Methodological Framework and Simulations for Evaluating the Impact of EU Enlargement on the Italian Economy

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SOMMARIO

Methodological Framework and Simulations for Evaluating the Impact of EU Enlargement on the Italian Economy

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L'impatto sull'Italia dell'allargamento a Est dell'Unione Europea è stato analizzato con un approccio metodologico molto avanzato. La ricerca è stata condotta con modelli multisettoriali di un gruppo significativo di paesi connessi mediante un modello del commercio bilaterale che realizza un effettivo collegamento bilaterale. Il lavoro dimostra con metodo originale che gli effetti dell'impatto dell'allargamento sugli altri Stati membri dell'Unione Europea può essere di gran lunga più importante di quelli percepibili con analisi vis-a-vis *tra un singolo paese dell'Unione Europea e l'insieme dei paesi candidati. La multisettorialità dei modelli consente di evidenziare i mutamenti strutturali attesi nella struttura produttiva dell'Italia.*

The impact of EU Eastern enlargement on a Member State, i.e. Italy, has been analysed with a very advanced methodological approach. The research has been carried on with a system of models including several multisectoral country models and a bilateral trade model which "truly" links the system. The most original contribution of this paper is to show that indirect effects from the impact of enlargement on the EU Member States and the other countries in the system may be much more relevant than the direct effects

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usually considered by using a "stand alone model". Moreover, our multisectoral approach gives evidence of "losers" and "winners" among the sectors of the Italian economy after the Enlargement.
[JEL Code: C5, F15, F47].

Introduction

This paper examines the economic implications of European enlargement on the European Union and in particular on the Italian economy. Enlargement may be treated as the merging of two countries, that is, the EU 15[1] and the Central and Eastern European Countries (CC)[2]. The study has been designed to give evidence of the expected differences of the enlargement effects on each country and on its economic structure[3].

The results of this piece of research as any other need to be carefully read in the context of the instruments applied, the level of aggregation adopted, and the data employed if we are to obtain a correct reading of the analysis.

The availability of a multi-sectoral model of the Italian economy and of a significant group of similar models of key countries has made the present study possible. The Italian model is named INTerindustry Italian MOdel or INTIMO[4]. The group of the models — including INTIMO — constitutes the INFORUM (INterindustry FORecasting at University of Maryland)[5] system of models, all of which are linked by means of an international trade

[1] The EU 15 is the group of present Member States of the European Union: Austria, Belgium, Denmark, France, Finland, Germany, Greece, The Netherlands, Luxembourg, Ireland, Italy, Spain, Portugal, Sweden and United Kingdom.

[2] The CC are the present Candidate Countries under the Accession Program: Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia.

[3] This paper draws some simulation results from a study commissioned by the EU Directorate General Budget (GRASSINI M. *et* AL., 2001).

[4] The description of the real side of the INTIMO model is in GRASSINI M. (1987); the description of the nominal side of the model is in GRASSINI M. (1987); the introduction of the institutional accounts and their role in a macroeconomic multisectoral model is in MEADE D. (1997). In GRASSINI M. (1998) the institutional accounts of INTIMO are discussed for the three institutions: *a)* enterprises, *b)* households and *c)* government.

[5] The INFORUM works on economic modelling and forecasting is documented at the web site inforumweb.umd.edu. See also ALMON C. (1991).

model which makes the countries' multi-sectoral model a "true" interlinked system. Thanks to this system of models, this paper presents unprecedented results relating to the effects of EU enlargement on a specific Member State, i.e. Italy.

The present study, which spans a period of ten years (2001-2010), refers to a baseline scenario where the applicants follow a growth path not strengthened by the benefits of improved economic integration. In the alternative scenarios, these advantages are assumed to increase the applicants GDP rates of growth by about 2% annually; this is a widespread assumption which makes our simulations easily comparable with those of previous studies (Prodi, 2002). Although applicant countries have made considerable progress towards the full participation in a single market under the Europe Agreements, trade is still restricted by the existence of a range of border and non-border measures and a bundle of tariffs mainly concentrated on agricultural and food products. The study investigates the impact of the complete removal of these residual barriers to free trade among the EU15 and the applicants.

The integration of the Italian Inforum model into a family of interlinked models has a number of important advantages for the analysis of the questions under considerations. In contrast to any economic analysis with a "stand alone model" of a national economy, we are able to consider a number of indirect effects of enlargement within a framework of interlinked national models. The following lists cites just a few of these relevant effects operating through the European economies on a specific Member State: *a)* changes in the demand for Italian commodities as intermediate products by other EU countries due to additional imports from CC to present EU members other than Italy; *b)* changes in the demand for Italian consumption goods by other EU countries induced by income effects caused by economic growth in present Member States due to enlargement; *c)* changes in the demand of Italian capital goods from other EU countries due to the same economic reasons explained above; *d)* substitution effects in trade with CC between commodities of EU Member States — Italy included — due to changes in competitiveness caused by the impact of the removal of trade barriers on relative prices.

Recently, similar studies on the impact of European Eastern enlargement on single EU Member States have been carried out. Important examples are Keuschnigg and Kohler (1999), Keuschnigg, Keuschnigg and Kohler (1999) for the case of Austria and Germany respectively, and Kristensen and Rormose Jensen (2001) for the Danish case. A number of studies consider this impact on the EU as a whole; these studies are mainly based on methodological approach very different from the one used for the Italian case.

In particular, we would like to stress that our approach is innovative with respect to other studies in the field insofar as it allows us to evaluate not only the direct effects of enlargement normally presented in such analyses, but also the indirect effects generally ignored by more traditional models of analysis. In order to make our results comparable with those of other studies, we have produced some "intermediate results" with a first set of simulations. We have, however, devoted much more attention to the results obtained by means of our advanced system of models where the effect of the removal of tariff barriers can be fully appreciated.

This paper is organized as follows. Section 1 describes the national model and the bilateral trade model used to study the economic effects of EU enlargement. Section 2 presents the scenarios designed for several simulations and describes some introductory results. Section 3 displays our main empirical results on the macroeconomic and sectoral variables and the last section concludes. The Appendix contains a schematic overview of the econometric Italian model.

1. - An Outline of the Model

1.1 *General Features*

In order to appreciate the results, it is essential to be aware of some of the characteristics of the tools used in this study.

The country models used here belong to the INFORUM system; it consists of multisectoral models of Western Europe (Germany, France, Spain, Austria, the UK, Belgium, and Italy), the Far

East (China, Japan, South Korea, and Taiwan), and Central-North America (Canada, the United States, and Mexico)[6]. Each country model has been constructed by the country partner so that it embodies the peculiarities of the economy as observed and understood by the model builder. As described in Grassini (2001), a more descriptive name for these models might be Interindustry Macroeconomic Models (IM) or Multisectoral Macroeconomic Models (MM): "interindustry" and "multisectoral" stress the presence of a detailed representation of the industries in the economy, while "macroeconomic" emphasizes that the usual variables of macroeconomics are covered[7].

In the same way as (any structural) macroeconometric model, Inforum models are rooted in data and use regression analysis on time-series. An enormous database in necessary to support a proper IM model given the underlying belief that a model incorporating as many previous economic outcomes will have a better chance at forecasting or accurately simulating policy changes than a model that incorporates less information[8]. Therefore, parameters in behavioural relations are econometrically estimated using observed economic outcomes and not calibrated or even borrowed from "black box" databases by the model builder[9].

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[6] There are many contributions to economic analyses carried out using Inforum country models. Here we refer to special sessions devoted to Inforum models at the International Conferences on Input-Output Techniques in 1989 (Kethzely, Hungary) and in 1998 (New York, USA). Papers presented at the first conference are collected in a special issue of *Economic Systems Research*, vol. 3, no. 1, 1991. Contributions presented at the XII International Conference in New York may be found on *www.iioa.at*.

[7] Here, we do not compare the peculiarities of this kind of models with those of other macroeconomic or multisectoral models. However, see West R.G. (1995) for a synoptic presentation of Computable General Equilibrium (CGE) models, Classic Input-output models and Input-output+econometrics models. For a comparison between macroeconomic models see also Almon C. (1991). Furthermore, see Monaco R.M. (1997) who gives an interesting evaluation of different kinds of macroeconomic multisectoral models from the perspective of a model builder and user. As Inforum models are not CGE models, some fundamental differences between them will be underlined.

[8] Indeed, models belonging to the class of CGE do not contain any information related to the observed behaviour of economic agents.

[9] Examples of these practises are respectively Kehoe P.J. - Kehoe J.T. (1994) and Brown D.K. - Deardorff A.V. - Stern R.M. (1993).

Inforum models are explicitly dynamic because they include real dates on each year's solution. The researcher also knows the dynamic path by which the new solution is reached, which may have enormous practical considerations for those policy-makers who are often just as interested in the path to equilibrium as they are in the ultimate equilibrium point[10].

A distinctive property of these models is their "bottom-up" approach; that is, the macro totals are obtained by summing the industry details. Predictions of time paths are naturally computed at the industry level: the macro dynamics are simply the results of the industry dynamics. Furthermore, sectoral growth paths are not at all steady over time with accelerations, decelerations, recessions, and recoveries occuring along the simulation horizon. Therefore, as in the case of the evaluation of enlargement effects, an analysis based only upon the comparison between two equilibria would be misleading: the model should offer a guidance of how sectors may cumulate gains and losses along the path so that policy makers may consider potential policy actions.

In these models, the foreign trade flows have a distinctive feature. They are driven by a world commodity trade model, the Bilateral Trade Model (BTM) created and originally estimated by Ma (1996)[11]. The basic idea underlying this trade model was formulated in the late 1960s (Armington, 1969a and 1969b; Rhomberg, 1970 and 1973) and subsequently, a number of studies tackled estimation problems involved in the construction of this kind of trade model (see, for example, Nyhus, 1975; Fair, 1984). These analyses focussed on modelling trade shares by using relative prices as explanatory variables; the BTM model shares the basic characteristics of earlier works and contains interesting innovations which will be discussed later on.

[10] The results of policy analyses carried out using the CGE model are usually shown in tables where neither the time span required nor the time span expected to reach the *new equilibria* is referred to. In fact, it is not practicable to translate the *fictious* time of the CGE models into the calendar time needed by the policy maker.

[11] This has subsequently been revised and updated with more recent data.

1.2 *Some Features of the Italian Model*

INTIMO begins from the Italian input-output table and the institutional accounts. The input-output table used in the model has 44 sectors, 40 of which represent the private component of the economy, 4 of which represent non-market sectors (3 are governmental and 1 non-profit). The table distinguishes between domestic and foreign production in each cell, and the model preserves this distinction.

The institutional accounts have been aggregated into three sectors: "enterprises", "households", and "government". In the European System of Accounts (ESA) there are seven institutional accounts: 1) production; 2) generation of income; 3) distribution of income; 4) use of income; 5) capital; 6) financial; and 7) current transactions (with rest of the world). The input-output table and the institutional accounts are closely linked. Aggregates from the intermediate consumption and value added matrices in the input-output table go into the first two accounts, "production" and "generation of income". INTIMO then models the third and seventh accounts — the "distribution of income" and "current transactions" accounts — to calculate, among a number of macroeconomic aggregates, disposable income. The "use of income" and "capital" accounts allow us to compute macroeconomic variables such as saving, investment, consumption, inventory changes in nominal terms.

1.3 *Equations from Input-Output Identities*

In an input-output table there are two sets of accounting identities:

$$(1) \qquad Aq + f = q \qquad A'p + v = p$$

where q is the (column) vector of sectoral outputs, f is the vector of final demand, the sum of consumption, investment, inventory changes and net exports, v is the value added vector per unit of output, p is the vector of sectoral prices and, finally, $A = [a_{ij}]$ is the ma-

trix of coefficients so that $q_j{}^*a_{ij}=q_{ij}$ where q_{ij} is the flow from sector i to sector j in the input-output table; matrix A is also known as the "input-output technical coefficient matrix". The set of equations on the left side are known as the "fundamental equation in the input-output analysis" or "the Leontief equation"; the set of equations on the right side are known as the "Leontief price equation".

In INTIMO, all these variables should have also a t subscript to emphasize that they vary over time, so that the equation for the determination of output would be

$$q_t = A_t q_t + f_t \tag{2}$$

In determining prices, the distinction between foreign and domestic products is important. For the price equations, we need to separate the A'_t into a matrix of domestic inputs, H_t, and imported inputs, T_t, such that $A'_t = H_t + T_t$. The resulting equation for determining domestic prices is:

$$p_t = H_t p_t + T_t p_t^m + v_t \tag{3}$$

where p_t^m is the vector of import prices. While the elements of matrix A may be interpreted as "technical" coefficients, H and T matrices simply distinguish the origin of inputs, a distinction which is useful for analysing the impact of foreign prices on domestic prices but independent of any technological consideration. There are no annual input-output tables for Italy, but we do have historical series on outputs, final demand, imports dimestic prices, and foreign prices. From these series and the input-output table, we have built a series of A, H, and T tables from which we project future tables.

1.4 *Behavioural Equations*

In very general terms, the real and price sides of INTIMO (or any MM model) can be presented in the following form:

$$q = Aq + f(q,p,z_R) \quad p = Hp + Tp^m + v(p,q,z_N) \tag{4}$$

where z_R and z_N are vectors of variables not appearing in the in-

put-output table, such as interest rates, money supply, or population. Note the "crossovers"; prices appear in the final demands and physical outputs appear in the price equations. We omit the t subscripts which should be understood on each matrix or vector. We have not included a dependence of the matrices on prices because that dependence has not been built into the present version of INTIMO. Although it would create very substantial empirical problems, there is no problem in principle or theory in doing so. Besides these equations, there are others which lack a sectoral dimension, such as those for collecting personal taxes or government accounting. These equations model economic aggregates mainly located in the institutional accounts.

The real side and the nominal side of the model are strictly integrated and this must be taken into consideration when the simulations in this study are used to evaluate the effect of Eastern enlargement of the EU on the Italian economy. Furthermore, the model incorporates a very advanced treatment of indirect taxes (see, Bardazzi, 1992; Bardazzi, Grassini e Longobardi, 1991; Bardazzi and Grassini, 1993; Bardazzi, 1996; Grassini, 2001); in particular, the model explicitly shows the impact of the tax burden on the (sectoral) production side and the corresponding impact in terms of revenues on the national budget. For a schematic overview of INTIMO and of the various behavioural equations that make up the f and v functions, see the *Appendix*.

1.5 *The Bilateral Trade Model (BTM)*

BTM is estimated using a bilateral database, WTDB, released by Statistics Canada and made available to the Inforum research center. This database provides high quality and up-to-date information on commodity trade, which covers world commodity trade and makes the bilateral model genuinely "global". The raw dataset has been submitted to two aggregations. One concerns the commodity classification where the large number of commodity flows have been reduced to a set of 120 trade flows. The second is geographical so that the number of trading countries has been reduced

from 200 to about 60, including the countries of the system of multisectoral models and other countries or groups of countries (for instance, the transitional economies of Eastern Europe, the OPEC countries, South Africa, other developing Asian countries, and major South American countries). The data allows us to construct bilateral trade flow matrices for 120 commodity groups. Each matrix has a number of rows and columns which are related to these 60 countries. If the BTM database is ready to accommodate this huge number of countries, the present working version is tailored to the existing country models in the system[12]. The structure of the data allows us to investigate the trade structure of other countries not yet included in the system of models and, hence, to tackle problems such as those considered in the present research.

The BTM works as follows. It takes the sectoral imports from each country model and allocates them to the exporting countries within the system by means of import share matrices computed from the trade flows matrices. Imports from a country by all its trading partners equal the country's exports. Hence, this model ensures that imports from a given country determine its exports. This balance is obtained for each commodity group.

Then, the key function of the model is to calculate the movement of 120 import-share matrices. First of all, imports by product, prices by product, and capital investment by industry are taken from the national models. Then the model allocates the imports of each country among supplying countries by means of the import share matrices mentioned above. In any one of these matrices, which we denote by S (for share), where the element S_{ijt} is the share of country i in the imports of country j of the product in question in year t (t is 0 in 1990). The equation in the BTM for this typical element is:

$$S_{ijt} = \beta_{ij0} * \left(\frac{P_{eit}}{P_{wjt}}\right)^{\beta_{ij1}} * \left(\frac{K_{eit}}{K_{wjt}}\right)^{\beta_{ij2}} * e^{\beta_{ij3} T_t}$$

[12] The United States, Mexico, Canada, Japan, South Korea, China, Taiwan, the UK, France, Germany, Italy, Spain, Austria, and Belgium, two areas comprised by the rest of the OECD countries and "the rest of the world".

where:

P_{eit} = the effective price of the good in question in country i (exporter) in year t, defined as a moving average of domestic market prices for the last three years;

P_{wjt} = the world price of the good in question as seen from country j (importer) in year t (see description below);

K_{eit} = an index of effective capital stock in the industry in question in country i in year t, defined as a moving average of the capital stock indices for the last three years;

K_{wjt} = an index of world average capital stock in the industry in question as seen from country j in year t (see description below);

T_t = Nyhus trend variable, set to zero in the base year, 1990.

β_{ij0}, β_{ij1}, β_{ij2}, β_{ij3} are estimated parameters.

The world price, P_{wjt}, is defined as a fixed-weighted average of effective prices in all exporting countries of the good in question in year t:

$$P_{wjt} = \Sigma_i S_{ij0} P_{eit} \qquad \Sigma_i S_{ij0} = 1$$

and the world average capital stock, K_{wjt}, is defined as a fixed-weighted average of capital stocks in all exporting countries of the sector in question in year t:

$$K_{wjt} = \Sigma_i S_{ij0} K_{eit}$$

The fixed weights in the definition of the world price and the world average capital stock, the S_{ij0}, are the trade shares for the base year 1990. The use of the fixed weights ensures that the share equation satisfies the "homogeneity" condition as suggested by the demand theory. For example, if all effective domestic prices, P_{eit}, are doubled, then a doubling of the world prices as seen by each importing country (or its import prices) leaves the price *ratio* unchanged[13].

[13] It should also be noted that in any forecast period each trade share must be non-negative, and the sum of shares from all sources in a given market must add up to 1 (i.e. $\Sigma_i S_{ij} = 1$ for all j and t). The non-negativity condition is automatically satisfied through the use of the logarithmic functional form, but the

The BTM work begins with the collection of prices, imports and capital investments, but we see that the share equations require capital stock data which are intentionally not collected from the country models, even if they are endogenously computed. Capital stock data made available by official national statistics are largely based on different criteria, and may not always be comparable (as required in the above equation). Consequently, we chose to compute capital stock directly from statistics taken from a "comparable" perpetual inventory model where comparability is mainly based on the use of a common depreciation rate. The idea behind a relative capital stock as an explanatory variable is that (new) investments contain embodied technical progress. A capital stock which contains more recent investments may render the industry more competitive[14]. In other words, an industry can buy market shares by investing. In order to stress this assumption, capital stock is computed from investments, and the depreciation rate is consequently chosen as a strategic variable[15].

Ma (1996), estimated equations for over 19,000 trade flows. The capital term entered equations accounting for some 60% of total trade flow. We should emphasize that the estimation uses time-series rather than cross-sectional data. Thus, the coefficients showing the effect of investment in Italy on Italian shares in the imports of other countries only reflect the Italian experience and

adding-up condition is not. A way must, therefore, be found to modify the forecast trade shares so that the adding-up condition is met. Estimates of all the n shares are made separately and subsequently adjusted to meet the adding-up condition. In this way, the forecast shares in each market will satisfy both the adding-up condition and the non-negativity condition. In scaling the forecast shares to meet the adding-up condition in each import market, those with the best fits will require less adjustment than those with poor fits. One way to tackle the problem is to use the standard errors of the estimated equations as weights. Thus, the adding-up condition in each import market is imposed by distributing the residual in proportion to the standard error of each estimated share equation.

[14] This approach clearly couples the argument: «Developments in productivity are the result of many different factors, but depend largely on investment performance, which determines the structure and size of the capital stock and enables the penetration of new technologies in the economy. A higher rate of investment growth raises the capital available per worker and thereby — *ceteris paribus* — labour productivity. A high rate of innovation in a context of strong investment growth increases also the quality of the capital stock» (EUROPEAN COMMISSION, 2002).

[15] At present, it is equal to 8%.

is not based on, for example, the effects of German investment on Germany's exports. Although the procedure described above may appear rather mechanical due to the treatment of the large number of equations involved, we wish to stress that the model is not treated like a "black box". Shares different from zero are examined individually for their plausibility throughout the sample period together with the routine forecast horizon. This procedure is carried out annually in order to anticipate any mis-functioning on the part of the model.

2. - Simulation Scenarios for EU Enlargement

A baseline scenario has been outlined which assumes exogenous variables to provide a feasible path for the future economic performance of the domestic economy without EU enlargement. Two large sets of simulation scenarios have been designed for our research. With the first set, we have investigated the impact of enlargement on an EU member country with the assumption of a higher growth rate within the applicant countries due to the persisting effects of the Europe Agreements. In this first set of simulations, we do not include any change of prices due to the removal of trade barriers. Thus the economic effects are due both to changes in demand and to an increase in CC imports which will mean an increase in Italian exports. Therefore, for simplicity's sake, we can refer to this first group of simulations — including three different alternatives as explained below — as the CC growth effect scenarios. After this first round of simulations, some conclusions are drawn and additional elements are included in our analysis. With the second set of simulation scenarios, we have investigated the removal of tariff and non tariff barriers to allow the completion of a free trade area among the EU member countries and the applicants. This second set is labelled as the *removal of trade barrier scenarios* and it allows us to fully investigate the impact of the main economic changes implied by the enlargement process.

All simulations span a period of ten years (2001-2010) with year-by-year results.

2.1 *The "Baseline" Scenario*

Without enlargement, the CC's GDP growth is assumed to follow the average growth rate of the other countries in the system. This assumption is justified by arguing that the CC economic integration supported and assisted by the EU — on driving the applicants along their transition towards a market economic structure — has already produced benefits in terms of a higher GDP growth rate. In other words, in the absence of institutional and economic EU supports, the CC "catching up" process will miss that stimulus which fosters their growth on levels higher than those of the EU Member States.

As explained above, the Bilateral Trade Model forecasts bilateral trade flows by 14 trading partners and two regions covering the rest of the world. Each country's model forecasts sectoral imports and domestic prices. Given each country's imports of a given commodity, BTM decides from whom that commodity will be imported, based on relative prices between countries, and relative growth rates of capital stock for the commodity between countries. After BTM has solved, it provides each national model with forecasts of exports and average foreign prices which are then treated as exogenous assumptions for that model. Hence, for an individual country model of the INFORUM international system, the export projection from BTM is given. As for domestic prices forecasted by the national models and used in BTM, these are adjusted by assumed exchange rates to produce indexes of effective prices. Industry-specific trade-weighted averages of these country prices are then taken as the prices of the two remaining regions (namely, "other OECD" and "the rest of the world"). Since all CC fall into one or other of these two regions, the basic assumption of the baseline is that these countries have "average" prices relative to those in countries in the model, where "average" is the average over the 14 trading partners. This rather neutral role of prices is not inconsistent with what has taken place in the recent past. When the CC began the transition from their past economic system towards a market-oriented economy ten years ago, there was an acute crisis in their former economic and

political system. After an immediate downward plunge, the recovery was characterized by GDP rates of growth higher than those in EU countries. The CC in their transition process immediately aimed at a close economic integration with Western Europe. The countries with the best economic performance took reform seriously and were supported by the EU Commission. Despite the good performance in GDP growth, the depth of the structural changes produced disequilibria that led to high rates of inflation. Present and anticipated inflation would be likely to damage the competitiveness of these countries were it not offset by a drop in the value of their currencies. We assume that this drop will cancel the rise in inflation so that the effective prices of imports from these countries will be about average for the countries in the BTM.

As for Italian government expediture, we have assumed that the *Stability and Growth Pact*, which imposes budgetary discipline and improvement on the budgetary procedure, will force national governments to limit their expenditure to a growht rate approximately equal to, or slightly below, that expected for GDP. Considering the volume of the Italian public debt, a low profile growth in government expenditure may be realistic. In the present scenario as well as in the other scenarios designed in this paper, we assume a constant rate of growth of real government expenditure.

The model includes a well-elaborated Demographic Projections Model (DPM). The role played by DPM is to produce projections of population by age and gender (Bardazzi, 2000). As with any other demographic model, DPM is tailored to generate medium to long-term projections. DPM relies upon scenarios concerning fertility rates by age, mortality rates from one age cohort to the next, and net immigration by age and gender. The hypothesis regarding net immigration is the most unpredictable of the components of population projections. The working assumption employed here is designed by ISTAT (Italian Statistical Office) and based on the past behaviour of migration flows: this hypothesis does not take into account other potential factors that may heavily influence future migrations such as the enlargement of EU labour market to Eastern countries. Indeed, the accession

of the CC to the EU is likely to have a significant impact on the conditions of migration. Not surprisingly, a debate on the consequences of potential migration has provoked the fear in many countries that the increase in EU population due to Eastern labour flows may lead to a deterioration of the labour-market position of the local workforce and to wage reduction and job losses. These concerns are particularly acute in countries which are likely to be net recipients of migratory flows, such as Germany and Austria[16]. In spite of the central role played by migration in the negotiations on Eastern enlargement, migration research suggests that the overall impact of enlargement on the EU15 labour market will be limited and that migratory flows will be concentrated in specific Member States. Moreover, demographic projections for CC present similar characteristics with those of most Western countries, that is, population decline and population ageing. If these projections are confirmed in the future, applicants will no longer have a positive demographic surplus export[17]. In addition, the economic situation of candidate countries is expected to improve thus reducing the incentive to emigrate. Finally, in the past Italy has not been a migratory pole for Eastern migrants, given its geographical location and prevailing economic conditions, and there is little reason to believe that this framework will change dramatically in the near future. Therefore, we have not assumed a change of migration flows in the simulation scenarios. This decision is based on the hypothesis that any potential variation in the number of migrants will be so low as to leave the labour market, and the economy as a whole, largely intact.

Finally, it is assumed that the exchange rates among the key currencies in the baseline as well as in the other scenarios will not vary much over time. It is expected that the Euro/US$ exchange rate will rise steadily from the present 0.90 to 1.00 by 2010. This

[16] As argued by EUROPEAN INTEGRATION CONSORTIUM EIC (2000), regions bordering the CC may be expected to take the bulk of post-enlargement migration. For a recent report on migration in Central and Eastern Europe, see OECD (2001).

[17] For an analysis of past migration flows between the CC and Italy and some comments on projections following enlargement as in EUROPEAN INTEGRATION CONSORTIUM EIC (2000), see GRASSINI M. *et* AL. (2001).

is based on the widely held view that the Euro is undervalued. The Euro/Pound *ratio* remains constant at 0.630. It is expected that the UK will monitor this rate closely and try to maintain it rather than attempting to maintain the Pound/US$ exchange rate. The Euro/Yen *ratio* rises from 110 to 117 which indicates a slight but progressive weakening of the Japanese currency.

2.2 *The First Scenario: Italy Versus the Candidate Countries*

The first group of simulation scenarios (CC growth effect scenarios) does not include any change of prices due to the reduction of trade barriers. In all three alternative scenarios of this group, we assume that EU enlargement takes place and that the improvement of economic integration will result in an increase in GDP rates of growth of about 2% annually with respect to the baseline for the Candidate Countries. This is a widespread assumption which makes our results easily comparable with those of other studies. In fact, as recently explained by the President of the European Commission, Romano Prodi, «depending on the degree of structural reform undertaken, enlargement-induced additional growth for the new members ranges from 1,4% to 2.7%» (Prodi, 2002)[18]. Although market integration between the EU and CC has taken place already through the Europe Agreements, full membership of the EU will mean several important further steps for the CC. Besides the removal of all remaining trade tariffs, which will be considered later on in the paper, accession will extend the single market to the CC. This will mean that the processes and reforms undertaken since the transition began will be deepened further, with trade and capital movements enhancing the integration process and with EU structural and social fund transfers contributing to pro-growth policies.

[18] Applied studies to this subject may differ in their assumptions about expected growth for CC after accession. Our hypothesis of a growth rate of 2% higher than the EU15 is somewhat in the middle between a more conservative assumption of about 1.5% above the no enlargement scenario as in BALDWIN R.E. *et* AL. (1997), and a more optimistic scenario of about 2.5% more than the baseline as in CEC-ECFIN (2001).

Since we do not have models for the CC, nothing can be said about the shifts in the composition of their final demand. On the resource side, however, we assume that imports will grow as rapidly as GDP (Grassini, 2002), so that the resource structure remains unchanged. Higher levels of imports from the CC will balance with higher exports for the countries in the model system. The rapid growth of the applicant countries in terms of GDP should be considered an appropriate assumption and EU enlargement clearly assumes that economic integration will also result in the development of the newcomers' economies in line with the EU prosperity level, which means a faster GDP rate of growth for over another decade.

This first alternative scenario — "Italy versus CC" — only considers the direct effect of the CC increase in imports on the Italian economy in terms of Italian exports to these countries. In other words, given the increase in Italian exports due to the increase in CC demand, *the Italian model is run alone*. No account is taken of the effect of the enlargement on other economies. We are fully aware that this is a "purely academic case"[19] because it is clear that the impact for each of the EU countries depends on the European market as a whole. This scenario is quickly overcome in the next Section.

2.3 *The Second Scenario: EU Versus the Candidate Countries*

This scenario considers the impact of the increase in CC imports on the export structure of all models in the system. *The model system, including BTM and country-specific models, is run*. In this case, the effect of the growth in exports to the Central and Eastern European countries will affect every model in the system. Each country will be affected by the changes in the outputs, and

[19] We thank an anonymous referee for having so defined this scenario. However, in order to make our results comparable with other studies we have been "forced" to include such simulation in our work. In fact, most of these studies are founded on such scenario and do not evaluate the impact on foreign trade competitiveness excluding price effects (i.e. KEUSCHNIGG C. - KOHLER W., 1999).

therefore imports, of every other country. In this case, Italian exports will be determined by changes in demand for imports by all the countries in the system. Basically, in the first scenario the Italian model runs alone, whereas in the second scenario it is run together with is most important trading partners.

2.4 *The Third Scenario: Specializing the Foreign Demand of the Candidates Countries*

In the 1990s, the CC overcome the deep crisis which occurred after the crash of the socialist economies. During this decade, the trade between EU and these countries increased as the "catching up" of the applicants started[20]. With the transition a positive trend began; the import-export composition was concentrated on a small group of commodities[21]. During the transition, these commodities have maintained and even increased their importance in trade with the EU countries, accounting for about 60% of the total commodity trade[22]. The most important categories for CC's international trade are: *a*) Machinery and mechanical appliances; *b*) Electrical machinery and equipment; and *c*) Motor Vehicles and vehicle parts[23]. Since this specialization persisted during a period of restructuring towards market-oriented economies, in this scenario we will assume that this trend will continue in the near future, that is, over the time span of the present study. Indeed, this specialization may well be the result of the good use that applicants have made of their negotiations with the EU and programs such as PHARE. Other direct advantages will be generated by their access to the Structural Funds; indirect advantages will come from FDI flows which are expected to

[20] The statistical evidence of this structural change is extensively analysed in LANDESMANN M.A. - STEHRER R. (2002). For a reference to the trade flows between the Candidate Countries and Italy, see GRASSINI M. (2002).

[21] BALDONE S. *et* AL. (1997) pointed out this trade specialization pattern emerging in the early 1990s.

[22] See GRASSINI M. *et* AL. (2001), GRASSINI M. (2002).

[23] For detailed data on import/export shares between Italy and the CC, see GRASSINI M. *et* AL. (2001), pp. 19.

remain substantial as the policy of the CC continues to focus on integration with the countries of Western Europe. All these elements generate investments. Commodity bundles listed above relate to equipment or its production. The concentration in trade may therefore be related to the accumulation process. Hence, this scenario may be appropriate to investigate the effects of the CC import structural changes on the Italian economic structure and on that of the other countries.

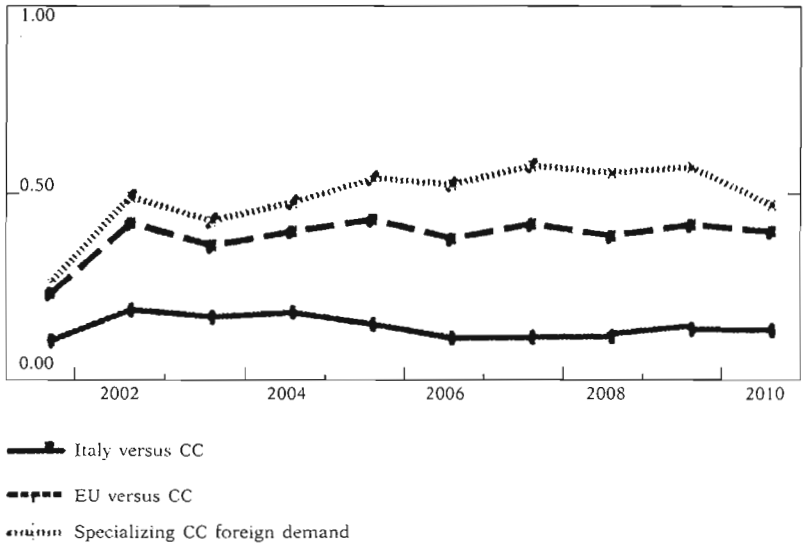
This group of three scenarios (CC growth effect scenarios) is designed as a first step in investigating the effects of EU enlargement. The difference between the first two scenarios is meant to highlight the relevance of the "indirect effects" or "second-order effects" of enlargement on a single member country, namely Italy. As already noted, European enlargement affects each Member States directly and indirectly, irrespective of its geographical distance from any given Candidate Country. In other words, where the gravity model approach tends to weaken the bilateral link as the distance increases, we argue that the indirect effects may be even more important than the direct ones. San Marino may have no bilateral link with Hungary; but the links between Hungary and Germany and between Germany and Italy may link San Marino with Hungary in unexpected ways. This is an extreme case where only the indirect effects matter. As our results will show in a more likely case, such as the bilateral links among EU15 economies, the interaction of direct and indirect influences amplifies the impact of a shock such as the Eastern enlargement. Finally, the third scenario — to be compared with the second — allows us to see the significance, if any, of the change in the import structure of the Central and Eastern European countries.

2.5 *Some Important Insights from the First Simulations*

The GDP growth rates for the three scenarios are plotted in Graph 1 as differences from the baseline scenario. In the scenario "Italy versus CC", the increase in GDP compared to the base-

GRAPH 1

GDP RATES OF GROWTH
(DIFFERENCES FROM THE BASELINE)



line is very modest and falls along the simulation interval. In the second scenario "EU versus CC", the increase in Italian GDP is roughly twice the previous one at the beginning of the simulation interval; the increase in GDP develops smoothly up to a maximum at the end of the period. In the third scenario "Specialising CC Foreign Demand", where the CC are only assumed to increase their imports for those commodities with the largest shares and covering about 60% of total imports, the increase in Italian GDP growth rate is close to 0.5%.

In the product account side, exports and imports reveal the highest difference with respect to the baseline scenario. In particular, taking the third scenario, there is a divergence of over 1% from the baseline for the increase in exports. The increase in imports is much lower, at about 0,6%. The trade balance produces an increase in GDP; consequently, the accelerator pushes invest-

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[23] For detailed data on import/export shares between Italy and the CC, see GRASSINI M. *et* AL. (2001), pp. 19.

ments up and the increase in disposable household income — which results in an increase in household consumption — adds another stimulus to GDP growth.

Given the baseline, these results allow us to draw some preliminary but important conclusions. We have seen that the differences in the scenarios have a clear impact on the results for the simulation. In particular, the first scenario would cause an increase in the GDP growth rate of about 0.15% for the entire simulation period. The second scenario, which also takes into account the indirect effects of the EU enlargement, generates an increase of GDP close to 0.4% for the period 2000-2010. The third scenario pushes this increase up by another 0.10%. Clearly, the first scenario demonstrates that a comparison of Italy versus the CC is not adequate. The second and the third scenarios provide evidence of the relevance of the detected trade specialization between Italy (but not only Italy) and the most important applicants. It is necessary to remind the reader that, in this set of simulations the magnitude of the impact on domestic prices is expected to be negligible because: *a*) the CC prices do not change in any scenario; and *b*) the increase in final demand is in fact very modest and possibly it will not sensibly affect the productivity which is — in this case — the main lever influencing the price formation. At the end of the first round of simulations, we then start to investigate the effect of the second set of simulation scenarios with respect to the third scenario (and, of course, to the baseline).

2.6 *The Second Set of Simulations: the Removal of Trade Barriers*[24]

This group of simulations is designed to evaluate the impact of a change in trade and non-trade barriers following EU enlargement to the East. In a model, this would mean linking the CC growth effects and trade specialization as assumed in the previous Section with a change in relative prices due to the removal of barriers.

[24] We thank Elisa Quinto and Alessandro Missale for their contributions to the design of the following scenario variables.

Under the Europe Agreements, custom tariffs on EU imports from the CC and on CC imports from the EU have been eliminated for practically all industrial goods with very few exceptions. On the other hand, custom tariffs are still imposed on agricultural products and fisheries both in the CC and in the EU. The structure of residual custom tariffs for agricultural products imposed by the EU on imports from the CC and by these countries on imports from EU have been estimated using data on custom duties to an 8-digit level of detail. To design this scenario, these custom duties for CC have been approximated by the import-weighted average of tariff rates set by the Czech Republic, Hungary and Poland[25]. These computed tariff rates are shown in Table 1.

Since the effects of the elimination of EU tariffs on CC products are equivalent to a reduction in import prices of the same percentage, we model such effects as a reduction in the relative prices of Italian imports in the import equation on the Bilateral Trade Model[26]. This allows us to evaluate the effects, at the sectoral level, of the removal of the remaining tariffs. It is worth no-

[25] First, we have calculated the unweighted average tariff rate on imports originating from the EU for each country at the 4-digit level (data is from the database of the EU available on: *www.mkaccdb.eu.int*). Then, for each of the three Candidate Countries the average tariff rates for the 24 agricultural sectors (2-digit sectors), have been computed as a weighted average of the 4-digit rates, using as weights the value of Italian exports to the country (data on Italian exports is from the COMEXT database) in question (see Table 1, first column). The structure by sector of Italian custom tariffs on products originating in the Czech Republic, Hungary and Poland has been computed using data on EU custom duties reported in the TARIC Consultation database (this database can be found at the web site *http://europa.eu.int/comm/taxation_customs/dds/cgi-bin/tarchap* of the European Commission or on *www.finanze.it* of the Italian Ministry of Finance). We have again used the above procedure. First, we have computed the average of custom tariffs at the 4-digit level from the detailed data at the level of 8-digits and, then, the weighted average rate per sector using data on Italian imports for the three countries under examination. In the case of volume duties we have computed total tariff revenues using the volume of Italian imports of the particular product from the COMEXT database and then constructed the *ad valorem*-equivalent tariff rate. The average tariff rates by sector are reported in the second column 2 of Table 1.

[26] More precisely, a reduction of the average tariff rate per sector from its actual level to zero is considered equivalent to a change in the relative price of imported goods for the corresponding sector.

TABLE 1

AVERAGE TARIFFS RATES ON ITALIAN TRADE WITH THE CZECH REPUBLIC, HUNGARY AND POLAND (PERCENTAGE VALUES)

Sectors	On exports to CZH-HU-POL	On imports from CZH-HU-POL
Unmilled cereals	36	21
Fresh fruits, vegetables	12	13
Other crops	3	6
Livestock	17	12
Fishery	5	9
Meat	32	21
Dairy products and eggs	24	64
Preserved fruits, vegetables	24	14
Preserved seafood	28	16
Vegetable and animal oils, fats	8	1
Grain mill products	18	31
Bakery products	24	16
Sugar	35	18
Cocoa, chocolate, etc	25	11
Food products n.e.c.	17	7
Prepared animal feeds	6	1
Alcoholic beverages	34	6
Non-alcoholic beverages	34	6
Tobacco products	31	29
Paints, varnishes, lacquers	1	1
Scrap, used, unclassified	1	0
Average on above sectors	20	14

Source: EU Market Access Database and TARIC Consultation.

ting that we do not consider the potential effects on Italian exports of the removal of tariffs by CC on products originating in Italy. Therefore, the potentially negative impact on Italian output from accession is likely to be overestimated by our simulation.

Non-Tariff Barriers (NTBs) such as: *a)* quantitative restrictions; *b)* price control measures; *c)* import licensing; *d)* different standards and *e)* other technical requirements and custom procedures are impediments to trade. It is commonly believed that the effects of the removal of NTBs should be substantial. Unfortunately, available information on NTBs is mostly qualitative and it is

difficult to translate it into a quantitative index useful for investigating the impact of NTBs on trade. This explains why it is not uncommon in the literature to model the effect of NTBs by relying on pure judgement. For instance, Baldwin, Francois and Portes (1997) estimate that the elimination of NTBs between the EU and CC would mean a 10% reduction in trade costs, that is equivalent to a 10% reduction in custom duties. Keuschnigg and Kohler (1999) follow the same approach, but opt for a more conservative 5%.

Although our analysis relies on the same kind of judgement as Baldwin, Francois and Portes (1997), our study is innovative in two respects. First, we provide both the estimates for two different scenarios in order to evaluate the sensitivity of trade flows and the results to these alternative hypotheses. Secondly, we take into account that the incidence of NTBs differs across sectors and distinguish between three different *ad valorem* equivalents of NTBs so as to develop the full potential of our sectoral model.

To evaluate the extent to which EU imports are subject to NTBs in the various sectors, we use "trade coverage *ratios*" for each EU sector. Coverage *ratios* are provided by Wang (2000) who uses information on NTBs indicators contained in the Trade Analysis and Information System (TRAINS) database of UNCTAD. TRAINS provides information for each Harmonized System item (6-digit level) on the presence of NTBs[27]. Depending on the corresponding "trade coverage *ratios*" we distinguish between three types of sectors, heavily protected, mildly protected, and unprotected by NTBs (Table 2).

[27] "Coverage *ratios*" for each (2-digit) sector are computed as the percentage of imports (per sector) that are covered by at least one of the following NTBs:
a) Tariff Measures (other than *ad valorem*) such as tariff quota and temporary duties;
b) Price Control Measures countering the damage caused by the application of unfair foreign trade practices;
c) Standards and Other Technical Requirements, including quality, safety, health and other regulations;
d) Automatic Licensing Measures;
e) Monopololistic Measures;
f) Quantity Control measures in EU-CC trade, however absent at present, being lifted by the Europe Agreements.

TABLE 2

NTBs COVERAGE *RATIOS* BY SECTORS

Heavily Protected Sectors	NTBs
2 Fruits and Vegetables	34
6 Cotton	53
7 Wool	27
12 Coal	52
18 Meat	19
27 Food Products n.e.c.	64
29 Alcoholic Beverages	20
32 Yarns and Threads	81
33 Cotton Fabrics	52
34 Other Textile Products	88
36 Wearing Apparel	88
49 Synthetic resins, man-made fibres	79
57 Product of coal	52
65 Basic iron and steel	10
67 Aluminium	50
Mildly Protected Sectors	
3 Other crops	1
10 Fishery	6
28 Prepared animal feed	3
35 Floor coverings	1
47 Basic chemicals	3
52 Soap and toiletries	2
53 Chemical products, n.e.c.	1
58 Tyres and tubes	1
59 Rubber products, n.e.c.	1
73 Metal containers	5
75 Hardware	5
93 Radio, TV, phonograph	1
94 Other telecomm. Equipment	1
106 Motor vehicles	2
107 Motorcycles and bicycles	2
108 Motor vehicle parts	2

Source: UNCTAD and WANG Q. (2000).

To estimate the impact of the reduction of the NTBs imposed by the EU we consider two scenarios:

1) A first conservative scenario (see Keuschnigg and Kohler, 1999) assumes that the removal of NTBs is equivalent to the abatement of a 10% tariff rate in the heavily affected sectors and to the abatement of a 5% tariff rate in the mildly affected sectors.

2) A second generous scenario (see Baldwin, Francois and Portes, 1997) assumes that all sectors are to a certain extent protected by NTBs, whose effect is on average equivalent to a 10% tariff rate. Such scenario assumes that the removal of NTBs is equivalent to the abatement of custom tariffs equivalent to 15, 10 and 5% in the heavily, mildly and (apparently) unprotected sectors, respectively.

3. - Selected Macroeconomic and Sectoral Results

In this Section, some results of the effects on the Italian economy due to the EU Eastern enlargement are presented. Because of the detailed analysis in terms of variables and economic sectors contained in our econometric model, a selection has been made and the presentation will begin with the most popular macroeconomic variables and will proceed to examine the disaggregated impacts through different sectors. However, we would like to remind the reader that, given the "bottom-up approach" of our model, the macroeconomic variables are determined as sums of the sectoral variables and not the other way around.

Household consumption response is important in understanding the domestic demand behaviour and some key features of the model. Household consumption is estimated using PADS[28] and population projections for the demand system have been made using the demographic projection model connected to INTIMO. In these equations, the household disposable income and the price term are the most important independent variables. Household disposable income is modelled in the accountant section of the multisectoral model as the sum of "resources" (such as compensation of employees, property income and transfer pay-

[28] This demand system has been designed by ALMON C. (1979) and (1996). The implementation of PADS for INTIMO is described in BARDAZZI R. - BARNABANI M. (2001).

ments) minus "uses" (such as taxes, social security contributions and transfers to others) of the Income Distribution Account for Households. For example, an increase in exports will generate an increase in employment which will in turn boost the compensation of employees and personal consumption expenditure. On the other hand, a price increase will reduce consumption, through a complex price term in the equation.

Turning to our results, Table 3 compares the baseline household consumption growth rates for selected items with two simulation scenarios: the specialization of CC (without changes in trade barriers), and the specialization of CC plus the removal of tariff and non-tariff barriers (according the generous hypothesis)[29]. We can observe an increase in the demand for some goods, such as food products, where the negative growth rate of the baseline reverts to a positive sign, at least for some years. This result may be explained by the reduction of tariffs and prices for some traditionally highly-protected items such as "bread and cereals", "meat", "dairy products", "fruit and vegetables", and "tobacco" (Table 4). We find the same effect, albeit less evident, for "clothing and footwear" and for "trasport" mainly due to the removal of non-tariff barriers. The household consumption of some services also increases: in this case, an income effect due to the rise of private disposable income prevails over a negligible price effect due to higher income elasticities for these items (Bardazzi and Barnabani, 2001). For example, the tendency towards an increased consumption of "housing" and "health" services due to population ageing was already apparent in the baseline scenario (Bardazzi, 2000) The household disposable income profile is shown in Table 5 for the baseline and the two alternative scenarios. As can be seen, households will benefit from enlargement in both nominal and real terms, even though the removal of custom barriers produces a de-

[29] For each sector, the first line shows the rate of growth from year 2003 to 2010; the second line shows the difference from the first line. For example, the total household consumption (TOTAL) growth rate in year 2006 is expected to be equal to 1.47; the "Specializing CC" scenario suggests a growth rate equal to 1.47+0.23, that is to say a growth rate of 1.7%, while the "Removal of barriers" scenario produces a growth rate of 1.63 (1.47+0.16). All the tables where results are presented as "deviations from base values" should be read along these lines.

TABLE 3

HOUSEHOLD CONSUMPTION, SELECTED ITEMS, RATES OF GROWTH*

Titles of Alternate Runs

Line 1: Baseline
Line 2: Specialising CC foreign demand
Line 3: Specialising CC foreign demand + Removal of trade barrier (generous scenario)
Alternatives are shown in deviations from base values.

	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10
Total	1.687	1.460	1.458	1.472	1.359	1.563	1.622	1.596
	0.209	0.210	0.228	0.234	0.251	0.230	0.226	0.178
	0.210	0.397	0.184	0.164	0.239	0.265	0.261	0.220
Food & Beverages	-0.190	-0.433	-0.404	-0.343	-0.429	-0.175	-0.100	-0.104
	0.209	0.211	0.230	0.238	0.256	0.232	0.227	0.169
	0.211	0.462	0.193	0.171	0.249	0.273	0.267	0.216
Clothing & Footwear	0.577	0.316	0.372	0.408	0.326	0.563	0.646	0.545
	0.200	0.198	0.218	0.227	0.245	0.222	0.224	0.177
	0.202	0.428	0.181	0.165	0.244	0.270	0.239	0.219
Housing	2.529	2.303	2.208	2.113	1.993	2.192	2.212	2.204
	0.229	0.215	0.224	0.235	0.258	0.239	0.242	0.193
	0.232	0.350	0.175	0.161	0.243	0.269	0.276	0.228
Furniture & Services	1.136	0.926	0.948	0.953	0.857	1.033	1.110	1.125
	0.210	0.210	0.228	0.237	0.256	0.233	0.229	0.179
	0.212	0.398	0.182	0.164	0.243	0.266	0.267	0.222
Health	3.191	2.904	2.879	2.733	2.577	2.702	2.743	2.664
	0.219	0.217	0.232	0.235	0.250	0.234	0.233	0.189
	0.220	0.353	0.185	0.161	0.234	0.264	0.265	0.225
Transports & Communications	2.604	2.337	2.379	2.302	2.152	2.283	2.321	2.237
	0.180	0.196	0.223	0.224	0.236	0.214	0.205	0.173
	0.179	0.410	0.185	0.156	0.226	0.249	0.238	0.211
Recreation & Education	2.411	2.160	2.150	2.150	2.066	2.255	2.282	2.236
	0.205	0.211	0.230	0.236	0.254	0.231	0.227	0.182
	0.207	0.379	0.183	0.164	0.243	0.266	0.261	0.222
Other Goods and Services	1.805	1.599	1.537	1.684	1.511	1.725	1.780	1.772
	0.213	0.215	0.235	0.237	0.251	0.231	0.224	0.168
	0.214	0.384	0.190	0.167	0.237	0.266	0.266	0.222

* These consumption categories are obtained by aggregation over the 40 consumption items considered in INTIMO. Here follows the list of these aggregated categories with the number of items from which they are obtained: Foods & Beverages (13), Clothing & Shoes (2), Housing (2), Furniture & Services (6), Health (4), Transports & Communications (4), Recreation & Education (4), Other Goods and Services (5).

TABLE 4

HOUSEHOLD CONSUMPTION DEFLATORS, SELECTED ITEMS, RATES OF GROWTH

Titles of Alternate Runs
Line 1: Baseline
Line 2: Specialising CC foreign demand
Line 3: Specialising CC foreign demand + Removal of trade barrier (generous scenario)
Alternatives are shown in deviations from base values.

	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10
Bread & Cereals	2.95	2.85	2.69	2.20	2.15	1.89	1.91	2.16
	0.09	0.04	0.02	0.01	0.01	0.08	0.07	0.11
	0.08	-0.52	-0.03	-0.06	-0.08	-0.04	0.04	0.06
Meat	3.47	3.54	3.33	2.79	2.83	2.65	2.60	2.54
	0.09	0.05	0.02	0.00	0.00	0.04	0.08	0.15
	0.09	-0.75	-0.03	-0.04	-0.03	0.00	0.03	0.10
Fish	3.48	3.68	3.51	2.95	3.04	2.87	2.83	2.85
	0.03	0.01	-0.01	-0.03	-0.04	-0.02	-0.01	0.04
	0.03	-0.19	-0.04	-0.04	-0.06	-0.06	-0.03	0.00
Dairy products	3.35	3.51	3.34	2.84	2.95	2.79	2.74	2.67
	0.02	0.02	-0.01	-0.03	-0.04	-0.02	0.01	0.09
	0.02	-0.51	-0.04	-0.03	-0.06	-0.03	-0.01	0.02
Fruits & Vegetables	3.45	3.65	3.48	2.93	3.02	2.85	2.81	2.82
	0.03	0.01	-0.02	-0.03	-0.04	-0.02	0.00	0.04
	0.03	-0.21	-0.04	-0.05	-0.06	-0.06	-0.03	0.00
Clothing	3.13	3.20	2.96	2.37	2.33	2.09	2.15	2.54
	0.10	0.10	0.07	0.05	0.04	0.07	0.05	0.05
	0.11	-0.29	0.02	-0.01	-0.04	-0.02	0.13	0.02
Shoes	2.94	2.80	2.72	2.30	2.36	2.30	2.27	2.45
	0.04	0.02	0.00	-0.01	-0.02	0.01	0.03	0.08
	0.05	-0.39	-0.01	-0.02	-0.03	-0.02	0.01	0.04
Furniture	2.98	2.93	2.80	2.34	2.32	2.31	2.31	2.41
	0.16	0.06	0.00	-0.01	-0.01	0.03	0.07	0.08
	0.17	-0.18	-0.01	-0.02	-0.05	-0.01	0.04	0.05
Medicines	3.38	3.18	3.08	2.70	2.65	2.52	2.48	2.39
	0.06	0.07	0.06	0.02	-0.01	0.03	0.05	0.08
	0.06	-0.27	0.05	0.00	-0.05	0.01	0.03	0.01
Auto & Cycles	2.89	2.41	2.20	1.88	1.86	1.81	1.88	2.01
	0.20	0.15	0.09	0.08	0.08	0.12	0.15	0.09
	0.20	-0.27	0.06	0.05	0.04	0.10	0.15	0.09

TABLE 5

HOUSEHOLD DISPOSABLE INCOME (1988 PRICES)

Titles of Alternate Runs
Line 1: Baseline
Line 2: Specialising CC foreign demand
Line 3: Specialising CC foreign demand + Removal of trade barrier (generous scenario)
Alternatives are shown in deviations from base values.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Household	789	826	863	899	937	973	1011	1050	1093	1137
disposable income	1	3	5	8	10	13	16	9	23	26
(Thousands	1	3	5	6	9	10	13	16	20	23
Euros)										

crease in disposable income with respect to the case of "Specialising CC Foreing Demand". We have, however, overestimated the negative effect on Italian output from enlargement, because we do not take the potentially positive effect on Italian exports of the removal of tariffs by CC on Italian commodities into account[30].

A summary of the main macroeconomic variables is shown in Table 6. Here the baseline scenario is compared with the overall simulation of "removal of trade barriers (generous scenario)". On the uses side, household consumption benefits from the removal of tariffs although the profile of its aggregate growth rate remains relatively unchanged. The results of Table 6 are obtained by summing up the sectoral estimates presented above: household consumption by category is more variegated, a characteristic which is lost in the aggregate figure. The highest difference between the baseline and the alternative scenario is for exports (with an increase of about 1% at the end of the simulation horizon), while the increase in imports is much lower (about 0.5%). The increase in sectoral outputs and the growth of imports and exports lead to an increase in GDP which is close to 0.5 at the end of the period. The removal of tariffs and NTBs has a distinctive impact

[30] For an evaluation of the impact on household welfare see GRASSINI M. *et* AL. (2001).

TABLE 6

PRODUCT ACCOUNT AND PRICE INDEXES

Titles of Alternate Runs

Line 1: Baseline
Line 2: Specialising CC foreign demand + Removal of trade barrier (generous scenario)
Alternatives are shown in deviations from base values.

	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10
Resources								
GDP	2.40	1.67	1.86	1.65	1.42	1.88	1.83	1.77
	0.38	0.39	0.32	0.30	0.48	0.51	0.53	0.43
Imports	6.10	4.58	4.83	4.09	3.60	4.54	4.42	4.39
	0.52	0.64	0.54	0.37	0.56	0.64	0.67	0.54
Uses								
Consumption	1.79	1.62	1.62	1.63	1.54	1.70	1.75	1.73
	0.16	0.31	0.14	0.13	0.19	0.21	0.20	0.17
Household consumption	1.69	1.46	1.46	1.47	1.36	1.56	1.62	1.60
	0.21	0.40	0.18	0.16	0.24	0.27	0.26	0.22
Government expenditure	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Investments	8.69	3.98	4.64	2.83	1.25	3.85	2.98	2.51
	0.56	0.61	0.29	-0.22	0.01	0.27	0.22	0.44
Inventory change	5.87	4.28	4.68	3.72	3.13	4.09	4.08	4.12
	0.82	0.86	0.68	0.60	0.98	1.00	1.04	0.73
Exports	2.77	2.79	3.14	3.16	3.37	3.41	3.68	3.87
	0.82	0.61	0.87	1.03	1.38	1.33	1.40	0.91
GDP deflator	3.19	3.38	3.36	2.85	2.87	2.76	2.82	2.82
	-0.04	-0.05	-0.03	-0.06	-0.11	-0.11	-0.12	-0.08
PCE deflator	2.71	2.64	2.65	2.37	2.37	2.29	2.33	2.34
	0.03	-0.24	0.02	-0.01	-0.04	-0.01	0.01	0.01

on prices: the GDP deflator growth rate decreases compared with the baseline. On the contray, the Personal Consumption Expenditure Deflator growth pattern is not affected greatly by the alternative scenario apart from the accession year 2004 when the reduction in price growth is about 0.24%. Although this effect on growth rates then vanishes altogether, the levels are permanently affected. These aggregate results clearly show that enlargement has a more significant effect, in terms of prices, on the total domestic product than on the bundle of goods and services for private consumption. This result is explained by the efficiency gains in terms of productivity combined with the reduction of prices for some imported commodities used in the production process.

At the macroeconomic level, the cumulative impact of the applicants' new prosperity (measured as an increase in import growth rates) on the Italian economy, and the removal of tariffs and non-tariff barriers is clearly positive. Despite the generally positive impact of enlargement, some sectors benefit more than others from the re-shaping of the EU production structure. Moreover, some are directly hit by a reduction of imports prices, such as, "agriculture" and "food industries", and suffer a clear, albeit temporary, drop in competitiveness. The disaggregated economic effects of enlargement on the Italian economy are shown in Table 7 where the "Removal of trade barriers in the "generous" scenario is compared with the baseline. If we examine sectoral performance, we find that "milk & dairy products" suffer a sharp increase in (foreign) competitiveness so that the performance in terms of total output is negative with respect to the baseline. The sector "other manufacturing industry" does not appear to have been largely affected by the enlargement and remains a highly dynamic sector. Other sectors tend to decelerate following the removal of trade barriers, but subsequently regain a good pace of growth.

Sectoral growth paths are not steady over time with accelerations, decelerations, recessions, and recoveries which lead to different "final" scores. Table 8 presents an evaluation of enlargement in two columns respectively headed "average", which gives — for the TOTAL economy — the percentages of the difference between the cumulated outputs of the "generous scenario" and the cumulated outputs of the "baseline" in the interval 2001-2010, and "2010" which reports percentages relative to the difference of total outputs in the last year examined. The sectoral output growth rates are measured as differences with respect to the TOTAL growth rate. The second column reveals our preferences for analysing the simulations by "level" rather than "rate of growth" of output; the rate of growth is fully satisfactory for short-term analysis where a single period rate of growth contains all the information about the path for the time interval, but permutations of a rate of growth time series may describe very different paths. The horizon of analysis in this study is a decade so that we are in the

TABLE 7

TOTAL OUTPUT RATES OF GROWTH

Titles of Alternate Runs

Line 1: Baseline
Line 2: Specialising CC foreign demand + Removal of trade barrier (generous scenario)
Alternatives are shown in deviations from base values.

	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10
Total	2.40	1.60	1.83	1.55	1.28	1.79	1.74	1.69
	0.45	0.44	0.37	0.35	0.58	0.62	0.65	0.51
1 Agricolture, forestry fishery	-0.24	-0.38	-0.48	-0.41	-0.41	-0.02	0.23	0.39
	0.28	0.09	-0.27	-0.13	0.31	0.31	0.34	0.30
4 Coal, oil, petroleum ref. products	3.68	1.85	1.46	3.17	4.37	4.95	5.05	4.74
	0.10	0.03	0.38	0.46	0.41	0.26	0.21	0.37
5 Electricity gas, water	1.89	1.36	1.44	1.13	0.93	1.33	1.32	1.32
	0.41	0.43	0.30	0.30	0.51	0.55	0.58	0.46
Manufacturing	2.16	1.34	1.64	1.08	0.81	1.36	1.41	1.50
	0.68	0.64	0.58	0.60	0.94	0.99	1.07	0.78
7 Primary metals	3.16	2.10	2.53	1.83	1.51	2.19	2.13	2.13
	0.81	0.50	0.46	0.52	1.02	1.08	1.14	0.97
8 Stone, clay & glass products	3.66	2.16	2.76	2.17	1.44	2.22	1.68	1.44
	0.30	0.26	0.16	0.01	0.25	0.32	0.30	0.38
9 Chemical products	0.71	0.51	0.65	0.38	0.22	0.44	0.54	0.49
	0.38	0.24	0.20	0.24	0.52	0.52	0.59	0.44
10 Metal products	3.87	1.67	2.08	1.04	0.55	1.58	1.31	1.33
	0.93	0.97	0.85	0.77	1.17	1.29	1.37	0.97
11 Agric. & indus. machinery	3.74	1.42	2.23	0.93	0.62	1.61	1.64	2.14
	1.47	1.34	1.60	1.56	2.07	2.22	2.34	1.88
12 Office, precision, opt. instruments	2.00	1.42	1.77	1.48	1.51	1.34	1.66	1.81
	0.65	0.72	0.64	0.62	0.82	0.82	0.90	0.49
13 Electrical goods	2.66	1.42	1.56	0.75	0.45	0.84	0.71	0.75
	1.15	1.28	1.25	1.30	1.59	1.61	1.69	1.02
14 Motor vehicles	0.10	0.55	0.17	-0.54	-1.25	-0.65	-0.69	-0.73
	1.35	1.28	1.23	1.42	2.14	2.19	2.45	1.58
15 Other transport equipment	3.52	3.92	4.52	4.13	3.96	3.98	4.46	5.02
	0.39	0.29	0.37	0.42	0.48	0.54	0.66	0.39
16 Meat & preserved meat	-0.41	-0.51	-0.46	-0.36	-0.41	-0.04	0.18	0.39
	0.22	0.40	-0.11	0.00	0.27	0.29	0.31	0.14
17 Milk & dairy products	0.81	0.63	0.66	0.76	0.67	0.92	1.02	1.10
	0.25	-0.60	-0.71	-0.46	0.23	0.26	0.26	0.26
18 Other foods	0.70	0.61	0.60	0.68	0.62	0.92	1.07	1.08
	0.21	0.39	-0.03	0.05	0.31	0.31	0.28	0.29
19 Alcohol & non alcoh. Beverages	1.59	1.30	1.11	1.20	1.11	1.43	1.50	1.53
	0.27	0.30	-0.02	0.06	0.30	0.32	0.34	0.33
20 Tobacco	-2.23	-2.67	-2.97	-3.21	-3.53	-3.48	-3.61	-3.84
	0.25	-0.44	-1.94	-1.26	0.00	0.03	0.03	-0.01
21 Textile & clothing	0.78	0.85	0.73	0.33	0.26	0.67	1.05	0.91
	0.15	0.10	0.03	0.06	0.34	0.29	0.36	0.40
22 Leather, shoes & footwear	-0.36	0.12	0.34	0.47	0.60	1.56	2.36	3.36
	0.17	0.48	0.32	0.35	0.37	0.39	0.55	-0.70
23 Timber, wooden product & furniture	3.46	2.26	2.73	2.00	1.39	1.84	1.70	1.52
	0.18	0.41	0.17	0.08	0.35	0.38	0.39	0.39

TABLE 7 *(cont.)*

TOTAL OUTPUT RATES OF GROWTH

	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10
24 Paper & printing products	1.52	1.14	1.30	1.01	0.91	1.19	1.36	1.43
	0.64	0.47	0.49	0.56	0.86	0.91	1.04	0.86
25 Plastic products & rubber	1.98	1.53	1.81	1.46	1.23	1.34	1.37	1.33
	0.81	0.75	0.77	0.83	1.11	1.09	1.21	0.75
26 Other manufacturing industry	2.73	3.64	4.46	4.83	5.27	5.51	5.94	6.43
	0.13	0.29	0.21	0.25	0.29	0.22	0.26	0.00
27 Building & construction	6.26	3.59	4.76	4.05	2.34	3.68	2.57	1.64
	0.19	0.10	0.03	-0.28	-0.15	0.03	-0.12	0.13
Services	2.09	1.53	1.65	1.46	1.24	1.61	1.60	1.57
	0.37	0.44	0.32	0.30	0.46	0.50	0.52	0.41
28 Recovery & repair services	0.15	-0.62	-0.67	-1.14	-1.56	-1.35	-1.47	-1.66
	0.48	0.50	0.41	0.42	0.64	0.69	0.73	0.58
29 Wholesale & retail trade	1.67	0.98	1.17	0.92	0.67	1.12	1.11	1.07
	0.40	0.50	0.36	0.33	0.52	0.56	0.59	0.47
30 Hotels & restaurants	2.28	2.02	1.90	2.04	1.84	2.13	2.15	2.14
	0.25	0.41	0.22	0.20	0.29	0.31	0.32	0.25
31 Inland transport services	2.83	1.94	2.23	1.90	1.60	2.16	2.09	2.04
	0.48	0.49	0.42	0.38	0.61	0.66	0.69	0.55
32 Sea & air transport services	0.71	0.54	0.64	0.59	0.57	0.71	0.76	0.80
	0.23	0.21	0.23	0.25	0.37	0.38	0.42	0.32
33 Auxiliary transport services	2.18	1.54	1.74	1.50	1.29	1.70	1.69	1.67
	0.41	0.45	0.38	0.36	0.55	0.59	0.62	0.49
34 Communication	3.26	2.79	2.85	2.68	2.51	2.78	2.78	2.74
	0.34	0.45	0.30	0.29	0.44	0.47	0.48	0.37
35 Banking & insurance	2.37	1.80	1.99	1.79	1.60	1.97	1.97	1.96
	0.42	0.42	0.38	0.37	0.57	0.61	0.64	0.50
36 Other private services	2.29	1.46	1.73	1.37	1.06	1.56	1.49	1.45
	0.49	0.48	0.43	0.41	0.64	0.68	0.72	0.56
37 Real estate	2.62	2.29	2.27	2.17	2.02	2.25	2.25	2.23
	0.26	0.36	0.21	0.19	0.28	0.31	0.32	0.26
38 Private education services	2.06	1.68	1.77	1.60	1.52	1.77	1.84	1.87
	0.41	0.48	0.37	0.36	0.52	0.54	0.57	0.41
39 Private health services	3.02	2.72	2.68	2.49	2.28	2.40	2.40	2.36
	0.23	0.31	0.19	0.16	0.23	0.26	0.27	0.23
40 Recreation & culture	1.77	1.51	1.53	1.53	1.44	1.70	1.73	1.75
	0.28	0.39	0.24	0.23	0.34	0.37	0.38	0.30
Services non-market	2.12	2.11	2.11	2.11	2.11	2.12	2.12	2.11
	0.01	0.02	0.01	0.01	0.01	0.02	0.02	0.01
41 General public services	1.84	1.84	2.04	2.08	0.21	2.31	2.48	2.62
	0.49	0.41	0.53	0.63	0.85	0.85	0.91	0.64
42 Public education	2.06	1.84	1.84	1.84	1.83	2.01	2.08	2.06
	0.22	0.37	0.18	0.16	0.24	0.26	0.26	0.22
43 Public health services	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44 Non-profit institutions	1.28	1.08	0.98	1.06	0.87	1.05	1.08	0.96
	0.22	0.40	0.18	0.16	0.24	0.27	0.26	0.22

presence of long-run simulations where the sequence of growth rates may well be significant; the percentages reporting the difference in total outputs for the last year sum up structural changes over time.

Back to Table 8, column "2010" gives a good picture of the effects of enlargement according to the scenarios considered. In particular, the real effects of enlargement are measured by cumulating the annual gains (or losses) in order to obtain a more accurate impression of the impact in a given year. Although a number of studies conclude that the impact of enlargement (on the EU-15 countries, groups of countries or single countries) is expected to be modest, we should stress that what is most important is its cumulative effect over time. In the case of Italy a relatively substantial expansion will affect some sectors ("agriculture and industrial machinery", "electrical goods", "motor vehicles", "metal products"), whilst others (mainly "food industries" and "tobacco") will lose their relative importance. A cumulative output rate of growht difference of over 5% (at the end of the 2000s) will indicate a sizeable sectoral impact.

The anticipated increase of exports generated by the demand of the CC in their process of "catching up" exerts a clear keynesian demand effect so that all industries benefit in varying degrees in terms of output growth. This is the overall result obtained from the first set of "CC growth effect scenarios". Clearly, the removal of tariffs and NTBs interferes with these results. In order to evaluate such interference, we must consider that the removal of trade barriers causes imports from the CC to be more competitive. These imports, which constitute part of the resources, will be used to feed intermediate and final consumption. If we examine import composition, we find that some imports tend to feed intermediate consumption whilst others figure directly in final consumption, such as for example, goods produced for household consumption. Hence, the effect of more competitive imports may vary across sectors.

Graphs 2, 3, and 4 may help to highlight the impact of the new prosperity of the CC represented in the "Specializing CC" scenario and the changes due to the removal of trade barriers in the

TABLE 8

GENEROUS SCENARIO VS. BASELINE-SECTORAL OUTPUT GROWTH RATES DIFFERENCE

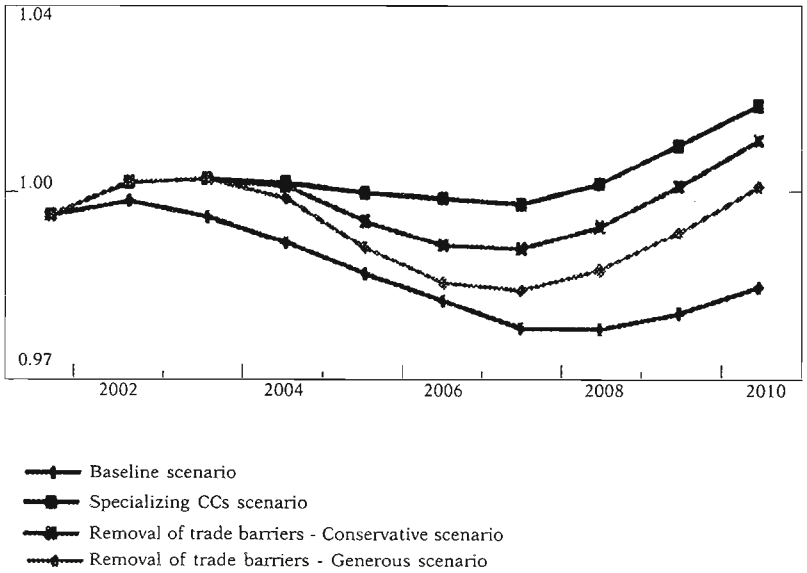
Sector	Average*	2010
Total	2.5	4.9
Sectoral differences from the Total		
Agriculture, forestry, fischery	-1.8	-3.3
Coal, oil, petroleum ref. products	-0.1	-1.2
Electricity, gas, water	-0.3	-0.7
Manufacturing	1.4	2.8
Primary metals	1.6	3.3
Stone, clay & glass products	-1.1	-2.4
Chemical products	-0.7	-0.9
Metal products	2.9	5.5
Agric. & indus. machinery	6.6	13.6
Office, precision, opt. instruments	1.4	2.2
Electrical goods	4.7	8.9
Motor vehicles	5.7	12.5
Other transport equipment	-0.5	-0.9
Meat & preserved meat	-1.5	-3.0
Milk & dairy products	-2.8	-5.1
Other foods	-1.4	-2.7
Alcohol & non alcoh. beverages	-1.4	-2.6
Tobacco	-3.5	-7.9
Textile & clothing	-1.6	-2.8
Leather, shoes & footwear	-1.1	-2.7
Timber, wooden product & furniture	-1.0	-2.0
Paper & printing products	0.9	2.3
Plastic products & rubber	2.3	4.3
Other manufacturing industry	-1.4	-3.0
Building & construction	-2.2	-4.7
Services	-0.4	-0.9
Recovery & repair services	0.1	0.5
Wholesale & retail trade	-0.2	-0.4
Hotels & restaurants	-1.1	-2.3
Inland transport services	0.2	0.4
Sea & air transport services	-1.1	-2.0
Auxiliary transport services	-0.1	-0.2
Communication	0.3	-0.9
Banking & insurance	-1.1	-0.1
Real estate	-0.2	0.5
Other private services	-1.3	-2.3
Private education services	-0.9	-0.5
Private health services	-2.4	-2.7
Recreation & culture	0.7	-1.9

* Average refer to the period 2001-2010.

"conservative" and "generous" scenarios. In each sector, the output index (2001=1) shows higher growth in the "Specializing CC" scenario confirming the positive benefit of the keynesian effect due to the increase in imports for the CC. For "agricolture, forestry, fishery" (Graph 2), the removal of trade barriers has a negative impact on sectoral performance in term of output, particularly when shifting from the "conservative" to the "generous" scenario. In "milk and dairy products" (Graph 3), the removal of trade barriers is even more severe; all the benefits of the expansion stimulated by higher exports are lost and sectoral output falls below the "baseline" track until the end of the period when it once again approaches the "baseline" level. On the contrary, the removal of trade barriers improves the sectoral performance for "leather, shoes and footwear" (Graph 4); in particular, the "conservative scenario" stimulates further growth while the "generous scenario" tends to un-

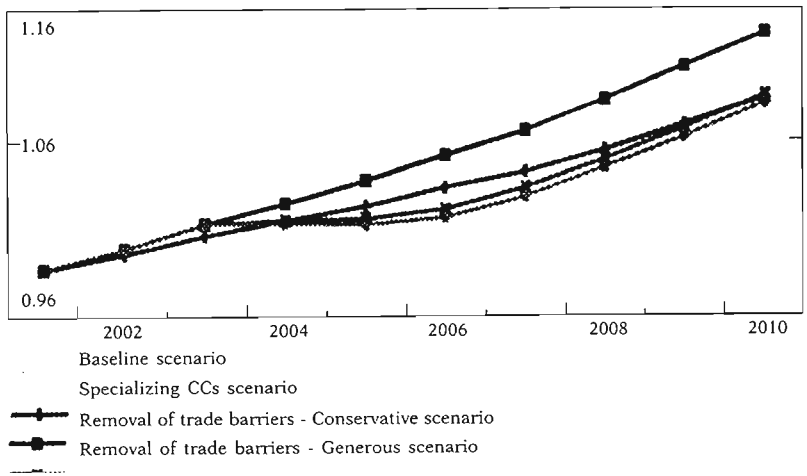
GRAPH 2

1 AGRICULTURE, FORESTRY, FISHERY
OUTPUT INDEX (2001=1)



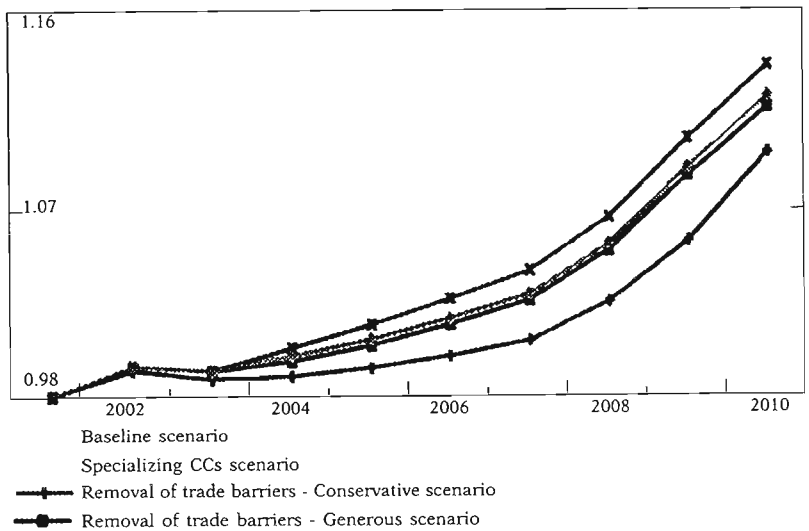
GRAPH 3

17 MILK & DAIRY PRODUCTS
OUTPUT INDEX (2001=1)



GRAPH 4

22 LEATHER, SHOES & FOOTWEAR
OUTPUT INDEX (2001=1)



dermine this stimulus. This means that according to the "conservative scenario" commodities with reduced import prices generally constitute intermediate consumption for this sector, whilst in the "generous scenario" the import price reduction is more likely to affect sectoral competition in final consumption products.

4. - Conclusions

The impact of European enlargement on Italy has been evaluated by dismantling the scenarios in order to calculate how Italy is affected by both the new prosperity of the applicants and the removal of existing trade barriers.

The effect of the applicants' new prosperity has been considered in terms of their increased imports from the EU and not in terms of the effect of the enlargement inside the CC economies. This is characteristic of all studies of enlargement viewed exclusively from one side, in this case, the Member States.

As regards the simulation results for the removal of tariffs and non-tariff barriers, two alternative scenarios have been formulated. In the case of non-tariff barriers it is impossible to measure the precise size of their mark-up on price formation. Two scenarios have been designed: one refers to generous effects in terms of Baldwin's hypothesis (Baldwin *et* Al., 1997) which assumes an overall reduction of 10%, and the other to a conservative hypothesis similar to that proposed by Keuschnigg and Kohler (1999).

Focussing on the Italian economy, the first conclusion reached in the study concerns the evaluation of the direct and indirect impact of the assumed increase in the applicant country's GDP growth rates. Since the econometric model of the Italian economy is a multisectoral macroeconomic model (as is every other model in the Inforum model system), we have used a detailed sectoral representation of the economy to measure the impact of the applicants demand for goods and services; namely, their import structure. Since the historical data on trade between the CC and the EU is concentrated on the import-export flows of a clearly defined number of commodities, we have investigated the effect of

this trade specialization on the performance of the Italian economy.

The simulation design has allowed us to compare the impact of the Italy-CC relationship with regard to trade with Italy and the impact on Italy obtained from the more significant impact of the EU15-CC trade. In the first case, we have two countries, Italy and the CC, and in the second case, we have two countries, EU15 and CC, with Italy constituting a single region of the EU. This second case has allowed us to measure the indirect effect of the Eastern European enlargement on Italy. Furthermore, there is a third case where the changing composition of the CC imports is considered. This experiment provides evidence that in the case of Italy, which is not on the Eastern EU border but is nevertheless quite near it, the indirect impact on the GDP rate of growth is even more important than the direct one. We can say that the effects of enlargement on the EU 15 as a whole may be even more important than the effect of direct trade which a single Member State has *vis à vis* the new entrants. Since the effect of the increase on exports induced by a growing demand for goods by the CC is preserved along the simulation period, we can see that the increase is doubled by the indirect effect and that the specialization in CC imports generates a further increase in the GDP rate of growth. This in turn means that the total increase amounts to a factor of approximately 2.6 with respect to that found in the case of Italy-CC.

The sectoral results of our study allow us to detect a group of "winners" represented by "agricultural and industrial machinery", "electrical goods", "motor vehicles", and "metal products" which show a remarkable performance with the output growth rates above the economy wide average, even more than 5%. The relative weight of some "winners" means that most of the sectors are driven below average; however, among them some "losers" may be clearly observed: mainly the food industry, "tabacco", and "building and construction". Furthermore, it is important to remember that the removal of trade barriers has been modelled as unilateral, namely only the Candidate Countries benefit from the reduction of their export prices. This has been done in order to emphasize the feared loss in price competitiveness of a Member

States foreign trade. Our results show that this loss is more than offset by the increase of foreign demand.

This result clearly demonstrates that the Eastern enlargement is not simply a question of boundaries. In particular, it is clear that — for countries such as Spain, Ireland and Portugal — the indirect effect of Eastern enlargement may be much more significant than the direct effect. Furthermore, the sectoral analysis of foreign trade — together with the sectoral evaluation of its impact — is crucial for understanding the effects of enlargement.

The importance of a sectoral representation of the economy becomes clearer when the removal of tariffs and non-tariff barriers, which mainly concern agriculture and food industry products, have been evaluated. Non-tariff barriers still apply and constitute the bulk of measures hampering international trade between the CC and the EU. Moreover, these measures are concentrated on particular products. For example, the international trade model used in this study examines information on 120 commodities; here, the non-tariff barriers — specifically singled out for simulating their removal — account for about 15% of the range of commodities considered by the model.

In terms of GDP, studies on the impact of Eastern enlargement on a single Member State or on the EU-15 generally conclude that the impact is modest, negligible, or not discernable (see, for example, Baldwin, Francois and Portes, 1997; CEC-ECFIN, 2001). We cannot confirm such conclusions given that they usually are based on analytical tools which are inappropriate for evaluating the sort of effects examined in this study. It should be noted that the process of enlargement will mean the "hauling" of the CC economies to the levels of prosperity of the EU15; the hauling is also supported by the CC processes of trade specialization and the removal of commodity-specific tariffs and trade barriers. This in turn requires a "mesoeconomic" approach where the sectoral representation of the economy may well help highlight the structural changes induced by these factors. The present study demonstrates that macrovariables such as GDP or "total output" may obscure changes in the structure of the economy which certainly merit policy-makers' attention.

APPENDIX

A Schematic Overview of INTIMO (INTerindustry Italian MOdel)

INTIMO is a Multisectoral Model (MM) based upon the accounting framework of the input-output table and the institutional accounts of Italy. This table has the intermediate consumption classified for 44 sectors: 40 sectors represent the private component of the economy; 4 sectors represent no-market sectors (3 Government and 1 non-profit). The peculiar representation of Government expenditure in the I/O table (as specified by international statistical standards) commands some changes which lead to the introduction of an extra sector labeled "Government wages"; this sector does not alter the basic accounting structure of the table and the behavior of the model and appears as the 45th sector of the I/O table.

TABLE 9

INTIMO REAL SIDE

Component	Sectors	Influences
Output by product sector	45	$q=Aq+f$
Personal consumption by expenditure categories	40	Disposable income Size distribution of income Change in disposable income Relative prices Age structure of the population Other demographic variables
Investment by investing industries	21	Output over the last three years Change in product output
Inventory change by product sector	27	Product output, inventory stocks
Imports by product sector	41	Import-share equations (*ratio* of sectoral imports to domestic demand)

TABLE 9 *(cont.)*

INTIMO REAL SIDE

Component	Sectors	Influences
		Foreign prices (supplied by the Bilateral Trade Model)/domestic prices "Nyhus time trend"
Exports by product sector		Supplied by the Bilateral Trade Model (BTM)
Labour productivity by product sector	40	Sectoral output Time trend
Employment	40	Labour productivity
Consumption and investment by product	45	Final demands by category are bridged to producing sectors
Government purchases by product sector		Exogenous

TABLE 10

INTIMO PRICE-INCOME SIDE

Component	Sectors	Influences
Prices by product sector	45	$p=pA+v$
Value added by product sector	45	Value added by industry distributed to products based on product-to-industry bridge
Wages		
Aggregate wage	1	Personal Consumption deflator Total output/employment
Wage index sectoral/aggregate	42	Rates of growht of employment Output Labour productivity Time trend

TABLE 10 *(cont.)*

INTIMO PRICE-INCOME SIDE

Component	Sectors	Influences
Social securities	45	Exogenous
Gross operating surplus	42	Sectoral prices Change in sectoral output Sectoral foreign prices for non-sheltered sectors Time trend
Indirect taxes		Output Prices Exogenous tax rates
Government subsidies		Exogenous

TABLE 11

INTIMO MACROECONOMIC AND OTHER VARIABLES

Component	Influences
Population	Supplied by Demographic Projection Model (DPM)
Labour force	Supplied by Demographic Projection Model (DPM)
Tax policy	Exogenous
Government expenditures	Exogenous
Price of crude oil	Exogenous: supplied by BTM
Savings rate	Exogenous: INTIMO assumption constant to its average in the 90's
Bridge tables: Intermediate coefficients Personal consumption	 Across-the-row-trends Exogenous: supplied at the base year by the Italian Statistical Office
Investments	Exogenous: supplied at the base year by the Italian Statistical Office

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L'utilizzo e l'*outsourcing* dei servizi alle imprese nei distretti industriali

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Questo articolo discute l'utilizzo e l'esternalizzazione dei servizi alla produzione da parte delle imprese dei distretti industriali, avvalendosi dei dati tratti da un'indagine dalla Banca d'Italia. I principali risultati sono i seguenti: (i) *le aziende* leader *fanno ampio uso dei servizi di* marketing*;* (ii) *le imprese che affrontano una domanda instabile sono meno integrate; (iii) l'esternalizzazione dei servizi a fornitori insediati fuori dai distretti industriali è frequente e consente di arricchire le catene del valore distrettuali con le risorse immateriali disponibili nelle città;* (iv) *questa modalità di esternalizzazione è facilitata dall'informatica.*

This paper deals with the use and outsourcing of production services by firms located in Italian industrial districts, using a survey from the Bank of Italy. The main results are the following: (i) *Firms playing a leading role towards the other firms in the district make more use of marketing services;* (ii) *There is a positive association between a low integration of activities inside the firm and a less stable demand for its own products;* (iii) *Outsourcing outside the industrial district allows firms to enrich their value chain with some intangible assets produced in the largest cities;* (iv) *Information technology also permits easier contacts with other firms not located in the same district.* [JEL Code: D23, L22, L6, L8].

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