accession. These, combined with different tariffs applied to Croatian and EU exports by their trading partners, suggests significant potential for trade creation and diversion effects in Croatia after EU accession.

Table 4: Import tariffs imposed by Croatia in baseline and scenario (percentage change)

	EU		Western Balkans			OECD			Mercosur			ROW		
	Base.	Scen.	Base.	Scen.	%	Base.	Scen.	%	Base.	Scen.	%	Base.	Scen.	%
Rice	0.0	0.0	0.0	0.0		2.0	22.3	1015.1	0.0	19.0		1.4	10.1	607.7
Wheat	5.9	0.0	0.0	12.1		0.0	5.7		0.0	10.2		0.1	8.1	7127.4
Other cereals	4.6	0.0	9.6	25.3	163.7	6.4	3.0	-53.2	9.7	3.3	-65.9	6.5	6.1	-5.5
Vegetables, fruits	9.5	0.0	13.7	1.0	-92.4	11.6	4.0	-65.8	10.9	12.5	14.6	8.5	7.0	-16.8
Oilseeds	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Sugar cane, sugar beet	10.0	0.0	0.0	0.0		0.0	36.4		0.0	5.0		8.1	0.4	-95.4
Plant-based fibres	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Other crops	4.3	0.0	4.5	0.0	-100.5	4.0	5.3	31.6	2.3	2.8	23.0	2.8	0.3	-88.2
Live cattle, sheep, goats, horses	20.3	0.0	0.0	0.0		0.0	4.6		0.0	4.4		0.2	1.1	343.6
Live pigs, poultry, other animals	2.6	0.0	0.4	0.2	-42.0	3.3	2.3	-30.9	4.0	7.3	79.6	1.4	0.8	-41.2
Raw milk	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Wool, silk-worm cocoons	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Meat beef, sheep, goat, horse	15.2	0.0	0.0	12.0		23.5	14.5	-38.4	28.1	84.4	200.7	0.0	9.0	
Meat pork, poultry, other	30.0	0.0	0.0	0.1		18.9	22.6	19.8	28.1	24.4	-13.0	3.4	13.5	292.2
Vegetable oils and fats	9.6	0.0	0.0	0.3		25.1	7.8	-68.8	0.2	0.7	287.0	2.8	8.4	198.0
Dairy products	16.6	0.0	0.0	0.1		22.2	37.6	69.2	36.5	8.8	-76.0	0.9	9.2	943.2
Milled Rice	0.0	0.0	0.0	0.0		0.5	23.0	4353.9	0.0	33.0		1.8	24.8	1242.5
Sugar	22.3	0.0	0.0	133.8		25.0	29.6	18.6	37.9	136.5	260.2	43.5	67.4	54.8
Other food Products	9.8	0.0	0.0	9.6		9.5	6.9	-27.7	11.4	14.6	27.7	6.5	6.7	3.2
Beverages and tobacco	11.6	0.0	0.0	10.5		12.9	4.8	-62.5	29.9	19.1	-36.3	11.9	6.9	-41.8

Source: GTAP database v. 8 for baseline and authors' calculation for scenario

Table 5: Import tariffs faced by Croatia in baseline and scenario (percentage change)

	EU		Western Balkans			OECD			Mercosur			ROW		
	Base.	Scen.	Base.	Scen.	%	Base.	Scen.	%	Base.	Scen.	%	Base.	Scen.	%
Rice	0.0	0.0	0.0	1.4		0.0	3.0		0.0	9.3		0.0	32.8	
Wheat	0.0	0.0	0.0	1.6		10.7	66.1	517.8	0.0	0.1		0.6	16.9	2698.0
Other cereals	0.0	0.0	0.0	2.1		0.2	44.9	18004.8	0.0	0.8		5.4	9.4	74.8
Vegetables, fruits	0.0	0.0	6.2	9.7	55.3	6.5	20.4	214.8	0.0	9.3		1.0	13.1	1159.6
Oilseeds	0.0	0.0	0.0	6.8		2.2	4.1	88.5	0.0	4.0		0.6	9.0	1384.2
Sugar cane, sugar beet	0.0	0.0	0.0	0.0		0.0	59.8		0.0	0.0		0.0	9.3	
Plant-based fibres	0.0	0.0	0.0	1.1		0.0	0.0		0.0	0.2		0.0	2.1	
Other crops	0.0	0.0	0.0	4.9		4.9	14.1	188.3	13.9	4.8	-65.4	2.8	8.1	194.9
Live cattle, sheep, goats, horses	0.6	0.0	0.0	9.2		0.0	4.1		0.0	1.4		0.0	2.4	
Live pigs, poultry, other animals	0.0	0.0	0.0	3.2		1.3	16.9	1241.3	2.6	5.4	110.9	0.2	6.3	2621.0
Raw milk	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Wool, silk-worm cocoons	0.0	0.0	0.0	0.0		0.0	0.8		0.0	8.0		0.1	31.2	26118.5
Meat beef, sheep, goat, horse	2.1	0.0	0.0	11.8		0.0	122.0		0.0	5.1		0.2	14.3	6875.6
Meat pork, poultry, other	0.0	0.0	0.0	15.2		7.0	37.2	430.7	0.0	9.0		25.2	22.7	-9.9
Vegetable oils and fats	0.0	0.0	0.0	1.8		5.1	6.5	28.5	0.0	10.4		0.8	12.9	1551.7
Dairy products	0.1	0.0	5.3	9.9	86.1	22.3	41.5	86.1	0.0	19.6		5.2	13.1	152.9
Milled Rice	0.0	0.0	0.0	1.5		0.0	21.1		0.0	10.6		0.0	88.8	
Sugar	106.0	0.0	0.0	3.7		29.4	20.5	-30.3	0.0	4.5		6.9	16.1	132.3
Other food Products	0.7	0.0	0.5	7.4	1441.7	6.3	13.4	114.1	10.2	10.9	6.9	3.7	13.8	276.0
Beverages and tobacco	1.2	0.0	1.0	7.4	647.2	2.8	4.9	70.8	13.7	18.8	37.2	5.3	33.8	543.8

Source: GTAP database v. 8 for baseline and authors' calculation for scenario

6. Results

6.1 Trade

Our results show that Croatia's EU accession affects significantly Croatia's exports of primary agricultural and food products to the EU (Table 6).

Table 6: Value of EU's imports from Croatia in 2018 (million USD and % change)

	From Croatia				Total			
	Baseline	Scenario	**Diff.**	**%**	Baseline	Scenario	**Diff.**	**%**
Rice	0.0	0.0	0.0		485.0	486.0	1.0	0.2
Wheat	46.7	82.8	36.1	77.3	6,625.0	6635.0	10.0	0.2
Other cereals	5.0	5.7	0.7	13.9	7,970.0	7971.0	1.0	0.0
Vegetables, fruits	72.4	87.7	15.3	21.1	44,954.0	44953.0	-1.0	0.0
Oilseeds	11.4	15.1	3.7	32.5	7,080.0	7084.0	4.0	0.1
Sugar cane, sugar beet	0.3	0.7	0.4	121.4	65.1	65.2	0.1	0.2
Plant-based fibres	16.2	18.1	1.9	11.7	835.0	835.0	0.0	0.0
Other crops	15.9	20.0	4.1	25.8	22,231.0	22236.0	5.0	0.0
Live cattle, sheep, goats, horses	20.3	23.9	3.6	17.7	3,463.0	3467.0	4.0	0.1
Live pigs, poultry, other animals	54.5	60.0	5.5	10.1	8,684.0	8690.0	6.0	0.1
Raw milk	44.3	56.0	11.7	26.4	152.0	154.0	2.0	1.3
Wool, silk-worm cocoons	18.3	32.2	13.9	76.0	926.0	925.0	-1.0	-0.1
Agriculture	**305.3**	**402.2**	**96.9**	**31.7**	**103470.1**	**103501.2**	**31.1**	**0.0**
Meat beef, sheep, goat, horse	38.0	50.8	12.8	33.7	17269.0	17295.0	26.0	0.2
Meat pork, poultry, other	66.8	85.4	18.6	27.8	30584.0	30601.0	17.0	0.1
Vegetable oils and fats	16.9	18.1	1.2	7.1	19076.0	19077.0	1.0	0.0
Dairy products	53.5	56.3	2.8	5.2	32092.0	32125.0	33.0	0.1
Milled Rice	0.1	0.1	0.0	3.7	1380.0	1380.0	0.0	0.0
Sugar	533.0	304.0	-229.0	-43.0	9710.0	9753.0	43.0	0.4
Other food Products	156.0	164.0	8.0	5.1	121793.0	121803.0	10.0	0.0
Beverages and tobacco	78.2	78.2	0.0	0.0	44722.0	44717.0	-5.0	0.0
Food	**942.5**	**756.9**	**-185.6**	**-19.7**	**276626**	**276751**	**125**	**0.0**
Whole economy	**11903**	**12312**	**409.0**	**3.4**	**5448234**	**5447548**	**-686**	**0.0**

Source: MAGNET results

The sectors which witness the greatest positive export growth are wheat (36 million USD), vegetables and fruit (15 million USD), beef (12.8 million USD) and other meat (18.6 million USD). Interestingly, an increase in EU imports of wheat, vegetables and fruit and other meat from Croatia is not due to changes in bilateral tariffs between the EU and Croatia which were already zero, but due to trade diversion effects from different destinations (OECD, ROW or Western Balkans) to the EU (tariffs faced by Croatia in those countries after the EU accession are higher than before). In the case of beef which was protected by the EU prior to accession of Croatia, the result is a

combination of increased market access for Croatia and a redirection of Croatian trade. The Croatian beef sector loses 8.5 million USD of exports towards OECD countries and the ROW (Table 11) due to harmonization of tariffs towards third trade partners (trade diversion effect).

While Croatia's agricultural sector increases its exports to the EU by 31.7% (96.9 million USD) the food sector decreases its EU exports by 19.7% (185.6 million USD). This decrease is driven by the sugar sector, whose exports to the EU fall by 43% (229.0 million USD). The introduction of the sugar production quota in Croatia causes production to fall hence the negative performance in exports.

The situation is different when analysing Croatia's imports from the EU (Table 7).

Table 7: Value of Croatia's imports from EU in 2018 (million USD and % change)

	From the EU				Total Imports			
	Baseline	Scenario	**Diff.**	**%**	Baseline	Scenario	**Diff.**	**%**
Rice	0.4	0.5	0.0	9.7	0.5	0.5	0.0	0.0
Wheat	0.4	0.4	0.0	-7.0	0.5	0.4	-0.1	-20.0
Other cereals	38.4	34.3	-4.1	-10.7	48.7	43.6	-5.1	-10.5
Vegetables, fruits	116.0	110.0	-6.0	-5.2	172.0	157.0	-15.0	-8.7
Oilseeds	14.7	12.1	-2.6	-17.7	17.6	14.4	-3.2	-18.2
Sugar cane, sugar beet	7.1	6.0	-1.1	-16.0	9.2	7.6	-1.6	-17.7
Plant-based fibres	0.5	0.5	0.0	-4.9	1.9	1.8	-0.1	-4.8
Other crops	76.3	72.9	-3.4	-4.5	102.0	92.7	-9.3	-9.1
Live cattle, sheep, goats	115.0	122.0	7.0	6.1	116.0	122.0	6.0	5.2
Live pigs, poultry, other	65.2	61.6	-3.6	-5.5	78.9	74.2	-4.7	-6.0
Raw milk	0.1	0.0	0.0	-16.4	0.2	0.2	0.0	-15.5
Wool, silk-worm cocoons	0.0	0.0	0.0	-25.0	0.3	0.2	-0.1	-24.8
Agriculture	**434.2**	**420.3**	**-13.9**	**-3.2**	**547.8**	**514.6**	**-33.2**	**-6.1**
Meat beef, sheep, goat	10.4	22.0	11.6	111.5	40.0	31.6	-8.4	-21.0
Meat pork, poultry, other	133.0	254.0	121.0	91.0	176.0	268.0	92.0	52.3
Vegetable oils and fats	21.6	34.3	12.7	58.8	80.5	78.8	-1.7	-2.1
Dairy products	82.6	112.0	29.4	35.6	128.0	144.0	16.0	12.5
Milled Rice	4.7	5.5	0.9	18.3	8.5	7.5	-1.0	-12.0
Sugar	2.5	52.4	49.9	1971.1	130.0	212.0	82.0	63.1
Other food Products	596.0	636.0	40.0	6.7	826.0	822.0	-4.0	-0.5
Beverages and tobacco	153.0	157.0	4.0	2.6	196.0	198.0	2.0	1.0
Food	**1003.8**	**1273.2**	**269.4**	**26.8**	**1585.0**	**1761.9**	**176.9**	**11.2**
Whole economy	**18288.0**	**16163.0**	**-2125.0**	**-11.6**	**30034.0**	**30439.0**	**405.0**	**1.3**

Source: MAGNET results

Croatian imports of primary agricultural products fall by 14 million USD (-3.2%). The greatest decreases are found in the following sectors: other cereals, vegetables and fruits, oilseeds and live pigs and poultry. While agricultural imports decrease, Croatia imports of food products increase by 270 million USD (26.8%). The value of Croatian imports of cattle, sheep and goat meat from the EU increase by 11.6%, and of dairy imports by 29.4%. The products that were facing the highest protection before the

accession are those for which imports increase the most, e.g. Croatia was levying a tariff of 30% on pork and poultry from the EU, and after the accession Croatia's imports of these products from the EU increase by 91% (Table 7).

Looking at Croatia's total imports at the aggregated level, it appears that some sectors are more affected than others. While Croatia's accession to the EU causes an abolition of Croatian protection for imports coming from the EU, it generally leads to an increase in protection of Croatian agricultural and food sectors for imports coming from third countries. These two elements result in a drop in total agricultural imports of 6.1%, and an increase in total imports of food products of 11.2% (Table 7).

After the accession to the EU, total exports of Croatian agricultural products increase by about 7.4% (Table 8). At the same time total Croatian food exports decrease by about 2.2%. Clearly, Croatia is confronted with a different rate of protection of agri-food products than it was before accession. Looking at other trading blocks, Croatia's accession to the EU does not have significant impacts on those regions in terms of percentage change in exports. Looking at table 8, one could mention raw milk but, the quantities exported are very small. In the EU-27, the value of sugar exports experiences the highest increase mostly because of the introduction of the sugar production quota in Croatia, and the increase in production market prices (see below).

Table 8: Value of Exports in 2018 (percentage change)

	EU	Croatia	Western Balkans	OECD	Mercosur	ROW
Rice	0.43	-79.31		0.08	0.00	0.00
Wheat	-0.09	-6.56	0.00	0.06	0.05	0.04
Other cereals	-0.01	-0.63	0.00	0.00	0.02	0.00
Vegetables, fruits	0.02	3.28	0.00	0.00	-0.04	-0.03
Oilseeds	-0.09	0.00	0.00	-0.01	0.02	0.00
Sugar cane, sugar beet	-0.97	55.02	-0.27	0.00	-0.14	-1.76
Plant-based fibres	0.00	9.31	0.00	0.01	0.14	-0.02
Other crops	0.01	9.13	0.39	0.00	0.00	-0.03
Live cattle, sheep, goats	0.54	21.24	-0.16	-0.03	-0.28	-0.12
Live pigs, poultry, other	-0.01	2.14	0.00	0.01	0.00	0.00
Raw milk	-6.98	29.56	-5.48	-5.56	-5.41	-5.91
Wool, silk-worm cocoons	-0.40	35.97	-0.52	-0.09	-0.79	-1.14
Agriculture	**0.02**	**7.44**	**-0.13**	**0.01**	**0.01**	**-0.05**
Meat beef, sheep, goat	0.64	9.76	0.00	-0.01	-0.25	-0.13
Meat pork, poultry, other	0.63	36.63	-0.86	-0.06	-0.17	-0.20
Vegetable oils and fats	0.21	-19.22	-0.13	0.02	0.02	-0.05
Dairy products	0.27	3.89	0.00	-0.03	0.52	-0.26
Milled Rice	0.31	-48.65	0.00	0.00	0.00	-0.02
Sugar	3.10	26.70	0.66	0.41	-0.22	1.41
Other food Products	0.15	-13.17	0.00	0.00	-0.04	-0.04
Beverages and tobacco	0.07	-29.01	0.58	0.04	0.03	0.09
Food	**0.24**	**-2.19**	**0.23**	**0.00**	**-0.07**	**0.02**
Whole economy	**0.00**	**0.07**	**-0.05**	**0.00**	**0.00**	**0.01**

Source: MAGNET results

The next tables present disaggregated trade results. The value of Croatian and EU-27 imports from the Western Balkans, OECD, Mercosur and ROW are presented in Tables 9 and 10 respectively. The value of Croatian and EU-27 exports to these groups of countries are presented in Tables 11 and 12 respectively.

Table 9: Value of Croatia's imports in 2018 (million USD and percentage change)

	Western Balkans				OECD				Mercosur				ROW			
	Base.	**Scen.**	**Diff.**	**%**	**Base**	**Scen.**	**Diff.**	**%**	**Base**	**Scen.**	**Diff.**	**%**	**Base**	**Scen.**	**Diff.**	**%**
Rice					0.0	0.0	0.0	-79.2					0.1	0.0	0.0	-48.0
Wheat	0.001		-0.001	-100	0.0	0.0	0.0	-50.0					0.1	0.0	-0.1	-67.5
Other cereals	0.005	0.003	-0.002	-40.0	0.9	0.8	-0.1	-12.3	7.8	7.2	-0.6	-8.2	1.6	1.4	-0.3	-16.1
Vegetables, fruits	0.034	0.036	0.002	5.9	21.0	19.6	-1.4	-6.7	5.2	3.9	-1.4	-26.0	29.7	23.7	-6.0	-20.2
Oilseeds	0.001	0.000	-0.001	-100	1.5	1.2	-0.3	-17.8	0.6	0.5	-0.1	-17.9	0.8	0.6	-0.1	-18.1
Sugar cane, sugar beet					0.0	0.0	0.0	-100					2.1	1.6	-0.5	-23.8
Plant-based fibres					0.0	0.0	0.0	-6.4					1.3	1.2	-0.1	-5.5
Other crops	0.152	0.147	-0.005	-3.3	0.6	0.4	-0.2	-29.1	15.9	11.7	-4.2	-26.4	8.7	7.5	-1.2	-13.4
Live cattle, sheep, goats	0.001	0.001	0.000	0.0	0.1	0.1	-0.1	-38.7					0.3	0.2	-0.1	-34.3
Live pigs, poultry, other	0.329	0.299	-0.030	-9.1	5.1	4.7	-0.4	-7.8	0.6	0.5	-0.1	-13.6	7.6	7.0	-0.6	-8.4
Raw milk	0.008	0.007	-0.001	-12.5	0.0	0.0	0.0	-20.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	-15.4
Wool, silk-worm cocoons					0.0	0.0	0.0	-50.0	0.0	0.0	0.0	0.0	0.3	0.2	-0.1	-24.4
Agriculture	**0.531**	**0.493**	**-0.038**	**-7.2**	**29.3**	**26.9**	**-2.4**	**-8.3**	**30.2**	**23.8**	**-6.4**	**-21.2**	**52.6**	**43.6**	**-9.1**	**-17.2**
Meat beef, sheep, goat	0.008	0.004	-0.004	-50.0	2.1	4.2	2.1	97.7	23.4	2.7	-20.7	-88.6	4.0	2.7	-1.3	-33.3
Meat pork, poultry, other	0.010	0.003	-0.007	-70.0	2.7	0.7	-2.0	-74.9	31.2	12.6	-18.6	-59.6	8.9	1.4	-7.5	-84.1
Vegetable oils and fats	0.024	0.022	-0.002	-8.3	0.4	0.9	0.5	122.3	10.5	9.8	-0.8	-7.1	47.9	33.9	-14.0	-29.2
Dairy products	0.013	0.010	-0.003	-23.1	1.3	0.5	-0.8	-62.7	3.8	12.6	8.9	236.0	40.2	18.9	-21.3	-53.0
Milled Rice	0.001	0.001	0.000	0.0	0.0	0.0	0.0	-50.0				-75.0	3.8	1.9	-1.9	-48.9
Sugar	0.001	0.000	-0.001	-100	0.1	0.9	0.8	666.4	117.0	109.0	-8.0	-6.8	10.9	49.7	38.8	356.0
Other food Products	0.027	0.016	-0.011	-40.7	42.2	36.7	-5.5	-13.0	19.6	14.6	-5.0	-25.5	168.0	135.0	-33.0	-19.6
Beverages and tobacco	0.003	0.002	-0.001	-33.3	3.8	3.7	-0.1	-2.1	0.4	0.4	0.0	-0.5	39.0	36.8	-2.2	-5.6
Food	**0.087**	**0.058**	**-0.029**	**-33.3**	**52.7**	**47.6**	**-5.1**	**-9.6**	**205.9**	**161.6**	**-44**	**-21.5**	**322.7**	**280.3**	**-42.4**	**-13.1**
Whole economy	**7.9**	**7.0**	**-0.9**	**-11.5**	**1853.0**	**1631.0**	**-222**	**-12.0**	**345.0**	**279.0**	**-66**	**-19.1**	**9540.0**	**12359**	**2819**	**29.5**

Source: MAGNET results

Table 10: Value of EU imports in 2018 (million USD and percentage change)

	Western Balkans				OECD				Mercosur				ROW			
	Base.	**Scen.**	**Diff.**	**%**	**Base.**	**Scen.**	**Diff.**	**%**	**Base.**	**Scen.**	**Diff.**	**%**	**Base.**	**Scen.**	**Diff.**	**%**
Rice					10.8	10.8	0.0	0.0	126.0	126.0	0.0	0.0	129	129	0.0	0.0
Wheat	3.9	3.8	0.0	-0.5	1017.0	1011.0	-6.0	-0.6	3.6	3.5	0.0	-0.6	331	329	-2.0	-0.6
Other cereals	4.1	4.1	0.0	0.0	624.0	624.0	0.0	0.0	2054.0	2054.0	0.0	0.0	237	237	0.0	0.0
Vegetables, fruits	44.6	44.5	-0.1	-0.2	5707.0	5703.0	-4.0	-0.1	1528.0	1528	0.0	0.0	8847	8840	-7.0	-0.1
Oilseeds	15.7	15.7	0.0	0.0	1365.0	1365.0	0.0	0.0	2484.0	2485	1.0	0.0	414	414	0.0	0.0
Sugar cane, sugar beet	0.1	0.1	0.0	0.0	0.7	0.7	0.0	-0.7	0.0	0.0	0.0	0.0	4.9	4.8	0.0	-0.8
Plant-based fibres	0.0	0.0	0.0	0.0	235.0	235.0	0.0	0.0	19.8	19.7	-0.1	-0.5	391	390	-1.0	-0.3
Other crops	7.4	7.4	0.0	0.0	1349.0	1349.0	0.0	0.0	3294.0	3296	2.0	0.1	3903	3901	-2.0	-0.1
Live cattle, sheep, goats	0.4	0.4	0.0	0.0	276.0	276.0	0.0	0.0	7.6	7.6	0.0	0.0	86.2	86.2	0.0	0.0
Live pigs, poultry, other	14.6	14.6	0.0	0.0	692.0	692.0	0.0	0.0	257.0	257.0	0.0	0.0	1069	1069	0.0	0.0
Raw milk	3.1	2.8	-0.3	-9.2	11.4	10.3	-1.1	-9.6	1.5	1.4	-0.1	-9.1	78.9	71.4	-7.5	-9.5
Wool, silk-worm cocoons	0.2	0.2	0.0	-1.2	319.0	314.0	-5.0	-1.6	48.1	47.4	-0.7	-1.5	407	400	-7.0	-1.7
Agriculture	**94.0**	**93.6**	**-0.4**	**-0.4**	**11606.9**	**11590.8**	**-16.1**	**-0.1**	**9823.5**	**9825.6**	**2.0**	**0.0**	**15898**	**15871.4**	**-26.5**	**-0.2**
Meat beef, sheep, goat	4.0	4.0	0.0	-0.2	1391.0	1385.0	-6.0	-0.4	5463.0	5444	-19.0	-0.3	854	850	-4.0	-0.5
Meat pork, poultry, other	4.9	4.9	0.0	-0.2	808.0	807.0	-1.0	-0.1	4629.0	4624	-5.0	-0.1	2718	2712	-6.0	-0.2
Vegetable oils and fats	47.6	47.5	-0.1	-0.2	363.0	363.0	0.0	0.0	6495.0	6495	0.0	0.0	5149	5145	-4.0	-0.1
Dairy products	5.8	5.8	0.0	-0.2	1675.0	1672.0	-3.0	-0.2	25.2	25.1	-0.1	-0.4	1527	1524	-3.0	-0.2
Milled Rice	0.2	0.2	0.0	0.0	32.0	31.9	-0.1	-0.3	22.9	22.9	0.0	0.0	760	759	-1.0	-0.1
Sugar	13.0	13.5	0.5	3.8	171.0	177.0	6.0	3.5	951.0	985	34.0	3.6	6294	6510	216	3.4
Other food Products	93.2	93.1	-0.1	-0.1	9291.0	9285.0	-6.0	-0.1	2482.0	2481	-1.0	0.0	31086	31062	-24.0	-0.1
Beverages and tobacco	29.8	29.8	0.0	0.0	3940.0	3938.0	-2.0	-0.1	556.0	556.0	0.0	0.0	2736	2734	-2.0	-0.1
Food	**198.5**	**198.8**	**0.3**	**0.1**	**17671.0**	**17658.9**	**-12.1**	**-0.1**	**20624.1**	**20633.0**	**8.9**	**0.0**	**51124**	**51296**	**172.0**	**0.3**
Whole economy	**2102.0**	**2101.0**	**-1.0**	**0.0**	**840971.0**	**840533.0**	**-438.0**	**-0.1**	**73332.0**	**73328.0**	**-4.0**	**0.0**	**1559247**	**1557993**	**-1254**	**-0.1**

Source: MAGNET results

Table 11: Value of Croatia's exports in 2018 (million USD and percentage change)

	Western Balkans				OECD				Mercosur				ROW			
	Base.	**Scen.**	**Diff.**	**%**	**Base.**	**Scen.**	**Diff.**	**%**	**Base.**	**Scen.**	**Diff**	**%**	**Base.**	**Scen.**	**Diff.**	**%**
Rice	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.1	0.0	0.0	-79.3
Wheat	0.3	0.5	0.2	52.1	2.7	0.2	-2.5	-94.1	0.2	0.4	0.2	81.4	74.4	35.0	-39.4	-53.0
Other cereals	0.0	0.0	0.0	7.7	1.7	0.8	-1.0	-56.3	0.0	0.0	0.0	14.3	9.2	9.4	0.2	2.4
Vegetables, fruits	0.2	0.2	0.0	18.0	10.0	7.9	-2.1	-21.0	0.7	0.7	-0.1	-11.2	42.9	34.1	-8.8	-20.5
Oilseeds	0.0	0.0	0.0	-2.5	2.2	2.6	0.5	21.7	0.1	0.1	0.0	11.0	32.7	28.7	-4.0	-12.2
Sugar cane, sugar beet	0.0	0.0	0.0	150.0	0.1	0.0	-0.1	-80.7	0.0	0.0	0.0	118.2	0.4	0.5	0.1	36.0
Plant-based fibres	0.0	0.0	0.0	6.7	2.2	2.4	0.3	11.5	0.2	0.2	0.0	10.7	6.1	6.2	0.1	1.1
Other crops	0.0	0.0	0.0	-8.0	2.3	1.7	-0.6	-27.7	2.9	6.2	3.3	116.5	23.9	21.4	-2.5	-10.5
Live cattle, sheep, goats	0.1	0.1	0.0	-16.7	3.2	3.2	0.0	-0.3	0.3	0.3	0.0	10.2	24.8	31.4	6.6	26.6
Live pigs, poultry, other	0.1	0.1	0.0	1.7	6.8	5.2	-1.6	-24.0	0.5	0.5	0.0	2.9	28.3	26.7	-1.6	-5.7
Raw milk	0.2	0.2	0.1	32.9	5.7	7.9	2.1	37.0	0.5	0.7	0.2	36.0	19.0	25.6	6.6	34.7
Wool, silk-worm cocoons	0.1	0.1	0.0	74.2	3.1	4.9	1.8	59.0	0.2	0.2	-0.1	-32.3	6.1	0.4	-5.7	-93.5
Agriculture	**1.0**	**1.3**	**0.3**	**28.0**	**40.0**	**36.7**	**-3.3**	**-8.2**	**5.7**	**9.3**	**3.6**	**63.8**	**267.9**	**219.4**	**-48.5**	**-18.1**
Meat beef, sheep, goat	0.1	0.0	0.0	-50.0	5.3	0.0	-5.3	-99.6	0.2	0.2	0.0	-19.8	6.6	3.4	-3.2	-48.8
Meat pork, poultry, other	0.1	0.0	0.0	-54.8	8.9	1.7	-7.2	-81.3	0.3	0.2	-0.1	-38.6	27.5	54.8	27.3	99.3
Vegetable oils and fats	0.0	0.0	0.0	0.0	0.8	0.8	0.0	-1.7	0.0	0.0	0.0	-45.0	14.2	7.2	-7.0	-49.2
Dairy products	0.3	0.5	0.3	104.1	5.6	2.6	-2.9	-52.7	0.2	0.1	-0.2	-64.9	38.1	42.0	3.9	10.2
Milled Rice	0.0	0.0	0.0		0.0	0.0	0.0	-58.3	0.0	0.0	0.0	-100.0	0.1	0.0	-0.1	-95.6
Sugar	0.0	0.0	0.0		0.0	0.0	0.0	-56.7	0.0	0.0	0.0		1.6	0.4	-1.2	-73.4
Other food Products	1.2	0.9	-0.2	-20.6	59.4	47.6	-11.8	-19.9	0.1	0.1	0.0	2.9	155.0	111.0	-44.0	-28.4
Beverages and tobacco	2.3	2.0	-0.3	-14.1	9.1	8.5	-0.5	-5.7	0.4	0.4	0.0	-10.8	176.0	101.0	-75.0	-42.6
Food	**3.9**	**3.5**	**-0.4**	**-9.2**	**89.1**	**61.3**	**-27.8**	**-31.2**	**1.2**	**0.9**	**-0.4**	**-28.7**	**419.1**	**319.8**	**-99.3**	**-23.7**
Whole economy	**64.8**	**54.8**	**-10.0**	**-15.4**	**1466**	**1474**	**8.0**	**0.5**	**112.0**	**115.0**	**3.0**	**2.7**	**5050**	**4396**	**-654.0**	**-13.0**

Source: MAGNET results

Table 12: Value of EU exports in 2018 (million USD and percentage change)

	Western Balkans				OECD				Mercosur				ROW			
	Base.	**Scen.**	**Diff.**	**%**	**Base.**	**Scen.**	**Diff.**	**%**	**Base.**	**Scen.**	**Diff**	**%**	**Base.**	**Scen.**	**Diff.**	**%**
Rice	0.1	0.1	0.0	0.0	8.2	8.2	0.0	-0.1	0.4	0.4	0.0	-0.3	9.6	9.6	0.0	-0.1
Wheat	7.4	7.4	0.0	0.0	242.0	242.0	0.0	0.0	1.0	1.0	0.0	0.0	3392.0	3401.0	9.0	0.3
Other cereals	2.4	2.4	0.0	0.0	214.0	214.0	0.0	0.0	0.4	0.4	0.0	0.0	1804.0	1804.0	0.0	0.0
Vegetables, fruits	62.3	62.3	0.0	0.0	1709.0	1709.0	0.0	0.0	51.6	51.6	0.0	0.0	3789.0	3790.0	1.0	0.0
Oilseeds	9.6	9.6	0.0	0.0	293.0	293.0	0.0	0.0	2.3	2.3	0.0	0.0	408.0	408.0	0.0	0.0
Sugar cane, sugar beet	0.0	0.0	0.0	0.0	3.1	3.1	0.0	0.6	0.0	0.0	0.0	0.0	3.5	3.5	0.0	-0.3
Plant-based fibres	0.1	0.1	0.0	-1.6	125.0	126.0	1.0	0.8	0.3	0.3	0.0	0.0	214.0	214.0	0.0	0.0
Other crops	34.5	34.5	0.0	0.0	3162.0	3162.0	0.0	0.0	80.7	80.4	-0.3	-0.4	6597.0	6598.0	1.0	0.0
Live cattle, sheep, goats	28.2	28.2	0.0	0.0	459.0	459.0	0.0	0.0	8.8	8.7	0.0	-0.2	619.0	618.0	-1.0	-0.2
Live pigs, poultry, other	12.2	12.1	-0.1	-0.8	635.0	635.0	0.0	0.0	75.3	75.2	-0.1	-0.1	2526.0	2526.0	0.0	0.0
Raw milk	0.0	0.0	0.0	-4.3	1.7	1.7	0.0	-1.8	0.1	0.1	0.0	-2.8	6.6	6.4	-0.2	-3.5
Wool, silk-worm cocoons	1.7	1.7	0.0	-1.2	20.4	20.3	-0.1	-0.5	2.4	2.4	0.0	0.4	97.9	98.6	0.7	0.7
Agriculture	**158.5**	**158.4**	**-0.1**	**-0.1**	**6872.4**	**6873.3**	**0.9**	**0.0**	**223.3**	**222.9**	**-0.4**	**-0.2**	**19466.7**	**19477.2**	**10.5**	**0.1**
Meat beef, sheep, goat	3.7	3.7	0.0	0.0	170.0	170.0	0.0	0.0	2.2	2.2	0.0	-0.5	565.0	565.0	0.0	0.0
Meat pork, poultry, other	12.3	12.3	0.0	0.0	1770.0	1771.0	1.0	0.1	7.3	7.3	0.0	0.0	1324.0	1322.0	-2.0	-0.2
Vegetable oils and fats	20.4	20.4	0.0	0.0	1279.0	1279.0	0.0	0.0	100.0	100.0	0.0	0.0	698.0	698.0	0.0	0.0
Dairy products	15.5	15.4	-0.1	-0.6	2065.0	2065.0	0.0	0.0	28.6	28.6	0.0	0.0	3515.0	3515.0	0.0	0.0
Milled Rice	0.4	0.4	0.0	0.0	37.4	37.4	0.0	0.0	0.3	0.3	0.0	0.0	60.2	60.2	0.0	0.0
Sugar	0.2	0.2	0.0	-2.8	46.1	44.8	-1.3	-2.8	0.2	0.2	0.0	-3.0	130.0	127.0	-3.0	-2.3
Other food Products	135.0	135.0	0.0	0.0	9829	9831	2.0	0.0	264.0	264.0	0.0	0.0	12099.0	12107.0	8.0	0.1
Beverages and tobacco	112.0	112.0	0.0	0.0	15928	15928	0.0	0.0	356.0	356.0	0.0	0.0	8685.0	8701.0	16.0	0.2
Food	**299.5**	**299.4**	**-0.1**	**0.0**	**31124.5**	**31126.2**	**1.7**	**0.0**	**758.6**	**758.6**	**0.0**	**0.0**	**27076.2**	**27095.2**	**19.0**	**0.1**
Whole economy	**5810.0**	**5816.0**	**6.0**	**0.1**	**827890**	**828213**	**323.0**	**0.0**	**57128**	**57138**	**10.0**	**0.0**	**1066610**	**1067309**	**699.0**	**0.1**

Source: MAGNET results

6.2 Production

Trade liberalization is expected to affect the quantity of goods produced in Croatia and the EU, as well as in their main trading partners.

Croatia

Our results can be found in Table 13, and show that Croatia's EU accession leads to an increase in production volume for the majority of agricultural products (except for sugar beet, wheat and other cereals) and a decrease in production volume for most food products (except beef, sheep and goat meat).

Table 13: Value and volume of production, and change in production prices in Croatia in 2018 (million USD and percentage change)

	Value of production				Volume*	Price**
	Baseline	**Scenario**	**Diff.**	**%**	**%**	**%**
Rice	0	0	0	-	-	-14.3
Wheat	873	802	-71	-8.1	-0.8	-7.5
Other cereals	759	689	-70	-9.2	-1.3	-8.1
Vegetables, fruits	2012	1872	-140	-7.0	0.3	-7.2
Oilseeds	496	459	-37	-7.5	-0.3	-7.3
Sugar cane, sugar beet	55	29	-26	-47.3	-37.1	-16.7
Plant-based fibres	104	106	2	1.9	4.7	-2.8
Other crops	216	209	-7	-3.2	1.5	-4.3
Live cattle, sheep, goats	941	914	-27	-2.9	2.2	-4.8
Live pigs, poultry, other	1449	1384	-65	-4.5	1.7	-6.0
Raw milk	1582	1548	-34	-2.1	3.2	-5.2
Wool, silk-worm cocoons	182	190	8	4.4	9.7	-4.8
Agriculture	**8669**	**8202**	**-467**	**-5.4**	**1.1**	**--**
Meat beef, sheep, goat	1198	1207	9	0.8	3.1	-2.4
Meat pork, poultry, other	1423	1295	-128	-9.0	-5.9	-3.2
Vegetable oils and fats	166	160	-6	-3.6	-2.7	-1.2
Dairy products	1247	1231	-16	-1.3	-0.5	-0.8
Milled Rice	280	281	1	0.4	1.3	-1.1
Sugar	289	324	35	12.1	-56.3	156.5
Other food Products	1911	1771	-140	-7.3	-6.2	-1.3
Beverages and tobacco	1434	1350	-84	-5.9	-7.0	1.2
Food	**7948**	**7619**	**-329**	**-4.1**	**-5.5**	**--**
Whole economy	**120044**	**118903**	**-1141**	**-1.0**	**-0.20**	**--**

*Change in volume corresponds to change in value at constant prices
**Per cent change in production market prices between baseline and scenario
Source: MAGNET results

While after EU accession the prices of many important agricultural and food products drop, the value of production of Croatian agri-food sectors decreases for almost all major branches (except sugar, wool and silk-worm cocoons, plant-based fibres, and beef, sheep and goat meat). In aggregated terms, the values of agri-food production decrease by about 5.4% and 4.1% respectively. The sugar sector remains an exception since the producer price in Croatia increases by about 156% (Table 13). This huge increase is led by an imposed sugar production quota that necessitates a reduction in the production of sugar in Croatia from approximately 240,000 tonnes in 2011 to 193,000 tonnes in 2013

(European Commission, 2009). As a result, the value of sugar production increases by about 35 million USD.

The sector producing beef, sheep and goat meat experiences a positive but small development. Despite a decrease in prices, the value of production increases by about 9 million USD. Other sectors that benefit are wool, silk-worm cocoons (8 million USD), plant-based fibres (2 million USD) and milled rice (1 million USD). Larger decreases are seen for vegetables and fruits (140 million USD), other food products (140 million USD), pork, poultry and other meat (128 million USD), and the beverage and tobacco sector (84 million USD). These results illustrate the deficiency in competiveness of Croatian agricultural and food sectors in contrast to other EU Member States. Furthermore, higher tariffs faced by Croatian exporters after Croatia's EU accession (effect of harmonisation of tariffs by its previous trading partners i.e. the Western Balkans, OECD, Mercosur and ROW, to those applied to the EU) reduce Croatian exports and thus lead to significant drop in production .

EU-27 and other regions

Given Croatia's small share of the EU import and export markets, no sector in the EU faces a change greater than +/-0.7% (Table 14). Yet, as opposed to in Croatia, in the EU-27 both the agricultural and food producers gain (45 million USD and 428 million USD, respectively) due to an increase in exports to Croatia, the EU producers of sugar (120 million USD), of pork and poultry (118 million USD), and other food products (97 million USD) benefit the most.

Table 14: Value of Production in EU-27 in 2018 (million USD and percentage change)

	Baseline	Scenario	**Diff.**	**%**
Rice	1239	1239	0	0
Wheat	30887	30862	-25	-0.08
Other cereals	29167	29169	2	0.01
Vegetables, fruits	77384	77377	-7	-0.01
Oilseeds	17304	17305	1	0.01
Sugar cane, sugar beet	3042	3040	-2	-0.07
Plant-based fibres	1907	1906	-1	-0.05
Other crops	102116	102121	5	0.00
Live cattle, sheep, goats	35288	35324	36	0.10
Live pigs, poultry, other	63309	63341	32	0.05
Raw milk	55660	55665	5	0.01
Wool, silk-worm cocoons	297	296	-1	-0.34
Agriculture	**417600**	**417645**	**45**	**0.01**
Meat beef, sheep, goat	50760	50787	27	0.05
Meat pork, poultry, other	137637	137755	118	0.09
Vegetable oils and fats	30113	30131	18	0.06
Dairy products	262673	262710	37	0.01
Milled Rice	2114	2115	1	0.05
Sugar	17651	17771	120	0.68
Other food Products	504399	504496	97	0.02
Beverages and tobacco	333013	333023	10	0.00
Food	**1338360**	**1338788**	**428**	**0.03**
Whole economy	**29677602**	**29673954**	**-3648**	**-0.01**

Source: MAGNET results

Table 15 shows the value of production in the rest of the regions of this study.

Table 15: Value of production in Western Balkans, OECD, Mercosur and ROW in 2018 (million USD and percentage change)

	Western Balkans				OECD				Mercosur				ROW			
	Base	**Scen.**	**Diff.**	**%**	**Base**	**Scen.**	**Diff.**	**%**	**Base**	**Scen.**	**Diff.**	**%**	**Base**	**Scen.**	**Diff.**	**%**
Rice	1	1	0	0.00	23604	23605	1	0.00	3436	3435	-1	-0.03	122856	122863	7	0.01
Wheat	185	184	-1	-0.54	30342	30353	11	0.04	4425	4426	1	0.02	79914	79930	16	0.02
Other cereals	161	161	0	0.00	66756	66755	-1	0.00	13681	13680	-1	-0.01	118764	118768	4	0.00
Vegetables, fruits	1219	1219	0	0.00	154025	154024	-1	0.00	9121	9119	-2	-0.02	719339	719381	42	0.01
Oilseeds	137	137	0	0.00	33313	33311	-2	-0.01	29643	29647	4	0.01	75741	75735	-6	-0.01
Sugar cane & beet	43	43	0	0.00	6337	6339	2	0.03	8743	8737	-6	-0.07	35573	35638	65	0.18
Plant-based fibres	1	1	0	0.00	23241	23241	0	0.00	4142	4142	0	0.00	48254	48257	3	0.01
Other crops	344	344	0	0.00	49339	49338	-1	0.00	34500	34494	-6	-0.02	127939	127939	0	0.00
Live cattle, sheep	289	289	0	0.00	63257	63254	-3	0.00	21894	21879	-15	-0.07	112533	112530	-3	0.00
Live pigs, poultry	295	295	0	0.00	76169	76168	-1	0.00	18179	18168	-11	-0.06	416051	416055	4	0.00
Raw milk	891	891	0	0.00	60754	60749	-5	-0.01	10238	10240	2	0.02	206197	206184	-13	-0.01
Wool, silk-	12	12	0	0.00	4295	4291	-4	-0.09	5145	5143	-2	-0.04	23128	23121	-7	-0.03
Agriculture	**3578**	**3577**	**-1**	**-0.03**	**591432**	**591428**	**-4**	**0.00**	**163147**	**163110**	**-37**	**-0.02**	**2086289**	**2086401**	**112**	**0.01**
Meat beef, sheep	289	289	0	0.00	147511	147509	-2	0.00	34660	34634	-26	-0.08	116851	116851	0	0.00
Meat pork, poultry	195	195	0	0.00	118072	118067	-5	0.00	23848	23825	-23	-0.10	149599	149567	-32	-0.02
Vegetable oils	149	149	0	0.00	34237	34237	0	0.00	31754	31757	3	0.01	154605	154590	-15	-0.01
Dairy products	655	655	0	0.00	178902	178896	-6	0.00	20361	20369	8	0.04	170644	170619	-25	-0.01
Milled Rice	26	26	0	0.00	32363	32363	0	0.00	6199	6199	0	0.00	111717	111722	5	0.00
Sugar	66	66	0	0.00	33079	33088	9	0.03	16122	16108	-14	-0.09	70078	70233	155	0.22
Other food	507	507	0	0.00	668105	668098	-7	0.00	61707	61696	-11	-0.02	654142	654159	17	0.00
Bev. and tobacco	407	407	0	0.00	314820	314818	-2	0.00	27693	27692	-1	0.00	258149	258221	72	0.03
Food	**2294**	**2294**	**0**	**0.00**	**1527089**	**1527076**	**-13**	**0.00**	**222344**	**222280**	**-64**	**-0.03**	**1685785**	**1685962**	**177**	**0.01**
Whole economy	**37064**	**37062**	**-2**	**-0.01**	**43911540**	**43910702**	**-838**	**0.00**	**3623971**	**3623627**	**-344**	**-0.01**	**37819395**	**37823355**	**3960**	**0.01**

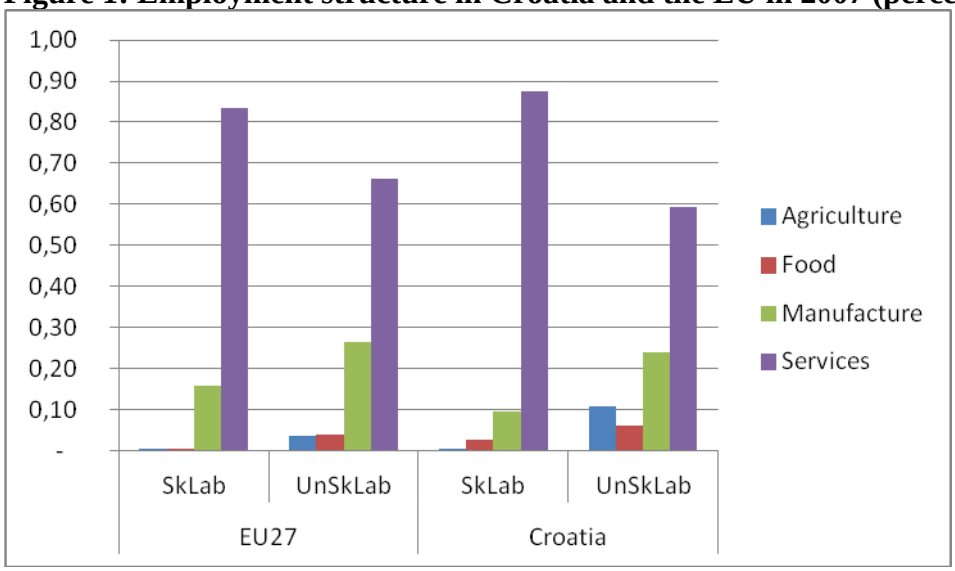
Source: MAGNET results

The effects of Croatia's EU accession on production on third countries, are relatively minor (Table15). In percentage change is so insignificant that it is not worth highlight it, so the focus is placed in absolute terms. In the ROW, substitution of EU products on Croatian markets translates into approximately 3960 million USD in production gains, mostly outside the agri-food sectors and sugar (155 million USD). Contrary to producers in the ROW, other trading blocs like OECD and Mercosur are negatively affected since both face higher entry barriers to Croatian markets after the accession to the EU.

6.3 Employment

Analysis of employment patterns in Croatia and the EU (in 2007) shows the similarity of the employment structure *outside* the agricultural and food sectors (Figure 1). In both regions most of the workforce were employed in the services sector (76.5% in Croatia, and 75.6% in the EU), then in the manufacturing sector (17.8% in Croatia, and 19.6% in the EU). The main differences in employment structure concerned the agri-food sector. The percentage of people employed in the agricultural sector was much higher in Croatia (7%) than in the EU (1.9%). Similarly, the share of employment in the food sector in Croatia (4.7%) was higher than in the EU (2.7%).

Figure 1: Employment structure in Croatia and the EU in 2007 (percentage)

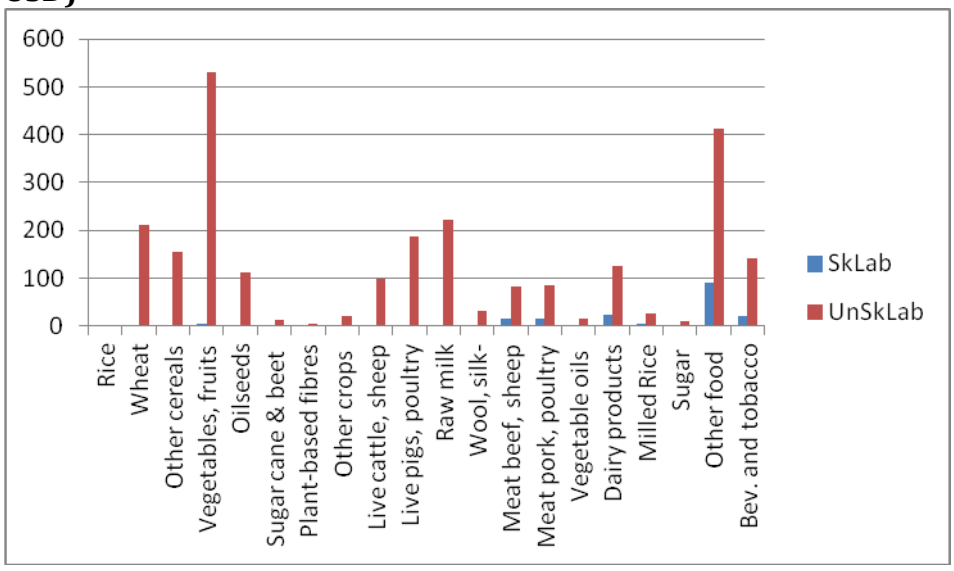


Source: authors' calculation from GTAP database

In Croatia, the vegetable and fruit sector was the sector that contributed most to employment levels in the agri-food sector (Figure 2). This was followed by other food, milk production, wheat, and production of live pigs, poultry and other animals. In the EU, the majority of the labour force in the agricultural and food sectors was employed in the other food sector, other crops sector, and beverages and tobacco sector (Figure 3). Both in Croatia and the EU, the share of unskilled labour employed in the agri-food sector in 2007 was much higher than skilled labour.[13]

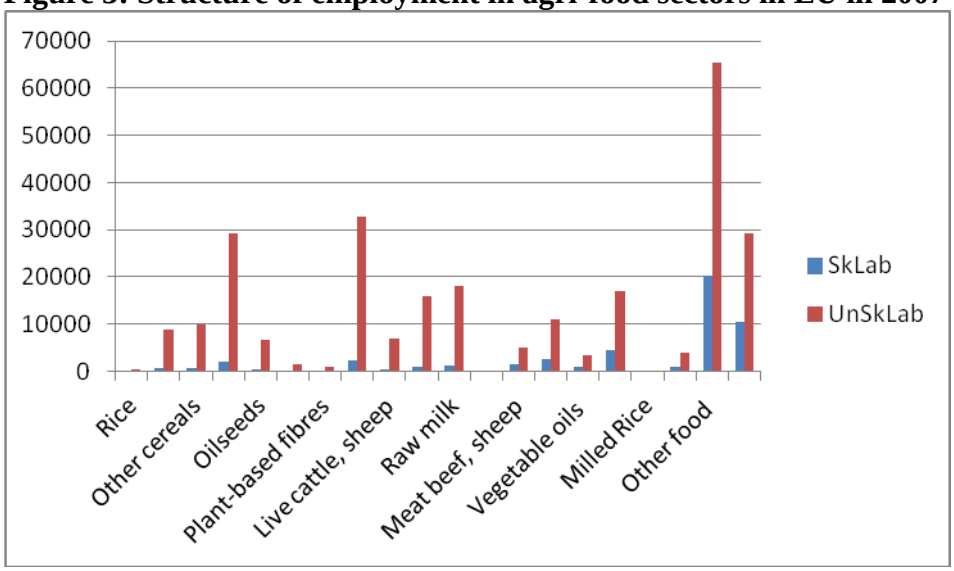
[13] The original GTAP formulation, as well as data from most of the source input-output tables, specifies only three primary factors: agricultural land, capital, and labour. As no global data set could serve as a basis for disaggregating employment by worker type, in order to obtain necessary information about unskilled and skilled labour, in GTAP database employment in above categories was calculated on the basis of labour payment shares mapped to GTAP sectors – by using an especially developed statistical

Figure 2: Structure of employment in agri-food sectors in Croatia in 2007 (million USD)



Source: authors' calculation from GTAP database

Figure 3: Structure of employment in agri-food sectors in EU in 2007 (million USD)



Source: authors' calculation from GTAP database

The impact of Croatia's accession to the EU on unskilled employment[14] in Croatia is shown in Table 16. The results demonstrate that in the agricultural and food sectors the unskilled employment effects are mostly negative (except for sectors such as wool, and beef, sheep and goat meat, where the level of unskilled employment marginally increases).[15] In relative terms, the most negatively affected sectors are sugar beet and sugar with decreases of about 41% and 53% respectively. Yet, the impact may be

model to cover all GTAP regions and by taking into consideration respective skilled/unskilled wage differentials for each region. Following this approach, employment by worker type (skilled and unskilled) is expressed in our study in constant million USD of 2007 (see Chapter 12B on skilled and unskilled labor data, Narayanan and Walmsley, 2008).

[14] The focus is on unskilled employment as skilled labour is fully employed by assumption.

[15] Changes in labour market modelling or in assumption such as GDP growth would impact this result.

overstated here as both sectors are characterised by a relatively low unskilled employment level and are subject to a newly introduced production quota.

Table 16: Effects on unskilled employment in Croatia in 2018 (million USD, percentage change and absolute change in unskilled full-time equivalents)

	Baseline in USD	Scenario in USD	Diff. in USD	%	absolute changes in unskilled full-time equivalents
Rice	0	0	0	0.00	0
Wheat	218	208	-10	-4.59	-833
Other cereals	165	156	-9	-5.45	-749
Vegetables, fruits	552	533	-19	-3.44	-1582
Oilseeds	120	116	-4	-3.33	-333
Sugar cane, sugar beet	17	10	-7	-41.18	-583
Plant-based fibres	8	8	0	0.00	0
Other crops	28	27	-1	-3.57	-83
Live cattle, sheep, goats	117	116	-1	-0.85	-83
Live pigs, poultry, other	224	220	-4	-1.79	-333
Raw milk	264	264	0	0.00	0
Wool, silk-worm cocoons	38	40	2	5.26	167
Agriculture	**1751**	**1698**	**-53**	**-3.03**	**-4412**
Meat beef, sheep, goat	93	96	3	3.23	250
Meat pork, poultry, other	99	93	-6	-6.06	-500
Vegetable oils and fats	16	16	0	-0.00	0
Dairy products	140	139	-1	-0.71	-83
Milled Rice	33	33	0	0.00	0
Sugar	17	8	-9	-52.94	-749
Other food Products	416	391	-25	-6.01	-2081
Beverages and tobacco	169	157	-12	-7.10	-999
Food	**983**	**933**	**-50**	**-5.09**	**-4163**
Whole economy	**17607**	**17624**	**17**	**0.10**	**1415**

Note: An average unskilled wage of approximately 1001USD/month is assumed
Source: MAGNET results

In absolute terms, unskilled employment in both agricultural and food sectors in Croatia is negatively affected with a drop of about 4400 and 4100 unskilled employees respectively. The highest negative impact on unskilled employment takes place in those sectors of the Croatian economy which (i) are less competitive and therefore will have to face increasing imports from the EU and other trading partners – e.g. other food products (2081 employees), (ii) will lose their shares in export markets due to higher tariffs introduced by their traditional trading partners – e.g. beverages and tobacco (approximately 1000 employees), and (iii) will be restricted in their productive capacities by the introduction of new policy measures such as production quotas – e.g. sugar (approximately 750 employees).

Among the agricultural sectors the most negatively affected in absolute terms are fruits and vegetables (approximately 1600 employees), wheat (approximately 800 employees), other cereals (approximately 750 employees) and sugar beet (approximately 600 employees). In the case of Croatia's agri-food sectors, an exogenous

increase in unskilled labour wages (eg. caused by an additional GDP growth), given constant or decreasing production, puts an additional pressure on labour costs that leads either to a direct increase in unemployment[16] or a faster shift in employment from less profitable agricultural sectors (e.g. fruits and vegetables) to other expanding sectors (e.g. services).

Table 17: Effects on unskilled employment in EU-27 in 2018 (million USD, percentage change and absolute change in unskilled full-time equivalents)

	Baseline in USD	Scenario in USD	Diff. in USD	%	absolute changes in unskilled full-time equivalents
Rice	649	649	0	0.00	0
Wheat	10219	10212	-7	-0.07	-275
Other cereals	10597	10598	1	0.01	39
Vegetables, fruits	32722	32720	-2	-0.01	-79
Oilseeds	6611	6611	0	0.00	0
Sugar cane, sugar beet	1164	1163	-1	-0.09	-39
Plant-based fibres	953	953	0	0.00	0
Other crops	40860	40863	3	0.01	118
Live cattle, sheep, goats	6619	6625	6	0.09	236
Live pigs, poultry, other	17005	17012	7	0.04	275
Raw milk	18895	18896	1	0.01	39
Wool, silk-worm cocoons	44	44	0	0.00	0
Agriculture	**146338**	**146346**	**8**	**0.01**	**314**
Meat beef, sheep, goat	6024	6026	2	0.03	79
Meat pork, poultry, other	12755	12765	10	0.08	393
Vegetable oils and fats	3535	3537	2	0.06	79
Dairy products	21401	21403	2	0.01	79
Milled Rice	186	186	0	0.00	0
Sugar	3306	3306	0	0.00	0
Other food Products	79266	79278	12	0.02	472
Beverages and tobacco	38053	38052	-1	0.00	-39
Food	**164526**	**164553**	**27**	**0.02**	**1061**
Whole economy	**4506696**	**4506005**	**-691**	**-0.02**	**-27162**

Note: An average unskilled wage of approximately 2120 USD/month is assumed
Source: MAGNET results

Contrary to the situation in Croatia, the enlargement is expected to induce *positive* changes in unskilled employment in the agri-food sector in the EU-27, as presented in Table 17. In absolute terms, unskilled employment levels in both the agricultural and food sectors expand by about 300 and 1100 employees respectively. Sectors that are especially positively affected are: other food products (approximately 500 employees), pork and poultry meat (approximately 400 employees), live pigs and poultry (approximately 300 employees) and live cattle, sheep and goats (approximately 240 employees). However, the rest of the economy's unskilled employment drops by about 28500 employees, a key reason for this is the improved market access of third countries into Croatia. Indeed with the accession, Croatia adopts the EU external tariffs which

[16] For the unskilled labour we assumed a fix wages regime and variable employment level as model closure.

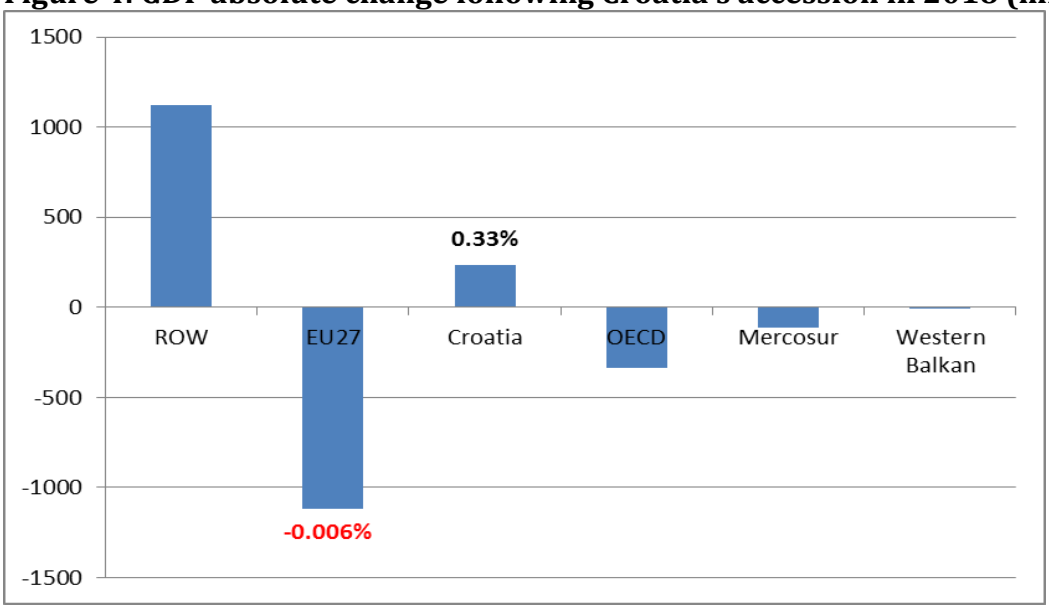
imply a substitution of EU-27's non-agri-food products in Croatia with those originating from the ROW.[17]

Clearly, changes in unskilled employment have to be seen as part of an on-going adjustment process (including, a better allocation of production factors) which takes place in both regions following a further harmonisation of trade and policy mechanisms. The total effect of this process is reflected in GDP changes as highlighted below.

6.4 GDP

The country that benefits the most from Croatia's adoption of EU agricultural and trade policies is Croatia itself; its GDP rises by 0.33% or about 235 million USD (Figure 4) i.e. approximately 172 million euros, which it is probably an underestimate as the model doesn't include factors that will greatly benefit Croatia, such as FDI or structural funds from the EU. Nevertheless, Croatia's GDP represents only around 0.35% of the EU's GDP. Therefore, the impact of Croatia's accession to EU is in general very small.

Figure 4: GDP absolute change following Croatia's accession in 2018 (million USD)



Source: MAGNET results

EU's GDP decreases by 0.006% (1.1 billion USD). This slight loss in the EU's GDP is insignificant and does not mean that the EU does not benefit from having Croatia access the EU, one need to take into account that the model does not capture all the different public or private transfers expected with this accession, as well as non-economic considerations such as political gains or regional stabilization. This means that our analysis probably underestimates the gains from such an accession. Moreover, beyond 2018, we would expect Croatia to keep growing and have a bigger positive impact on the EU.

[17] It is worth mentioning that with the accession to the EU, import tariffs imposed by Croatia on manufacturing from the ROW drop from 2.5% to 1.5%. At the same time, import tariffs faced by Croatia's manufacturing exports to the ROW increase from 3.8% to 8.2% (GTAP database v.8).

At the same time, Croatia's accession to the EU raises the ROW's GDP by 0.005% (in absolute terms by as much as 1.1 billion USD) mainly due to additional exports of non-agri-food products. On the other hand, it reduces GDP for OECD (334 million USD), Mercosur (112 million USD) and lastly for the Western Balkans (1 million USD). The decrease in GDP for these regions reflects the effects of changes in trade pattern; exports from these regions to Croatia, after its EU accession, are falling due to Croatia's increased external protection (trade diversion effects).

Overall, the impact of Croatia's accession to the EU is small and one should further analyse the accession not only including agricultural and trade policies but all the different transfers expected with this accession, being public (especially structural funds) or private (especially FDIs). These might have more significant impacts on Croatia and EU, and therefore on their GDPs.

7. Concluding remarks

This report assesses the likely effects of Croatia's accession to the EU on the agricultural and food sectors. The analysis is carried out using the global recursive dynamic CGE model MAGNET, and results take into consideration the shift in trade and agricultural policies in Croatia, as well as necessary adjustments of trade instruments applied by its main trading partners. It does not take into account, however, other EU policies such as the structural or cohesion policies, and additional gains resulting from the accession such as a less risky investment environment or a more efficient regulatory framework.

Main results show that Croatia will benefit from its accession to the EU with modest increase in its GDP and employment. The impact on the EU-27's GDP is not significant whereas in terms of jobs it is slightly positive for the agri-food sectors. However this doesn't mean that the EU does not benefit from having Croatia access the EU, one need to take into account that the model does not capture all the different transfers expected with this accession such the ones mentioned above.

By adopting European trade regime and agricultural policy, Croatia will face changes in its production and trade structure. At constant prices, Croatia's agricultural production benefits (increasing by 1.1%), whereas food production contracts (decreasing by 5.5%). It is worth mentioning that Croatia will experience strong price effects. As a result the value of production at real prices decreases in both the agricultural and food processing sectors.

Moreover, our results show that Croatia's EU accession affects significantly Croatia's exports to the EU of primary agricultural goods (raise by 32%) and of food products (fall by 20%). The sectors that gain the most are wheat, vegetables and fruits, and beef due to trade diversion effects from different countries (OECD or Western Balkans) to the EU. The situation is different when analyzing Croatia's imports from the EU where imports of primary agricultural products fall by 3.2% whereas those of food products increase by 27%. While Croatia's accession to the EU causes an abolition of Croatian protection for imports coming from the EU, it generally leads to an increase in protection of Croatian agricultural and food sectors for imports coming from third countries. These two elements result in a drop in total imports of agricultural products of 6.1% and an increase for food products by 11.2%. At the same time, total exports of Croatian agricultural products increase by 7.4% and total exports of food products decrease by 2%.

Lastly the financial package on agriculture, granted in the accession negotiations, provide significant gains for Croatia. However outcomes from Croatia's accession presented in this report are likely to be underestimated since many other budget transfers are excluded from this modelling exercise. Moreover, an in-depth analysis of the impacts on manufacturing and service sectors would be required. In addition gains from the adoption of transparent and stable regulatory frameworks are likely to be significant, and would require further examination.

References

Aguiar, A.,McDougall, R., Narayanan, B., Eds, 2012. Global Trade, Assistance, and Production: The GTAP 8 Database, Center for Global Trade Analysis, Purdue University. https://www.gtap.agecon.purdue.edu/databases/v8/v8_doco.asp

Bussiere, M., Fidrmuc, J., Schnatz, B., 2008. EU Enlargement and Trade Integration: Lessons from a Gravity Model. Review of Development Economics, 12: 562–576.

European Commission, 2009. A financial package for the accession negotiation with Croatia, Communication from the Commission, COM(2009)595 final, 29.10.2009, Brussels.

European Commission, 2011. Information on the Results of the EU Accession Negotiations with Croatia, Directorate General for Enlargement, November 2011, Brussels.

Hertel, T.W., Ed., 1997. Global Trade Analysis: Modeling and Applications, Cambridge University Press.

Kumric, O. and Franic R. 2005. Using Slovenian Experience in the Croatian Agricultural Policy Adjustment to EU Requirements. Agriculturae Conspectus Scientificus, Vol. 70 No. 1 (29-36).

Lejour, A., Mervar, A., Verweij, G., 2009. The Economic Effects of Croatia's Accession to the European Union, Eastern European Economics, 47(6), 60-83.

M'barek, R., Britz, W., Burrell, A., Delincé, J., 2012. An integrated Modelling Platform for Agro-economic Commodity and Policy Analysis (iMAP) - a look back and the way forward, JRC Scientific and Policy Report, Luxembourg: Publications Office of the European Union, EUR 25267. http://ftp.jrc.es/EURdoc/JRC69667.pdf

Möllers, J., Zier, P., Frohberg, K., Buchenrieder, G., Bojnec, Š., 2009. Croatia's EU accession: socio-economic assessment of farm households and policy recommendations, Studies on the Agricultural and Food Sector in Central and Eastern Europe, Leibniz IAMO, volume 48, number 53665.

Narayanan, B., Walmsley, T., Eds., 2008. Global Trade, Assistance, and Production: The GTAP 7 Database, Center for Global Trade Analysis, Purdue University. http://www.gtap.agecon.purdue.edu/databases/v7/v7_doco.asp

Nowicki, P., *et al*., 2009. Scenar 2020-II – Update of Analysis of Prospects in the Scenar 2020 Study, Contract No. 30–CE-0200286/00-21. European Commission, Directorate-General Agriculture and Rural Development, Brussels. http://ec.europa.eu/agriculture/analysis/external/scenar2020ii/index_en.htm

Sosic, V., Vujcic, B., 2005. Chapter 3 in Croatian Accession to the European Union: Facing the Challenges of Negotiations, Institute of Public Finance, vol. 3, pp 61-84.

Viner, J., 1950. The customs union issue, Carnegie Endowment for International Peace, New York.

Witzke, A.P., Zintl, A., Tonini, A., 2009. The Common Agricultural Policy SIMulation (CAPSIM) Model: Dairy Reform and Western Balkan Countries Accession Scenarios, JRC Scientific and Technical Reports. Luxembourg: Publications Office of the European Union, EUR 23951. http://ftp.jrc.es/EURdoc/JRC50411.pdf

Appendix

Table A1: Sector aggregation in MAGNET

No	Code	Description of product category	HS code
1.	Agriculture	Rice	1006 rice
2.		Wheat	1001 Wheat and meslin
3.		Other cereals	1002 rye in the grain 1003 barley 1004 oats 1005 corn (maize) 1007 grain sorghum 1008 buckwheat. millet & canary seed. cereals nesoi
4.		Vegetables. fruit & nuts	07 edible vegetables 08 ed. fruits & nuts. peel of citrus/melons
5.		Oilseeds	1201 Soybeans. whether or not broken 1202 peanuts (ground-nuts). raw 1203 copra 1204 flaxseed (linseed). whether or not broken 1205 rape or colza seeds. whether or not broken 1206 sunflower seeds. whether or not broken 1207 oil seeds & oleaginous fruits nesoi. broken or not 1208 flour & meal of oil seed & olea fruit (no mustard)
6.		Sugar cane & sugar beet	121291 Sugar Beet 121292 Sugar Cane
7.		Plant-based fibres	13 lac. natural gums. resins. etc. 14 vegetable plaiting materials
8.		Other crops	0199 Other raw vegetable materials 06 Live trees. other plants. cut flowers 1209 seeds. fruit and spores. for sowing 1210 hop cones. fresh or dried. lupulin 1211 plants etc for pharmacy. perfume. insecticides etc 121210 Locust Beans (Including Locust Bean Seeds) 121220 Seaweeds and Other Algae 121230 Apricot. Peach or Plum Stones and Kernels 121299 Other Vegetable Prods (chicory roots etc) 1213 Cereal straw & husks unprep w/n chop etc or pellet 1214 rutabagas. hay. clover & other forage products
9.		Live cattle. sheep. goats. horses	0101 horses. asses. mules and hinnies. live 0102 bovine animals. live 0104 sheep and goats. live
10.		Live pigs. poultry. other unprocessed or preserved animal products	0103 swine. live 0105 chickens. ducks. geese. turkeys. and guineas. live 0106 animals. live. nesoi - not elsewhere specified of indicated. 0407 birds' eggs. in the shell. fresh. preserved or cooked 0408 birds' eggs. not in shell & yolks. fresh. dry. etc 0409 honey. natural 0410 edible products of animal origin. nesoi 05 products of animal origin
11.		Raw milk	0401 milk and cream. not concentrated or sweetened

12.		Wool. silk cocoons	0296 raw animal materials used in textiles 50 silk. inc. yarns & woven fabrics thereof 51 wool & fine or coarse animal hair. inc. yarns & woven fabrics thereof
13.	Food	Meat cattle. sheep. goat. horse	0201 meat of bovine animals. fresh or chilled 0202 meat of bovine animals. frozen 0204 meat of sheep or goats. fresh. chilled or frozen 0205 meat of horses. asses. mules. hinnies fr. chld. fz 0206 edible offal. bovine. swine. sheep. goat. horse. etc.
14.		Meat pork. poultry. other	0203 meat of swine (pork). fresh. chilled or frozen 0207 meat & ed offal of poultry. fresh. chill or frozen 0208 meat & edible offal nesoi. fresh. chilled or frozen 0209 pig & poultry fat fresh chld frzn salted dried smkd 0210 meat & ed offal salted. dried etc. & flour & meal
15.		Vegetable oils and fats	15animal or vegetable fats. oils & waxes 2301 flour, meals etc.. 2304 oil-cake from soybean 2306 oil-cake from veg. fats
16.		Dairy products	0402 milk and cream. concentrated or sweetened 0403 buttermilk. yogurt. kephir etc. flavored etc or not 0404 whey & milk products nesoi. flavored etc. or not 0405 butter and other fats and oils derived from milk 0406 cheese and curd
17.		Milled Rice	Processed rice
18.		Sugar	17 sugar (raw. refined. confectionery)
19.		Other food products	09 coffee. tea. mate & spices 11 milling industry products 16 ed. prep. of meat. fish. crustaceans. etc 18 cocoa & cocoa preparations 19 preps. of cereals. flour. starch or milk 20 preps of vegs. fruits. nuts. etc. 21 misc. edible preparations 2308/9 animal feed
20.		Beverages and tobacco	22 beverages. spirits & vinegar 2302/3 & 2305 & 2307 residues from food industries but oil-cakes. 24 tobacco & manuf. Tobacco substitutes
21.		Manufactures (primary and machinery)	Chapters 25-49 52-87 88-98
22.		Services	Chapters: 9801-9835 9841-9855 9860-9884 Public services

Table A2: Regional aggregation in MAGNET

No.	Code	Country	Economic Agreement
1.	EU27	Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovak Republic, Slovenia, Bulgaria, Romania	EU27 (Customs union)
2.	Croatia	Croatia	No FTA. Main trading partner
3.	Western Balkans	Albania, Serbia, Bosnia-Herzegovina, Montenegro, Macedonia.	No FTA. Main trading partner
4.	OECD-nonEU	Australia, Canada, Chile, Israel, Japan, South Korea, Mexico, New Zealand, Norway, Switzerland, Turkey, USA.	No FTA. Main trading partner
5.	ROW	Rest of East Asia, Cambodia, Laos, Myanmar, Vietnam, Bangladesh, Rest of South America, Belarus, Ukraine, Rest of, Kazakhstan, Kyrgyzstan, Rest of Former Soviet Union, Armenia, Azerbaijan, Georgia, Islamic Republic of Iran, Rest of Western Asia, Rest of North Africa, Taiwan, Indonesia, Malaysia, Philippines, Singapore, Thailand, Pakistan, Sri Lanka, Bolivia, Venezuela, Egypt, Morocco, Tunisia, South Africa, Rest of Europe, Rest of EFTA, Peru, Ecuador, Panama, Colombia, Costa Rica, Guatemala, Nicaragua, Rest of Central America, Nigeria, Senegal, Rest of West Africa, rest of Central Africa, rest of South Central Africa, Ethiopia, Madagascar, Malawi, Mauritius, Mozambique, Tanzania, Uganda, Zambia, Zimbabwe, Rest of Eastern Africa, Botswana, Rest of South African Customs, Caribbean Countries, Oceania, Rest of Oceania, India, Russian Federation, China, Hong Kong,	No FTA. Main trading partner
6.	MERCOSUR	Argentina, Brazil, Uruguay, Paraguay	No FTA. Main trading partner

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Abstract

This report analyses the likely effects of Croatia's accession to the European Union (EU) on the agricultural and food sectors in terms of trade, production, employment and GDP for Croatia, the EU-27 and their main trading partners. Using a multi-country Computable General Equilibrium model (MAGNET) this study evaluates the impacts of the harmonisation of trade and agricultural policies that occur after this enlargement on July 1st, 2013. The results show that both Croatia's GDP and employment will slightly increase. The main conclusions point out significant market price effects as well as changes in trade patterns.

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