WORKING PAPERS

General Equilibrium Analysis of Croatia's Accession to the World Trade Organization

Jasminka Šohinger
Davor Galinec
Glenn W. Harrison

Croatian National Bank

W – 6 August 2001

Published by
Croatian National Bank
Public Relations and Publishing Department
Trg hrvatskih velikana 3, 10002 Zagreb
Phone: 385-1-4564-555
Phone: 385-1-4922-070, 385-1-4922-077
Fax: 385-1-4873-623

Web
http://www.hnb.hr

Editor-in-chief
Evan Kraft

Editorial board
Ante Babić
Igor Jemrić

Editor
Romana Sinković

Technical editors
Božidar Bengez, Slavko Križnjak

Associate
Ines Merkl

Printed by
Poslovna knjiga d.o.o., Zagreb

Those using data from this publication are requested
to cite the source.

Printed in 400 copies

ISSN 1331–8586

General Equilibrium Analysis of Croatia's Accession to the World Trade Organization

by
Jasminka Šohinger, Davor Galinec and Glenn W. Harrison

ABSTRACT

We consider the effects on Croatia of several important trade policy reforms using a quantitative, multi-regional, general equilibrium framework. A complete trade agreement with the European Union requires that some intermediate reforms occur, such as Croatia joining the World Trade Organization and liberalizing its trade policies. We evaluate the current trade regime of Croatia to assess what impacts those reforms will have. We then employ a quantitative simulation model to measure the effects on welfare of the intermediate reforms as well as the complete reform. We find that Croatia may suffer some short-term reductions in welfare as it starts out on the path to liberalization, but that there are welfare gains from complete liberalization. It is therefore important that the initial policy reforms be seen as one step along a path that will eventually provide demonstrable welfare gains, rather than as an end in themselves. Our approach is also designed to provide a formal simulation model that can be used to re-examine these issues as the reforms proceed, as they are modified, and as better data becomes available.

JEL: D54; D51; F13

Keywords: general equilibrium; trade agreement; trade policy; trade liberalization; welfare gains

---

Ms. Šohinger is Associate Professor of Economics, Faculty of Economics, Zagreb, Croatia (jasminka.sohinger@zg.tel.hr). Mr. Galinec is Division Chief, Balance of Payments Statistics Division, Croatian National Bank, Croatia (davor.galinec@hnb.hr). Mr. Harrison is Dewey H. Johnson Professor of Economics, The Darla Moore School of Business, University of South Carolina, USA (harrison@darla.badm.sc.edu). All views expressed in this paper are those of the authors and do not necessarily represent those of the aforementioned institutions.

Contents

Jasminka Šohinger, Davor Galinec and Glenn W. Harrison

GENERAL EQUILIBRIUM ANALYSIS OF CROATIA'S ACCESSION TO THE WORLD TRADE ORGANIZATION

1. Introduction

Croatia is a small open Central European economy in transition. Due to the war on its territory during 1991-95, its growth and integration into the international community through trade has been delayed compared to other Central and Eastern European countries. On November 30, 2000 Croatia became a member of the World Trade Organization (WTO).

Joining the WTO is a prerequisite for Croatia to gain access to European regional trade integration areas such as Central European Free Trade Association (CEFTA) and to start negotiations aimed at concluding an Association Agreement with the European Union (EU). In addition, WTO membership will provide Croatia with a reliable framework for restructuring its trade policies and regulations, all presumably aimed at achieving a more efficient allocation of resources and, consequently, an improvement in total welfare.

We provide a quantitative framework (based on the GTAPinGAMS model) to facilitate the negotiation of these trade policy options for Croatia. A subsidiary goal is to make available to Croatian researchers a starting point for their own work on the effects of trade policy reforms.

The policy goal is to evaluate the effects of Croatia membership in the WTO, which entails some unilateral trade liberalization for Croatia. We then evaluate the effects on Croatia of various regional trade arrangements. These involve some trade liberalization for Croatia, but also offer the benefits of access to foreign markets.

The methodological challenge that we address "head on" is the paucity of data. Data is normally quite poor for less developed countries, but for countries in transition there appear to be novel difficulties. What historical data exists may be quite useless, due to the historical use of meaningless national income accounting conventions. Moreover, the data that is available may reflect an economy riddled with distortions that are less transparent than simple subsidies or even direct regulation.

In section 2 we review the Croatian economy and foreign trade structure. In section 3 we describe how we developed the Croatian CGE model, and then in section 4 we examine several policy simulations.

2. Croatia's Foreign Trade Regime and Composition of Trade

2.1. Overall Trends in the Trade Regime

The trade regime in Croatia is being shaped by preparations for the WTO-induced trade liberalization. Croatia applied for WTO membership in 1993 and began a series of successive reforms. The quantitative restrictions remaining from the past, along with other non-tariff barriers, are being dismantled according to the Customs Tariff Schedule of July 1996. "Tarification" is also taking place. The Customs Tariff Schedule of July 1996 reduced the number of quotas in agriculture from 215 items to about 50 items, and system of variable levies was eliminated in 1996.

Croatian authorities prepared a new Custom Tariff Schedule, which has been in place since July 1st, 2000 as a part of the prerequisites for the full WTO membership. The main characteristics of the latest Custom Tariff Schedule are:

- levels of tariff protection on imports of manufactured goods have been decreased substantially, in line with the corresponding average WTO tariffs (see Table 4);
- seasonal tariffs previously announced by *ad hoc* publication in the official gazette *Narodne novine*, and specific tariffs on imports of agriculture and foodstuffs, were tarrified in the new Customs Tariff Schedule;
- Customs authorities are obliged to announce and the publish Custom Tariff Schedule on an annual basis, taking into account underlying bilateral and multilateral agreements.

Using the 1987 input-output table for Croatia, Galinec (1998) estimated that the average weighted nominal protection rate for the 38 tradable sectors dropped from 12.68% with the 1992 Customs Tariff Schedule to 9.84% with the 1996 Schedule. These comparisons used 1995 trade weights. The production sectors with the highest protection were beverages (25.27%), finished textile products (22.55%), foodstuffs (20.48%), cattle food (19.64%), leather goods (18.06%), oil derivatives (18.01%) and tobacco (17.17%). The lowest levels of protection applied to raw materials and energy sectors, ranging from 0.37% in the oil and natural gas sector to 3.23% for iron and ore basic industries. Galinec (2000) similarly estimated that the average weighted nominal protection rate for the 38 tradable sectors dropped from 10.73% with the1996 Customs Tariff Schedule to only 6.25% with the 2000 Schedule, in this comparison using 1999 trade weights. The highest levels of protection applied to beverages (26.57%) and tobacco (23.04%), which are also heavily protected using high excise duties. Compared to the 1996 Customs Tariff Schedule, the level of protection of these two sectors has substantially increased. Other sectors with the highest level of protection are finished textile products (17.68%), cattle food (17.07%), leather goods (14.61%), foodstuffs (13.86%) and petroleum products (13.45%), but the level of protection of those sectors has decreased compared to the corresponding tariff rates recorded by 1996 Custom Tariff Schedule. The lowest levels of protection still apply to raw materials and energy sectors (ranging from 0% to 0.98%) and shipbuilding (0.85%). Due to the relatively high import content of raw materials and energy in the shipbuilding industry, the average 1999 trade weighted tariff rate dropped from 5.51% to 0.85% between 1996 and 2000. The sector of petroleum products is protected by a 13.45% tariff, but the petro-

leum and natural gas sector is protected only by 0.98% and is an important input to the sector of petroleum products.

2.2. Distribution of Trade Flows by Markets and Commodity Sectors

The structure of merchandise trade by markets and commodity sectors of the SITC for 1992 and 1999 is shown in Table 1. The main Croatian trade partner in 1992 was the European Union (52.5% of total exports and 47.5% of total imports), mainly Germany and Italy. The break-up of Yugoslavia took place in 1991, with the former Republics becoming independent states and hence included separately in foreign trade statistics in 1992. Because of the inherited trade flows among the former Republics of Yugoslavia, the share of former Yugoslav countries was 32% of total exports and 23.1% of total imports in 1992, mainly from trade with Slovenia. The SITC structure of exports in 1992 shows that various finished products make up most of Croatia's exports (around 22.7% of total). They are closely followed by machinery and transport equipment (mainly shipbuilding industry), and then products classified by material. Chemical products and food are the next most important exports. On the imports side, products classified by material make up most of Croatia's imports (around 18.1% of total), followed closely by machinery and transport equipment, various finished products, and chemical products.

This structure reflects some understandable shifts compared to the pre-transition structure of trade from the end of the 1980's. Following the collapse of the huge barter trade flows with the Council for Mutual Economic Assistance (CMEA), the onset of economic reforms for most Central and Eastern European economies, and the break-up of the internal market of the former Yugoslavia, began a period of reorientation of trade toward the West.

Although no major changes occurred in the *sectoral* composition of trade in the last decade, some changes occurred in its *regional* distribution. The EU remains the main trade partner (48.8% of total exports and 56.5% of total imports in 1999), with the largest shares of Germany and Italy. Following the end of the hostilities on the Croatian territory in 1995, Croatian shipbuilding industry started to recover. The most important exports in 1999 were from the machines and transport equipment sector (29.1% of total exports). Compared to 1992 there was a large increase in shipbuilding industry orders from developing countries. According to the "flag of convenience" rule in the taxation of maritime transportation the majority of exports of ships are recorded in the trade statistics as exports to Russia, Liberia, Malta, Chile, Cyprus, etc. Exports of various finished products was 22.5% of total exports in 1999, but the relative shares of other sectors became lower because of the high export growth rate of the shipbuilding industry. The relative share of EU markets in exports has declined compared to 1992, because of competition from other European transition countries on EU market. In particular, CEFTA member countries have easier access to EU market compared to Croatia. At the same time, intra-CEFTA trade intensified, but without a significant participation of Croatia. Not being a member of CEFTA, Croatian goods are not as competitive on those markets (Table 2). Exports of

goods to the EU in 1997 increased by as much as 71% for Estonia, and even 181% for Latvia, while Croatian exports increased by only 11% (see Table 2).

The reason for the relatively small increase in Croatian exports to the EU lies partly in the fact that Croatian firms were already exporting to EU markets under preferential trade agreements before the other Central and Eastern European countries. From 1970 on, the EU concluded a number of trade agreements with the former Yugoslavia, including a trade and cooperation agreement in 1980. The EU unilaterally decided to apply the commercial terms of the agreement to all the former Yugoslav Republics when the former Yugoslavia dissolved. This directly benefited Croatia.

Data on the regional distribution of foreign trade clearly indicates the importance of EU markets for the Croatian economy. Opening up EU markets even further for Croatian goods should spur a major boost to Croatian competitiveness by enlarging its market (and thereby generating scale economies in many sectors) and forcing it to conform to the standards of this market (and thereby lowering transactions costs of trade with the EU). Attracting new Foreign Direct Investment (FDI) as a part of the same deal would also likely benefit Croatian growth as well.

However, tariff reductions, viewed as the "price" of such a deal with the EU, may be difficult to achieve domestically because of myopic concerns of domestic producers, as well as short-run government concerns regarding unemployment, central budget revenues and the balance of payments position. Total imports from EU countries represented 56.5% of total imports in 1999, an increase in the relative share compared to the 1992. This is mainly because of the increased imports of consumer goods, cars and aircrafts from the EU, as a result of increased purchasing power of Croatian citizens and increased level of activities of air carriers. The relative share of trade with the former Yugoslav countries has dropped, especially imports.

What this table does not contain, however, is the "invisible exchange" of services, such as tourism and transportation services. In the period 1997-1999 these invisibles accounted for roughly 19% of Croatia's GDP. Total revenue from exports of goods and services together in 1999 was 41.5% of GDP.

2.3. Impacts of Free Trade Agreements on Croatian Trade

During the 1990's Croatian authorities signed three Free Trade Agreements (FTA) with the rest of the world. The FTA with a part of Bosnia and Hercegovina (BiH) came into force in 1996, but was suspended in 1999. The Free Trade Agreements with Macedonia and Slovenia came into effect in September 1997 and January 1998, respectively. Since January 1st, 2001 Croatia has signed FTAs with Hungary and Bosnia and Herzegovina. The impacts of concluded FTAs are shown in Tables 3 and 4.

Croatian exports during 1993-1999 generally dropped compared with 1992 levels, but exports to Bosnia and Hercegovina, Macedonia, Slovenia and Hungary dropped much more (Table 1). These four countries account for 1/4 to 1/3 of total Croatian exports during this period. Due to the growth of exports to Bosnia and Hercegovina since 1996, the year when the FTA was concluded, the decline in exports to these four countries has slowed down. The fall of exports to Macedonia stopped in 1997 because of the FTA, but there were some implementation problems, and in 1998 and 1999 ex-

ports to Macedonia declined further. Exports to Slovenia shows the largest drop, and the impact of the FTA on Croatian exports to Slovenia seems to be marginal. Despite the fact that the FTA with Hungary is not yet in place, the level of exports to Hungary has been continuously rising, albeit slowly and from a low initial level.

Imports from these four countries, which account for 1/8 to 1/4 of total imports during the period, have generally fallen during the period despite the fact that total imports simultaneously increased. The fall in imports from these four countries was temporarily stopped in 1997 and 1998 as a result of increased imports from BiH. The shares of imports from BiH, Slovenia and Hungary are very low, and the pattern of imports from these four countries is mainly determined by imports from Slovenia.

In general, impacts of previous FTA on Croatian trade with the rest of the world appear to be limited – there is no FTA with major trading partners or CEFTA members which would induce new trade flows. The signed FTAs have not induced a large increase in Croatian trade flows, except for a 3-year period when Croatia enjoyed some gains on trade with BiH.

3. A CGE Framework for Analysis

3.1. Why Use Such a Big Model for Such a Small Country?

We propose adapting the GTAP database, and the GTAPinGAMS model[1], to evaluate the trade policy options facing Croatia. Several questions arise immediately.

First, why use a multilateral model to evaluate trade policy options for such a small country? The answer is primarily the importance of capturing the benefits to Croatia of access to foreign markets. Without a formal model of the likely trade response with foreign countries, one cannot capture these benefits except by parametric changes in terms of trade facing Croatia. Using a multilateral model allows us to endogenously capture the benefits of a lowering of foreign tariffs on Croatian exports. This point has been stressed by Harrison, Rutherford and Tarr (1997).

Second, how can one hope to incorporate the Croatian economy into a complex database such as GTAP without better data? Our response is to use what data we have on the Croatian economy and adapt the GTAP database to better reflect that economy. We make no apologies for the fact that we have "incomplete data" to undertake the task as well as we would like. However, the relevant comparative static comparison here is between "no model and no quantitative guidance" and "some model and some quantitative guidance." It is possible that a misleading model could be worse than relying on informed judgement, but that is only something that can be finally determined when one has all of the data one would want. Moreover, the procedure we adopt allows one to add in certain data as it becomes available, so that the Croatian representation in GTAP becomes better and better as new data is added.

One final point regarding the use of the GTAP database is that it is extremely easy to adapt it to appropriate (sectoral and regional) aggregations that allow one to focus on specific policy questions. That is, although the database starts out large, it can be

1 More detailed information on GTAP program, GTAP database, GTAPinGAMS model and MPSGE are presented in Appendix.

quickly whittled down to a much more manageable size. This allows the researcher to get on with the policy modeling much more quickly than would otherwise be possible.

3.2. Working with the GTAP Database

We start with version 4 of the standard GTAP database. Our approach to the data issue is to demonstrate how one can quickly adapt the standard GTAP database to include a country not previously included in the database, utilizing a transparent process whereby the available data on Croatia is merged into the existing GTAP database. Specifically, we construct an aggregation of the GTAP database in which one country is selected to be the putty that will become Croatian clay. We then "morph" this country into something better resembling Croatia using constrained least squares methods. The CGE model itself is written in MPSGE, which is Rutherford's (1995), (1999) language for formulating CGE models as complementarity problems in GAMS.

The raw GTAP database is first aggregated to better reflect the policy questions we are interested in: Croatian trade liberalization options. The 45 countries and regions of version 4 of the GTAP data base are aggregated to the following 7 regions: Croatia (CRO), European Union (EUR), European Free Trade Area (EFT), Central European Associates (CEA), United States (USA), Other OECD (OOE), and Rest of the World (ROW). Further geographic disaggregation would be possible, and may be useful for some simulations. For example, one could break out several of the individual EU countries.

Where did we find the country Croatia in the GTAP database? We didn't: we generated an aggregation in which Turkey was a sole region, and then adjusted the Turkish data to better reflect Croatia. Those adjustment methods are discussed in the next sub-section.

We aggregate the full 50 commodities of the GTAP database to the 31 sectors defined in Table 5. Many of these sectors are direct counterparts of the original GTAP sectors. This sectoral aggregation reflects a desire to match the GTAP database to the Croatian IO database, which unfortunately aggregates a great deal of agricultural activity and virtually all food products.[2]

We aggregate the 5 factors of the GTAP database to just 2: LAB for labor, and CAP for payments to capital. The GTAP factors LND (Land) and RES (Natural Resources) are aggregated into CAP, since payments for the use of them should appear as rent in the IO table.

3.3. Morphing Into Croatia

Croatia is not included explicitly in the GTAP data base. Therefore we proceed to re-balance the data base to include Croatia in two steps. First, we generate an aggregation that treats the country Turkey as if it were Croatia.[3] Second, we adjust the country representing Croatia to better reflect Croatia.[4] New data for Croatian taxes,

2 One hopes that the aggregation proclivities of the statisticians in Croatia is not meant as a reflection of culinary practice in the country!

intermediate transactions, value added, and demand are added initially. These data were obtained from the Croatian IO table and miscellaneous sources on distortions.

The procedure for re-balancing the GTAP data set is documented by Rutherford (1998). It amounts to a least-squares minimization of the differences between the original data set and one that best matches the new data imposed. This minimization problem is constrained by the requirements that the GTAP database remain micro-consistent.[5]

We stress the use of this software-intensive procedure as a way to "get the modeling started" without having to wait for every bit of data to become available. A major strength of this approach is that as new data becomes available it may be quickly added to the data and model to evaluate the effects on policy conclusions. Rather than "the good being a victim of the perfect," we believe that it is better to use the data that is available in an open-architecture way that facilitates extensions by others. Apart from better quality data for Croatia, we expect improvements in the re-balancing software that will make it even more flexible.

4. Policy Simulations

4.1. Defining the Policy Scenarios

Three scenarios are simulated using the Croatia CGE model to explore several trade policy options:

- STAGE1 is where Croatia joins the WTO. Specifically, this entails a reduction in tariffs by Croatia, and a removal of any export subsidies.
- STAGE2 is where Croatia then joins the CEFTA, on top of WTO accession.
- STAGE3 is where Croatia enjoys The Full Monty of EU accession, on top of membership of CEFTA and WTO accession.

These three stages represent a "wish list" of trade policy agreements for Croatia.

---

3 In technical terms it is a simple matter to document our procedures, assuming some familiarity with the structure of the GTAPinGAMS software, or access to Rutherford (1998). Our procedures just amount to re-labeling Turkey as country CRO for Croatia, and generating a standard aggregation using the command GTAPPAGGR CRO, where the files CRO.SET and CRO.MAP should be in the .\DEFINES directory. This command is given in the .\BUILD directory. All files referred to here that are not in the standard GTAP database and/or the standard GTAPINGAMS suite are available at http://dmsweb.badm.sc.edu/glenn/gtap_cro.zip.

4 Technically, we do this by installing data for Croatia in the file CRO.DEF, which is stored in the .\DEFINES directory. Then we just execute the command IMPOSE CROATIA CRO in the .\BUILD directory.

5 One weakness of the initial approach is that it does not adjust the trade data of Croatia. That is not a weakness of the original software developed by Rutherford (1998), since it was intended primarily for updating domestic taxes and subsidy data. Often in less developed countries one has access to an ancient input-output matrix but relatively fresh tax and tariff data; subsidy data is, not surprisingly, often ancient or unreliable or perpetually "in another file in another Ministry". In any event, a common task in developing CGE models for less developed countries is to re-balance the data set so that the model is benchmarked to the new distortions. This is essentially what the original routines in Rutherford (1998) were designed for. An extension of these routines is being developed by Thomas Rutherford (private communication) to allow one to include trade data.

WTO accession is assumed to result in Croatia reducing tariffs from the weighted average values listed in Table 4 to the values shown in column WTO. There are some instances where tariffs are increased slightly by WTO accession (e.g., AGR), but overall this represents a liberalization.

CEFTA membership is interpreted as a free trade area with the CEA region of the GTAP database. Thus Croatia and CEA reduce tariffs on imports from each other to zero, and maintain their existing tariffs with third countries. One could extend this to include a common external tariff, but the likely values for that common tariff are unclear at this point.

Finally, EU accession is interpreted as a free trade area with the EU.

In each scenario we replace lost government revenue with proportional changes in the VAT, which carries with it some distortions. Hence we take into account the second-best reality that lost tariff revenues will be replaced in a way that could worsen welfare. If the welfare cost of the VAT, at the margin, is greater than the welfare cost of the tariff, at the margin, then tariff reform cum revenue replacement could easily be welfare worsening (see Harrison, Rutherford and Tarr Š1993Ć for exploration of this theme).

Welfare changes are measured in terms of the standard equivalent variation in (national) income, expressed as a percentage of benchmark income. This welfare measure includes changes in the value of income as well as changes in the purchasing power of that income. Thus an increase in the value of income is not regarded as a welfare improvement if prices increase more than proportionately in Croatia, since purchasing power would decline.

4.2. Results

Tables 7, 8 and 9 summarize the main results from our simulations. In all cases we show results in comparison to our benchmark equilibrium, so the results are not additive as we move from STAGE1 to STAGE2 to STAGE3.

The overall welfare impacts are displayed in Table 9. They show that Croatia suffers a tiny welfare loss in STAGE1, but that the welfare gains increase substantially as it progresses into STAGE2 and STAGE3. These welfare gains are on an annual basis, and represent continuing gains measured as a percent of GDP. Thus, after STAGE3 Croatia would be enjoying a welfare gain of six-tenths of a percent in terms of GDP, which is quite sizeable. However, there is some initial "pain" in STAGE1 which seems to be a small price to pay for these longer-term gains.

Turning to the sectoral impacts, we observe some large changes in the sectoral composition of the Croatian economy, as well as its trade structure. Some sectors reduce domestic production after STAGE1, only to find these losses mitigated as Croatia moves to STAGE2 and STAGE3. For example, the electronic equipment sector (ELE) experiences a drop in output of 3.3% initially, but ends up in the long-run with a gain in output of 4.6%. Other sectors experience swings in the opposite direction: for example, beverages and tobacco sector (B_T) expands production substantially by 13.3% in STAGE1, maintains that expansion in STAGE2, and only declines as Croatia moves to STAGE3. Other sectors gain steadily during the liberalization

stages (e.g., motor vehicles (MVH) and other transport equipment (OTN)). Finally, some sectors lose steadily as the reforms proceed (e.g., agriculture and fisheries (AGR), forestry (FRS), food products (FOO) and animal products, n.e.c. (OAP)).

Of course, without some sectors declining and releasing valuable resources, there could not be expansions in other sectors. It is not the case that one can design policies to stop the reduction in output in some sectors, and still expect to gain output expansion in other sectors.

Turning to the structure of trade in Table 8, we see that the qualitative changes in production shown in Table 7 tend to be complementary to the changes in imports. As domestic production of some goods (e.g., agriculture and fisheries (AGR), forestry (FRS), food products (FOO) and chemicals rubber and plastics (CRP)) decline, we observe large increases in imports of these goods. Similarly, as domestic production of some goods expands (e.g., beverages and tobacco (B_T) during the early stages, leather goods (LEA), trade and transport (T_T)), we observe reduced imports. This complementarity between domestic production and foreign production is precisely where the gains from trade occur for Croatia.

As domestic resources are released to more valuable production in the sectors expanding in Table 7, we observe concomitant reductions in the need for imports in those sectors in Table 6.

One minor surprise is that these trade reforms lead to a net increase in government revenues. Hence we observe in Table 9 that there needs to be small decreases in the overall VAT in order to keep the government deficit fixed in real terms. The VAT declines across-the-board by 1.1%, 0.2% and 2.7% as we move through the three reforms.

5. Conclusions

Our results indicate that Croatia will suffer no major substantial welfare loss as it undertakes transitional steps to EU accession. Moving towards the WTO tariffs is a necessary step in that transition, and while there are some initial welfare losses, these are small and are more than made up for by the eventual welfare gains. Of course, if the second and third stages of the transition are delayed for very long, this calculus could be changed. Our simulation results also indicate where the production and trade structure of the Croatian economy might be expected to change. It is important to note that some sectors may decline or expand during the earlier stages of the transition, only to find those changes offset as the reforms continue.

It is essential that Croatia joins the world globalization process in spite of the short run costs that this will inevitably incur. This analysis also points out that it will be the case. But the long run effects are shown to be positive carrying with them a more efficient allocation of resources and a higher level of total welfare.

Appendix

The Global Trade Analysis Project (GTAP) is a research program initiated in 1992 to provide the economic research community with a global economic dataset for use in the quantitative analyses of international economic issues. GTAP objectives include the provision of a documented, public, global, general equilibrium data base. It also conducts seminars on a regular basis to inform the research community how to use the data in applied economic analysis. The GTAP effort has brought about the establishment of a global network of researchers, who share a common interest in multi-region trade analysis and related issues. The standard GTAP model produced by the GTAP Consortium is a multiregional, computable general equilibrium (CGE) model, with assumptions of perfect competition and constant returns to scale. Bilateral trade data is handled via the Armington assumption, and private household preferences are treated using the non-homothetic CDE functional form. The GTAP version 4 database contains detailed bilateral trade, transport and protection datacharacterizing economic linkages among regions, linked together with individual country input-output data bases for 45 country/regions, 50 sectors/commodities, and 5 primary factors. For complete documentation of the GTAP database, see *http://www.agecon.purdue.edu/gtap/*.

The GTAP database can be accessed in GAMS. The General Algebraic Modeling System (GAMS) is specifically designed for modeling linear, nonlinear, mixed integer, and complementarity optimization problems. The system is especially useful with large, complex problems. GAMS is available for use on personal computers, workstations, mainframes and supercomputers. GAMS allows the user to concentrate on the modeling problem by making the setup simple. The system takes care of the time-consuming details of the specific machine and system software implementation. GAMS is especially useful for handling large, complex, one-of-a-kind problems which may require many revisions to establish an accurate model.

The system models problems in a highly compact and natural way, using "algebraic" expressions that are familiar to economists when they write out the mathematical form of the model. The user can change the model formulation quickly and easily, can change from one solver to another, and can immediately access refined solution algorithms. Apart from access to specific solvers for well-defined problems, GAMS provides excellent "cradle to grave" support for large-scale modeling tasks. That is, GAMS handles the data input process, the model definition process, the solution process, and the analysis and display process.

The package "GTAPinGAMS" is particularly useful to economists who program in GAMS and wish to use the GTAP database in applied work. These programs include tools for the translation of GTAP data files into GAMS readable form, GAMS programs for dataset aggregation, filtering and the imposition of alternative tax rates on trade or domestic transactions. The data characterize intermediate demand and bilateral trade in 1995, including tax rates on imports and exports. GTAPinGAMS measures transactions in tens of billions of 1995 U.S. dollars.

In the GAMS model final demand is Cobb-Douglas. Also, the GTAPinGAMS model makes the simplest possible assumptions regarding investment demand, international capital flows and the time path of adjustment: all of these variables are exogenously fixed at base year levels. The core model uses simple Leontief, Cobb-Douglas and constant-elasticity-of-substitution (CES) functional forms so that its structure is as transparent as possible. These choices reflect the belief that any application of the GTAP data to a specific policy question should involve the development of a model tailored to the issues, and therefore the purpose of the core model is largely to illustrate how the benchmark data are organized. The core model is static. It is possible to easily extend the core GTAPinGAMS to relax any or all these simplifying assumptions. We employ the GTAPin GAMS software developed by Rutherford (1998) to access, aggregate, and model the original GTAP database. Complete details are provided at: *http://robles.colorado.edu/~tomruth/gtapingams/html/gtapgams.html*.

The CGE model is specified and solved as a subsystem within GAMS, and is written in MPSGE (Mathematical Programming System for General Equilibrium Analysis). MPSGE simplifies the modeling process and makes CGE modeling accessible to any economist interested in the application of these models. Documentation is available at: *http://www.gams.com/solvers/mpsge/index.htm*.

References

Brooke, A., D. Kendrick, and A. Meeraus (1988): *GAMS: A User's Guide,* Redwood City, CA: The Scientific Press.

De Melo, J., and D. Tarr (1992): *A General Equilibrium Analysis of US Foreign Trade Policy*, Cambridge, MA: MIT Press.

Državni zavod za statistiku (Croatian Central Bureau of Statistics) (1997): *Statistički ljetopis* (Statistical Yearbook), Zagreb.

Državni zavod za statistiku (Croatian Central Bureau of Statistics) (1998): *Statistički ljetopis* (Statistical Yearbook), Zagreb.

Galinec, D. (1998): *Analiza nominalne i efektivne carinske zaštite hrvatskoga gospodarstva* (Analysis of the Nominal and Effective Tariff Protection in the Croatian Economy), Financijska praksa (Financial Practice), Zagreb, No. 4-5, pp. 605-621.

Galinec, D. (2000): *Učinak nove Carinske tarife na razinu nominalne i efektivne zaštite po djelatnostima* (The Effect of the New Customs Tariff Schedule on the Level of Nominal and Effective Protection of Particular Sectors), Carinski vjesnik (Customs Review), Zagreb, No. 9, pp. 38-49.

Harrison, G. W., Th. F. Rutherford and D. Tarr (1993): *Piecemeal Trade Reform in Partially Liberalized Economies*, World Bank Economic Review, 7(2), May.

Harrison, G. W., Th. F. Rutherford and D. G. Tarr (1997): *NAFTA, MERCOSUR and Additive Regionalism in Chile: A Quantitative Evaluation*, Economics Working Paper B-97-05, Department of Economics, The Darla Moore School of Business, University of South Carolina, June 1997; available at: http://dmsweb.badm.sc.edu/glenn/AddReg.pdf

International Monetary Fund: *Direction of Trade Statistic*s, various.

International Monetary Fund (1998): *Republic of Croatia: Selected Issues and Statistical Appendix*, IMF Staff Country Report, No. 98, September.

Rutherford, Th. F. (1995): *Extensions of GAMS For Complementarity and Variational Problems Arising in Applied Economics*, Journal of Economic Dynamics and Control, 19(8), November, pp. 1299-1324.

Rutherford, Th. F. (1998): *GTAPinGAMS: The Data Set and Static Model*, *Unpublished Manuscrip*t, Department of Economics, University of Colorado at Boulder, October; available at: http://robles.colorado.edu/čtomruth/gtapingams/html/gtapgams.html

Rutherford, Th. F. (1999): *Applied General Equilibrium Modeling with MPSGE as a GAMS Subsystem: An Overview of the Modeling Framework and Syntax*, Computational Economics, 14 (1/2), October, pp. 1-46.

Srinivasan, T. N. and J. Whalley, (eds.) (1986): *General Equilibrium Trade Policy Modelin*g, Cambridge, MA: MIT Press.

Stjepanović, Lj. (1990): *Međusobni odnosi privrednih djelatnosti SR Hrvatske u 1987. godini* (Inter-Industry Relations of the Economy of the SR Croatia in 1987), Državni zavod za statistiku (Croatian Central Bureau of Statistics), Zagreb.

Vujčić, B., I. Drinovac and D. Galinec (1997): *Struktura, dinamika i determinante hrvatskog izvoza* (Structure, Dynamics and Determinants of the Croatian Exports), *Pregledi (Surveys),* Narodna Banka Hrvatske, Zagreb, March.

World Bank (1997): *Croatia Beyond Stabilization*, Report No. 17261-HR,Washington D.C., December.

Table 1: Composition of Exports and Imports by Countries and SITC Sectors 1992 and 1999, in percent of total

Exports 1992	Total	Food products	Beverages and tobacco	Raw materials except fuel	Fuel and lubricant	Oil and fats	Chemical products	Products classified by materials	Machines and transport equipment	Miscelaneous ready-made products	Other
TOTAL	100.0	10.0	2.4	6.2	8.6	0.1	13.0	17.8	18.5	22.7	0.6
DEVELOPED COUNTRIES	56.2	4.0	0.2	4.5	2.8	0.0	5.2	10.0	10.8	18.5	0.2
EU – 15	52.5	3.5	0.2	4.4	2.8	0.0	4.4	9.1	9.9	18.0	0.2
Austria	2.3	0.2	0.0	0.3	0.4	0.0	0.1	0.5	0.2	0.7	0.0
France	1.3	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.3	0.5	0.0
Italy	19.8	2.5	0.0	3.7	2.0	0.0	2.1	5.7	0.5	3.1	0.1
Netherlands	2.1	0.1	0.0	0.0	0.1	0.0	0.1	0.3	0.1	1.4	0.0
Germany	16.8	0.4	0.1	0.3	0.4	0.0	1.0	1.9	1.5	11.2	0.0
Sweden	7.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	7.1	0.2	0.0
Great Britain	1.2	0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.7	0.0
Other	1.7	0.1	0.0	0.1	0.0	0.0	0.5	0.5	0.2	0.2	0.0
EFTA	1.3	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.7	0.2	0.0
Switzerland	0.8	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.3	0.2	0.0
Other	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.0
OTHER DEVELOPED COUNTRIES	2.4	0.4	0.0	0.0	0.0	0.0	0.7	0.9	0.1	0.2	0.0
Japan	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
USA	1.5	0.2	0.0	0.0	0.0	0.0	0.3	0.7	0.1	0.2	0.0
DEVELOPING COUNTRIES	43.8	6.0	2.2	1.7	5.9	0.1	7.8	7.8	7.7	4.2	0.4
CENTRAL AND EASTERN EUROPE	5.8	0.9	0.2	0.1	0.4	0.0	1.3	0.5	1.8	0.4	0.0
FORMER YUGOSLAVIA	32.0	4.8	2.0	1.4	5.0	0.1	4.3	6.9	3.3	3.7	0.3
OTHER DEVELOPING COUNTRIES	6.0	0.2	0.0	0.2	0.5	0.0	2.1	0.4	2.6	0.1	0.1

Table 1: Composition of Exports and Imports by Countries and SITC Sectors 1992 and 1999, in percent of total – cont'd

Imports 1992	Total	Food products	Beverages and tobacco	Raw materials except fuel	Fuel and lubricant	Oil and fats	Chemical products	Products classified by materials	Machines and transport equipment	Miscelaneous ready-made products	Other
TOTAL	100.0	10.5	1.2	5.9	9.6	0.5	15.1	18.1	16.3	16.0	6.8
DEVELOPED COUNTRIES	53.5	2.5	0.2	1.9	1.1	0.3	9.3	8.3	11.6	12.9	5.5
EU – 15	47.5	2.3	0.2	1.4	0.5	0.3	7.9	7.6	9.8	12.4	5.2
Austria	4.3	0.2	0.0	0.1	0.1	0.0	0.8	1.1	1.1	0.8	0.0
France	1.6	0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.6	0.3	0.1
Italy	17.1	0.7	0.1	0.4	0.3	0.1	2.6	3.2	2.2	6.7	0.8
Netherlands	2.0	0.3	0.0	0.1	0.0	0.0	0.4	0.1	0.1	0.3	0.5
Germany	17.2	0.6	0.0	0.5	0.1	0.1	2.3	2.2	4.0	3.8	3.6
Sweden	1.2	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.8	0.1	0.0
Great Britain	1.4	0.0	0.0	0.0	0.0	0.0	0.6	0.1	0.4	0.1	0.1
Other	2.7	0.2	0.1	0.1	0.1	0.0	0.9	0.6	0.6	0.2	0.0
EFTA	1.7	0.1	0.0	0.0	0.0	0.0	0.7	0.3	0.4	0.1	0.1
Switzerland	1.5	0.0	0.0	0.0	0.0	0.0	0.7	0.3	0.3	0.1	0.1
Other	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
OTHER DEVELOPED COUNTRIES	4.3	0.2	0.0	0.4	0.6	0.0	0.8	0.3	1.4	0.4	0.2
Japan	0.7	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.6	0.1	0.0
USA	2.4	0.0	0.0	0.1	0.4	0.0	0.5	0.2	0.7	0.3	0.2
DEVELOPING COUNTRIES	46.5	8.0	1.0	4.0	8.6	0.2	5.7	9.8	4.7	3.1	1.4
CENTRAL AND EASTERN EUROPE	13.5	3.2	0.1	2.3	3.1	0.1	1.2	2.5	0.6	0.1	0.4
FORMER YUGOSLAVIA	23.1	3.5	0.7	0.6	0.2	0.1	4.2	6.9	3.8	2.9	0.2
OTHER DEVELOPING COUNTRIES	9.8	1.3	0.2	1.1	5.3	0.0	0.3	0.5	0.2	0.1	0.8

Table 1: Composition of Exports and Imports by Countries and SITC Sectors 1992 and 1999, in percent of total – cont'd

Exports 1999	Total	Food products	Beverages and tobacco	Raw materials except fuel	Fuel and lubricant	Oil and fats	Chemical products	Products classified by materials	Machines and transport equipment	Miscelaneous ready-made products	Other
TOTAL	100.0	6.8	2.4	5.7	7.8	0.2	12.0	13.4	29.1	22.5	0.1
DEVELOPED COUNTRIES	56.7	1.6	0.2	4.4	2.2	0.0	6.9	7.7	13.9	19.8	0.0
EU – 15	48.8	1.1	0.2	4.3	1.9	0.0	5.9	7.1	8.9	19.2	0.0
Austria	6.2	0.2	0.0	0.4	0.4	0.0	1.3	0.6	1.5	1.8	0.0
France	2.4	0.1	0.0	0.0	0.3	0.0	0.1	0.2	0.7	1.0	0.0
Italy	18.0	0.5	0.0	3.3	0.8	0.0	2.5	2.8	2.7	5.4	0.0
Netherlands	1.2	0.0	0.0	0.1	0.0	0.0	0.2	0.2	0.1	0.6	0.0
Germany	15.7	0.2	0.1	0.3	0.0	0.0	0.7	2.4	2.7	9.2	0.0
Sweden	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.0
Great Britain	1.9	0.1	0.0	0.0	0.1	0.0	0.1	0.2	0.5	0.8	0.0
Other	2.9	0.1	0.0	0.1	0.3	0.0	1.0	0.5	0.5	0.4	0.0
EFTA	3.5	0.0	0.0	0.0	0.1	0.0	0.1	0.1	2.9	0.1	0.0
Switzerland	0.8	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.3	0.1	0.0
Other	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0
OTHER DEVELOPED COUNTRIES	4.4	0.4	0.0	0.0	0.1	0.0	1.0	0.4	2.0	0.4	0.0
Japan	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
USA	2.0	0.2	0.0	0.0	0.0	0.0	0.4	0.3	0.8	0.3	0.0
DEVELOPING COUNTRIES	43.3	5.2	2.2	1.3	5.6	0.2	5.1	5.7	15.3	2.8	0.1
CENTRAL AND EASTERN EUROPE	7.5	0.9	0.1	0.1	0.4	0.0	1.1	0.7	4.0	0.2	0.1
FORMER YUGOSLAVIA	25.5	4.2	1.8	1.0	4.8	0.1	3.6	4.6	2.8	2.5	0.0
OTHER DEVELOPING COUNTRIES	10.3	0.1	0.3	0.1	0.4	0.0	0.3	0.5	8.5	0.1	0.0

Table 1: Composition of Exports and Imports by Countries and SITC Sectors 1992 and 1999, in percent of total – cont'd

Imports 1999	Total	Food products	Beverages and tobacco	Raw materials except fuel	Fuel and lubricant	Oil and fats	Chemical products	Products classified by materials	Machines and transport equipment	Miscelaneous ready-made products	Other
TOTAL	100.0	7.2	0.8	2.2	11.0	0.3	12.1	16.1	34.8	11.9	3.6
DEVELOPED COUNTRIES	66.5	3.7	0.4	1.0	1.2	0.1	8.9	10.2	28.2	9.4	3.4
EU – 15	56.5	3.3	0.3	0.9	0.9	0.1	7.3	9.4	22.6	8.4	3.3
Austria	7.1	0.6	0.1	0.1	0.2	0.0	0.9	1.5	2.4	1.1	0.2
France	5.0	0.2	0.0	0.0	0.0	0.0	0.9	0.5	3.0	0.3	0.0
Italy	15.9	1.0	0.0	0.2	0.2	0.0	1.8	3.7	4.0	3.8	1.0
Netherlands	1.8	0.3	0.0	0.2	0.1	0.0	0.3	0.2	0.4	0.1	0.2
Germany	18.5	0.7	0.0	0.2	0.2	0.0	1.9	2.5	8.9	2.4	1.8
Sweden	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.1	0.1	0.0
Great Britain	2.3	0.1	0.0	0.0	0.2	0.0	0.7	0.2	0.9	0.3	0.0
Other	4.3	0.5	0.0	0.1	0.0	0.0	0.7	0.7	1.8	0.4	0.0
EFTA	2.6	0.1	0.0	0.0	0.3	0.0	0.6	0.4	0.9	0.2	0.1
Switzerland	2.0	0.0	0.0	0.0	0.3	0.0	0.6	0.3	0.5	0.2	0.1
Other	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.0	0.0
OTHER DEVELOPED COUNTRIES	7.5	0.3	0.1	0.1	0.0	0.0	1.0	0.4	4.7	0.9	0.1
Japan	1.8	0.0	0.0	0.0	0.0	0.0	0.1	0.0	1.5	0.2	0.0
USA	3.1	0.1	0.1	0.0	0.0	0.0	0.7	0.1	1.7	0.4	0.0
DEVELOPING COUNTRIES	33.5	3.5	0.4	1.2	9.8	0.2	3.2	5.9	6.6	2.5	0.2
CENTRAL AND EASTERN EUROPE	15.7	1.2	0.0	0.2	8.6	0.1	1.1	2.3	1.8	0.4	0.1
FORMER YUGOSLAVIA	10.4	1.0	0.3	0.5	0.2	0.0	1.7	3.3	2.0	1.4	0.1
OTHER DEVELOPING COUNTRIES	7.3	1.4	0.1	0.5	1.0	0.1	0.4	0.4	2.8	0.6	0.1

Source: Central Bureau of Statistics (CBS) of the Republic of Croatia

Table 2: Percent Growth in Exports of Goods to the European Union

Country	1993	1994	1995	1996	1997
Bulgaria	1	41	14	0	17
Croatia	.	–3	2	–4	11
Czech Republic	.	16	9	44	11
Estonia	34	57	41	12	71
Hungary	–21	34	5	7	68
Latvia	14	14	29	16	181
Lithuania	35	–23	42	17	48
Poland	26	20	19	6	11
Romania	40	44	30	2	28
Slovak Republic	.	42	21	19	32
Slovenia	.	14	10	1	14

Source: IMF, Direction of Trade Statistics

Table 3: Growth Rates of Croatian Trade with 4 Selected Countries 1992 – 1999, in percent, base year 1992

	Exports								Imports							
	1992	1993	1994	1995	1996	1997	1998	1999	1992	1993	1994	1995	1996	1997	1998	1999
TOTAL	–	–15.1	–7.3	0.8	–1.9	–9.3	–1.2	–6.9	–	4.6	17.2	68.4	74.6	104.1	87.9	74.4
Bosnia and Hercegovina	–	–1.8	75.9	99.2	185.2	237.2	239.9	184.4	–	–82.7	–95.0	–89.2	–21.3	69.7	93.6	45.4
Macedonia	–	–27.8	–15.6	–19.8	–32.1	–10.9	–26.7	–26.2	–	–18.1	–50.9	–34.5	–39.7	–24.5	0.1	–5.8
Slovenia	–	–35.4	–49.5	–44.8	–44.5	–51.9	–60.7	–58.8	–	–11.6	–38.1	–8.0	–12.0	–13.6	–17.4	–29.5
Hungary	–	28.5	62.6	69.1	31.5	16.0	23.3	–6.1	–	–23.9	–2.5	53.8	87.5	132.2	106.4	69.8
SUB-TOTAL	–	–28.5	–27.2	–20.4	–10.4	–8.3	–15.5	–22.4	–	–18.2	–39.6	–9.5	–4.9	5.4	2.9	–13.7

Source: CBS of the Republic of Croatia

Table 4: Composition of Croatian Trade with 4 Selected Countries 1992 – 1999, in percent of annual total

	Exports								Imports							
	1992	1993	1994	1995	1996	1997	1998	1999	1992	1993	1994	1995	1996	1997	1998	1999
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Bosnia and Hercegovina	4.2	4.8	7.9	8.3	12.2	15.6	14.4	12.8	1.8	0.3	0.1	0.1	0.8	1.5	1.9	1.5
Macedonia	1.9	1.6	1.7	1.5	1.3	1.9	1.4	1.5	1.2	1.0	0.5	0.5	0.4	0.5	0.7	0.7
Slovenia	23.9	18.2	13.0	13.1	13.6	12.7	9.5	10.6	19.6	16.6	10.3	10.7	9.9	8.3	8.6	7.9
Hungary	0.9	1.4	1.6	1.5	1.2	1.2	1.1	0.9	2.3	1.7	1.9	2.1	2.5	2.6	2.5	2.2
SUB-TOTAL	30.9	26.1	24.3	24.4	28.2	31.3	26.5	25.8	25.0	19.5	12.9	13.4	13.6	12.9	13.7	12.3

Source: CBS of the Republic of Croatia

Table 5: Sectors in the Model

Label	Sector
AGR	Agriculture and fisheries
FRS	Forestry
FOO	Food products
OAP	Animal products n.e.c.
COL	Coal
O_G	Oil and Natural Gas
OMN	Other Minerals
B_T	Beverages and tobacco
TEX	Textiles
WAP	Wearing apparel
LEA	Leather goods
LUM	Lumber and wood
PPP	Pulp and paper
P_C	Petroleum and coal products
CRP	Chemicals rubber and plastics
NMM	Non-metallic mineral products
I_S	Primary ferrous metals
NFM	Non-ferrous metals
FMP	Fabricated metal products
MVH	Motor vehicles
OTN	Other transport equipment
ELE	Electronic equipment
OME	Machinery and equipment
OMF	Other manufacturing products
ENE	Energy and gas production and distribution
WTR	Water
CNS	Construction
T_T	Trade and transport
OSP	Other services (private)
OSG	Other services (public)
DWE	Dwellings
CGD	Savings good

Table 6: Sectoral Tariffs, in percent

Sector	Custom tariff schedule 1996		Custom tariff schedule 2000		WTO
	Nominal	Weighted (imports 1999)	Nominal	Weighted (imports 1999)	
1	2	3	4	5	6
ENE	0.000	0.000	0.000	0.000	n.a.
COL	0.945	0.956	0.833	0.011	0.000
O_G	3.930	1.231	3.125	0.979	0.000
P_C	13.187	17.656	9.389	13.452	15.000
I_S	3.178	4.168	0.849	1.638	0.000
NMM	6.199	10.982	3.885	6.555	3.885
NFM	6.953	9.604	3.727	5.048	4.627
FMP	13.374	14.222	8.181	9.047	8.181
OME	7.483	7.744	3.959	3.068	3.959
MVH	9.436	12.151	6.145	7.746	6.000
OTN	6.286	5.515	3.986	0.849	1.000
ELE	10.738	11.156	5.105	4.198	5.000
CRP	6.415	9.543	5.431	5.751	5.347
OMN	8.659	9.993	8.019	7.771	8.000
LUM	11.027	9.661	5.967	5.275	4.075
PPP	10.780	12.026	6.062	6.399	5.000
TEX	7.721	8.320	5.892	6.783	5.000
WAP	19.251	22.737	14.372	17.680	15.000
LEA	11.857	18.014	9.801	14.215	9.801
FOO	17.274	20.411	11.313	13.860	11.000
B_T	22.952	22.484	31.478	25.349	25.000
OAP	19.640	19.640	17.071	17.071	17.000
OMF	15.804	14.471	8.259	7.026	8.259
AGR	12.497	14.476	7.690	9.286	7.690
FRS	9.726	8.221	3.788	3.607	3.788

Table 7: Percent Sectoral Changes in Output

Sector	STAGE1	STAGE2	STAGE3
AGR	–3.0	–3.4	–3.9
FRS	–3.6	–3.8	–3.0
FOO	–0.8	–0.9	–4.9
OAP	–3.0	–3.4	–3.9
COL	–3.8	–4.1	–1.9
O_G	–1.6	–2.5	–0.8
OMN	1.5	1.3	1.4
B_T	13.3	14.3	–1.4
TEX	1.4	1.5	4.4
WAP	4.4	4.6	13.1
LEA	7.8	9.8	7.7
LUM	0.1	–0.2	–0.1
PPP	0.1	0.4	–0.4
P_C	2.2	–0.7	–5.4
CRP	–4.4	–3.8	–3.3
NMM	–1.8	–1.8	–1.8
I_S	–2.2	–2.6	1.0
NFM	2.2	0.1	1.7
FMP	0.9	0.8	–2.7
MVH	0.4	2.7	5.5
OTN	5.2	9.8	29.2
ELE	–3.3	–1.3	4.6
OME	–5.3	–4.8	–3.0
OMF	–0.2	–0.3	–1.7
ENE		–0.1	–0.3
WTR	0.7	0.7	1.6
CNS			–0.4
T_T	0.9	0.9	2.2
OSP	0.9	0.6	1.2
DWE	–0.2	–0.4	–1.9
CGD	1.9	1.9	1.9

Table 8: Percent Sectoral Changes in Imports

Sector	STAGE1	STAGE2	STAGE3
AGR	18.8	21.6	18.5
FRS	31.9	33.4	32.0
FOO	–0.5	0.7	11.9
OAP	–6.7	–6.2	–0.9
COL	8.2	8.5	6.0
O_G	1.7	1.4	–1.3
OMN	–6.2	–4.9	1.9
B_T	–28.1	–28.7	5.3
TEX	–1.4	–1.5	–4.2
WAP	–5.4	–5.3	2.8
LEA	–11.9	–14.6	–10.1
LUM	1.0	1.3	2.0
PPP	0.8	0.7	1.8
P_C	–4.6	2.2	14.2
CRP	12.1	12.3	12.8
NMM	4.4	4.4	5.3
I_S	1.4	1.5	–1.4
NFM	–1.6		–1.4
FMP	–0.6	–0.5	6.6
MVH	0.3		1.6
OTN	0.9	0.9	2.2
ELE	6.6	5.7	4.5
OME	9.6	9.4	9.7
OMF	0.9	0.9	2.2
T_T	–3.9	–4.0	–13.0
OSP	–2.9	–2.5	–8.4
OSG	–0.8	–0.8	–3.3

Table 9: Percent Changes in Factor Prices, Taxes and Welfare

Variable	STAGE1	STAGE2	STAGE3
LABOR	–0.449	–0.454	–0.956
CAPITAL	–0.418	–0.460	–1.133
VAT	–1.1	–0.2	–2.7
WELFARE	–0.075	0.091	0.641

Guidelines to Authors

In its periodical publications *Working Papers, Surveys and Discussion Papers*, the Croatian National Bank publishes scientific and scholarly papers of the Bank's employees, visiting scholars, and other associate contributors.

After the submission, the manuscripts shall be subject to peer review and classification by the Manuscript Review and Classification Committee. The authors shall be informed of the acceptance or rejection of their manuscript for publication within two months following the manuscript submission.

Manuscripts are submitted and published in Croatian and/or English language.

Manuscripts submitted for publication should meet the following requirements:

Manuscripts should be submitted in magnetic or optical storage media (3.5-inch floppy, ZIP, CD) accompanied by three printed paper copies. The acceptable text formats are Word 6 or 97 for Windows/Mac. RTF code page 437 or 852 format is preferred.

Diskettes should be labeled with the type of the word-processor and database used, as well as with the name of the author.

The first page of the manuscript should contain the article title, first and last name of the author and his/her academic degree, name of the institution with which the author is associated, author's co-workers, and the complete mailing address of the corresponding author to whom a copy of the manuscript with requests for corrections shall be sent.

Additional information, such as acknowledgments, may be included in the first page. If this information is extensive, it is preferred to incorporate it within the text, whether at the end of the introductory section or in the special section preceding the list of references.

The second page should contain the abstract and the key words. The abstract is required to be explicit, descriptive, written in third person, consisting of not more than 250 words (maximum 1500 characters). The abstract should be followed by maximum 5 key words.

A single line spacing and A4 paper size should be used. The text must not be formatted, apart from applying bold and italic script to certain parts of the text. Titles must be numerated and separated from the text by a double line spacing, without formatting.

Tables, figures and charts that are a constituent part of the paper must be well laid out, containing: number, title, units of measurement, legend, data source, and footnotes. The footnotes referring to tables, figures and charts should be indicated by lower-case letters (a,b,c…) placed right below. When the tables, figures and charts are subsequently submitted, it is necessary to mark the places in the text where they should be inserted. They should be numbered in the same sequence as in the text and should be referred to in accordance with that numeration. If the tables and charts were previously inserted in the text from other programs (Excel, Lotus…), these databases in the Excel format should also be submitted (charts must contain the corresponding data series).

The preferred formats for illustrations are EPS or TIFF with explanations in 8 point Helvetica (Ariel, Swiss). The scanned illustration must have 300 dpi resolution for gray scale and full color illustration, and 600 dpi for lineart (line drawings, diagrams, charts).

Formulae must be legible. Indices and superscript must be explicable. The symbols' meaning must be given following the equation where they are used for the first time. The equations in the text referred to by the author should be marked by a serial number in brackets closer to the right margin.

Notes at the foot of the page (footnotes) should by indicated by Arabic numerals in superscript. They should be brief and written in a smaller font than the rest of the text.

References cited in the text are listed at the last page of the manuscript in the alphabetical order, according to the authors' last names. References should also include data on the publisher, city and year of publishing.

Publishing Department maintains the right to send back for the author's revision the accepted manuscript and illustrations that do not meet the above stated requirements.

Printed paper copies and diskettes containing manuscript files shall not be returned.

All contributors who wish to publish their papers are welcomed to do so by addressing them to the Publishing Department, following the above stated guidelines.

The Croatian National Bank publications:

Croatian National Bank – *Annual Report*
Regular annual publication surveying annual monetary and general economic developments as well as statistical data.

Croatian National Bank – *Semi-annual Report*
Regular semi-annual publication surveying semi-annual monetary and general economic developments and statistical data.

Croatian National Bank – *Quarterly Report*
Regular quarterly publication surveying quarterly monetary and general economic developments.

Banks Bulletin
Publication providing survey of data on banks.

Croatian National Bank – *Bulletin*
Regular monthly publication surveying monthly monetary and general economic developments and monetary statistics.

Croatian National Bank – *Working Papers*
Occasional publication containing shorter scientific papers written by the CNB employees, visiting scholars and associate contributors.

Croatian National Bank – *Surveys*
Occasional publication containing papers of informative and surveying character written by the CNB employees, visiting scholars and associate contributors.

Croatian National Bank – *Discussion Papers*
Occasional publication containing discussion papers written by CNB employees, visiting scholars and associate contributors.

The Croatian National Bank also issues other publications such as, for example proceedings of conferences organized or co-organized by the CNB, books and papers or books and papers translations of special interest to the CNB as well as other similar publications.

ISSN 1331–8586