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The Impact of the European Single Market on the Austrian Economy under Alternative Assumptions about Global and National Policy Reactions

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***Abstract*—**In this paper, we explore the macroeconomic effects of the European Single Market on Austria by simulating the McKibbin-Sachs Global Model. Global interdependences and the impact of long-run effects on short-run adjustments are taken into account. We study the sensitivity of the results with respect to different assumptions concerning monetary and fiscal policies for the countries and regions of the world economy. The consequences of different assumptions about budgetary policies in Austria are also investigated. The simulation results are contrasted with ex-post evaluations of the actual impact of Austria's membership in the Single Market. As a result, it can be concluded that the Austrian participation in the European Single Market entails considerable long-run gains for the Austrian economy with nearly no adverse side-effects on any macroeconomic target variable.

***Keywords*—**Macroeconomics, European Union, simulation, sensitivity analysis.

I. Introduction

FOLLOWING the Cecchini Report [5], several studies investigated the implications of closer economic integration through the European Single Market for aggregate output and other macroeconomic variables in different European countries. Many of these studies used macroeconometric models to show the channels through which the productivity shock of "Europe 1993" might be transmitted to target variables of national economic policies, such as the rates of economic growth, of unemployment and of inflation. As Austria was the first of the previous EFTA countries which applied for membership in the EU, looking at such studies can be informative also for countries now still preparing for accession to the Union, such as the South-Eastern European countries.

Simulations of macroeconomic effects of an Austrian participation in the European Single Market were performed by the Austrian Institute of Economic Research (WIFO), using its macroeconometric model [1], [2]. Although the use of such a model can give rather detailed empirical results concerning quantitative implications of the Single Market shock for a large number of economic variables, this approach has the drawback of not being able to incorporate all the global implications of an event like becoming a member of the EU. As there might be important macroeconomic spillovers of closer integration in Europe to the world economy, quantitative estimates of the effects on a country like Austria which neglect these global feedbacks might be biased. Moreover, econometric models inevitably are based on numerous ad-hoc assumptions and are better suited to predict short-run dynamics than long-run effects. As the creation of the European Single Market is a typical example of a shock affecting the economy in the long run, issues like the long-run stability and sustainability of the effects should be taken into account, too, in particular since the long-run impacts of the move towards the Single Market may have important consequences for assessing its short-run effects. Therefore alternative evaluations of the impacts of the European Single Market on Austria taking into account global and long-run effects can be useful to complement the results obtained by using macroeconometric models.

In this paper, we extend previous results [3] and use a version of the McKibbin-Sachs Global Model to study the effects of the European Single Market on the world economy and particularly on Austria under alternative assumptions about policy reactions in Austria and the rest of the world. A brief overview of the model is given in Section II. Sections III and IV describe the simulation experiments performed with the model, designed to give quantitative estimates for the response of the Austrian economy to the creation of the European Single Market with and without an Austrian membership in the EU. The results of several alternative scenarios are described for the global policy scenarios (Section III) and for Austria policy scenarios (Section IV). Here, particular emphasis is given to the reactions of fiscal policies in Austria. It is shown that the impacts of the creation of the EU Single Market depend heavily on whether Austria participates directly in the Single Market and – to a lesser extent – on the conduct of Austrian fiscal policies. Finally, Section V puts the results into the context of more recent debates about the size of the gains from integration in Europe and gives some preliminary conclusions.

II. The McKibbin-Sachs Global Model

The McKibbin-Sachs Global Model is a dynamic general-equilibrium model of a multiregion world economy. It is based on microeconomic foundations by assuming that economic agents maximize intertemporal objective functions. In contrast

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to computable general-equilibrium models, individual countries' economies are not disaggregated into several sectors; however, dynamic relations are explicitly taken into account. The model exhibits a mixture of classical and Keynesian properties: expectations are assumed to be formed in a rational way, but various rigidities are taken into account by allowing for deviations from fully optimizing behavior. In particular, nominal wages are assumed to adjust slowly in the major industrial economies; due to this wage stickiness, extended periods of unemployment can be present in these economies. Nevertheless, the model solves for a full intertemporal equilibrium in which agents have rational expectations of future variables. As a model with theoretically constrained long-run properties, it can display how the short-run adjustment of the world economy to exogenous shocks depends upon the long-run adjustment.

The theoretical structure of the model as well as a listing of its equations is given in [4]; here we point out only some of its theoretical features which make it particularly well suited for analyzing adjustments to shocks such as the emergence of the European Single Market. First, the long run of the world economy is well determined, being driven by a neoclassical growth model, with exogenous technical progress and population growth. In the short run, on the other hand, the dynamics of the global economy towards this growth path is determined both by Keynesian rigidities in the goods and labor markets and by optimal decisions, conditional on expected future paths of the world economy. Thus, the model takes into account both theoretical considerations of long-run effects of shocks and short-run dynamics towards these long-run outcomes based on historical experience, with expectations formation providing a link between the long-run outcome and the short-run adjustment.

Secondly, the McKibbin-Sachs Global Model is a fully specified dynamic general-equilibrium model incorporating both the demand and the supply sides of the major industrial economies. Stock-flow relations are carefully observed, and intertemporal budget constraints are imposed. For instance, investment leads to physical capital accumulation, fiscal deficits lead to the accumulation of government debt, and current-account deficits lead to the accumulation of foreign claims against domestic production. Intertemporal budget constraints and forward-looking expectations require that all outstanding stocks of assets must be ultimately serviced. Underlying growth of Harrod-neutral productivity plus growth in the labor force is assumed to be 3 percent for each region. Due to the long-run properties of the model, the world economy in the model settles down to the 3 percent steady-state growth path after any set of initial disturbances.

Thirdly, asset markets are efficient as asset prices are determined by intertemporal arbitrage conditions and rational expectations. Asset prices are tied down by the imposition of intertemporal budget constraints. The long-run behavior of the model depends on stock equilibrium rather than flow equilibrium. Asset prices stabilize in real terms, once desired ratios of asset stocks to GDP are reached. The short run of the model behaves in a similar way as the basic Mundell-Fleming model under flexible exchange rates and high capital mobility; however, the future paths of the world economy are important in the short run because of the forward-looking behavior in asset and goods markets. For instance, the assumptions of perfectly flexible asset prices and wage stickiness give exchange rate overshooting. Prices in share markets and markets for short and long bonds in the industrial regions are determined by intertemporal arbitrage relations and by long-run sustainability conditions on fiscal deficits and current-account positions. The assumptions of rational expectations in financial markets and of partially forward-looking behavior in real spending decisions allow for incorporation of the effects of anticipated policy changes. As a consequence, every simulation requires that the entire future sequence of anticipated policies (in practice, forty-year paths of policy variables) must be specified.

Finally, the supply side of the model is specified in an internally consistent manner. Factor input decisions are based in part on intertemporal profit maximization by firms. Labor and intermediate inputs are determined to maximize short-run profits, given a stock of capital that is fixed within each period and adjusted according to a Tobin's q-model of investment, where Tobin's q evolves according to a rational-expectations forecast of future after-tax profitability. The wage-price dynamics, on the other hand, is specified on the basis of empirical evidence concerning differences in the wage-price processes in the United States and Europe on the one hand and Japan on the other resulting in different degrees of wage and price stickiness in these regions.

The version of the McKibbin-Sachs Global Model used in this paper, called MSGR34, consists of models of the following countries and regions: United States, Japan, Germany, United Kingdom, France, Italy, Austria, the rest of the Euro Area (REA), the rest of the OECD (ROECD), non-oil developing countries, oil-exporting countries, and eastern European economies. For the latter three regions, only the foreign trade and external financial aspects are modeled, whereas the industrial countries and regions are fully modeled with an internal macroeconomic structure. Although the basic theoretical structure for all industrial regions is the same, institutional differences are taken into account, especially in modeling labor markets. The Euro Area and the exchange rate arrangements of the rest of Europe are modeled by assuming the EMS-II to be a DM-zone, which is relevant for the transmission of shocks in Europe to the rest of the world.

In contrast to macroeconometric world models, the McKibbin-Sachs Global Model is fitted to macroeconomic data by a mix of calibration techniques for computable general-equilibrium models and econometric time-series estimates. Behavioral parameters taken from econometric studies and data for macro aggregates were combined with steady-state relations in the model to generate other data. The year for which actual data were replicated is not regarded as representing a steady state of the model but a point on the stable adjustment path towards the steady state, hence not all steady-state relations are assumed to hold for that year. The model is solved in linearized form, with the linearization

taking place at a point in time instead of along some reference path. Experiments with an earlier version of the model have shown that the properties of the full nonlinear model correspond closely to those of the linearized version. Ex-post forecasts have also shown that the McKibbin-Sachs Global Model gives a reasonably good account for the global experience of the past decades, justifying its use for predicting and simulating future events.

III. Simulations of Global Scenarios

In 1985, the Commission of the European Community proposed to complete the European Single Market by the end of 1992. A great number of measures were envisaged; most but not all of them were enacted in the member countries of the EU in the meantime. The main impact of the Single Market shall be the removal of existing barriers to trade in goods and services and to labor and capital movements within the EU. Public support for these measures was greatly enhanced by studies giving detailed assessments of the consequences of the Single Market for growth and welfare in Europe, most notably by [5]. This provided also a challenge for those European countries which were not members of the EU at the time of the start of the Single Market program. In particular, the EFTA countries (except for Switzerland) agreed to join the efforts of the EU by building up the European Economic Area together with the latter. In addition, several EFTA members became full members of the EU, including Austria and three other countries in 1995. Moreover, 13 countries (mostly from Eastern Europe) became EU members in three rounds of enlargement of the Union in the 2000s. In the meantime, the EU has put forward further steps for integration and unification, including the creation of the common currency euro. According to the Treaty of Maastricht this process shall result in creating an economic and ultimately also political union. Not all of these ambitious political goals have been fulfilled so far, and some will not be fulfilled in the near future. Therefore we concentrate on the consequences of the European Single Market, which is largely beyond dispute.

In Austria, before entering the EU an intensive discussion took place concerning the risks and chances of the Single Market for that country. On the one hand, there were widespread fears about increased competition from stronger EU economies in domestic and international markets. On the other hand, those who supported the Single Market movement were enthusiastic about its dynamic effects on the Austrian economy. Several studies were published about the possible consequences of Austria's participation in the Single Market for a variety of political, social and economic aspects. Detailed studies for different sectors of the Austrian economy as well as for the macroeconomic consequences of an Austrian membership in the EU appeared. The latter work more or less followed the methodology of the Cecchini Report in combining microeconomic estimates of possible effects on aggregate output to assess the implications of higher output on the macroeconomy, using econometric models for Austria [1], [2]. Alternatively, static computable general-equilibrium models [6], [7] were used to obtain estimates for the gains from integration in Europe for Austria. As in the Cecchini Report, global implications of the changes in the EC are absent from these evaluations. Moreover, macroeconometric models necessarily have to neglect long-run effects which cannot easily be simulated given the limitations of the data and the short-run character of (mostly Keynesian) econometric macro models. On the other hand, static CGE models cannot deliver any information on the dynamic adjustment paths.

In the present paper, we try to give a quantitative assessment of the response of the Austrian economy to the creation of the European Single Market with and without an Austrian membership in the EU, taking into account the long-run effects and the adjustment of the world economy, by simulating the McKibbin-Sachs Global Model under alternative assumption, s concerning the world economy and Austria. Following [8], [9], we model the movement towards the Single Market as a shift out in the production possibilities in the EU economies. The Cecchini Report and other studies of the European Commission estimate that there will be gains in total factor productivity in EU countries of more than 4.5 percent. It is, however, not plausible to assume these changes to occur at once, because completing the Single Market takes several years, and the reactions of economic agents on policy measures also occur after some time lag; on the other hand, anticipations of some changes by economic agents have to be taken into account. Therefore we assume that total factor productivity increases smoothly from 1990 until 1995. In particular, we assume total factor productivity in the EU countries (Germany, UK, France, Italy, and REA) to rise by 0.5 percent in 1990, 1.0 percent in 1991, 1.5 percent in 1992, 2 percent in 1993, 3.5 percent in 1994, and 4.0 percent from 1995 forever as compared to the baseline projection of the model.

In addition to the assumptions about the productivity shock, it is necessary to close the model by specific assumptions concerning monetary and fiscal policy reactions in the different economies. To do so, we consider several global scenarios, i.e. we simulate the McKibbin-Sachs Global Model under alternative assumptions about macroeconomic policies in order to check for the sensitivity of the world economy's reactions to the Single Market shock. As a counterfactual, Austria is first assumed to stay outside of the EU in these global scenarios; as the quantitative effects of global feedbacks of an Austrian participation in the European Single Market are very weak, they can be neglected anyway.

For monetary policy, we distinguish two categories of countries or regions: The USA, Germany, Japan and ROECD are assumed to pursue an autonomous monetary policy. This can be specified by assuming alternatively two different objectives of monetary authorities in these countries, namely "nominal income targeting" and "inflation targeting". Under the former objective, monetary policy aims at keeping the nominal income of the respective country at the values of the baseline solution, i.e. at the values which would have been obtained without the Single Market shock. If due to the Single Market shock real income increases, this implies lower money supply than in the baseline solution such that prices are lower

in order to keep nominal income (the product of real income and the price level) constant. In this way, prices are lowered in a somewhat artificial way, and the effects of the European Single Market on prices may be overestimated. Under "inflation targeting", on the other hand, monetary policy aims at keeping the rates of inflation at the values of the baseline solution of the model. In this case, prices do not decrease at all with the EU shock as price decreases are compensated by excessive increases in money supplies. We consider the possibility of "nominal income targeting" as more appropriate than that of "inflation targeting" as it keeps the velocity of money approximately constant. In particular, the model does not capture possible direct price effects of integration from increased competition; hence, "inflation targeting" would be too pessimistic with respect to the effects on the price level. For our sensitivity analysis, however, we examine both variants.

For the other members of the EU (United Kingdom, France, Italy, REA) and for Austria, on the other hand, we assume that they adjust their money balances such as to peg their exchange rates to the euro (i.e. the deutsche mark in the present model version). This is in accordance with the interpretation of the EMS as a greater DM-area; for Austria, the reason for this assumption is its well-known hard-currency policy which was executed by the Austrian central bank before Austria joined the EU.

Concerning fiscal policy, we consider the possibility of keeping the ratio of public consumption to GDP at its values in the baseline solution; alternatively, we assume the ratio of the public-sector deficit to GDP to be kept at its baseline values. If GDP rises due to the productivity shock, the first alternative implies endogenous increases of tax revenues and hence decreases of the budget deficit without having to cut public expenditures. The second alternative admits increasing public expenditures without increases of budget deficits. Moreover, we consider a scenario where we distinguish between those countries which are not directly affected by the productivity shock (USA, Japan, ROECD), and the members of the EU (Germany, UK, France, Italy, REA). For the former, we assume the share of government consumption in GDP to remain constant, with budget deficits and taxes adjusting endogenously to the spillovers of the EU shock. For the European countries, we assume that they keep the relation of their fiscal deficit to GDP constant and let government consumption and taxes adjust endogenously.

The following simulation experiments have been run: In scenario MF1, we assume all countries pursuing an autonomous monetary policy to target nominal income. Austria and the other members of the EU peg their exchange rates to the euro/DM. The countries not directly affected by the Single Market shock (including Austria) keep the ratio of public consumption to GDP constant; the members of the EU do so for the ratio of public-sector deficit to GDP. This scenario serves for comparison with the other global scenarios. In addition, as there might be biases in estimating the productivity gain of the Single Market, we ran the same simulation with all the values of the shock variables halved. This resulted in halving all values of the endogenous variables due to the fact that the model is solved for the linearized version, hence, if one considers other values for the productivity shock variables to be more plausible, one only has to adjust the values of the resulting endogenous variables in a proportionate way.

For monetary policies, the following alternative simulations were performed: In scenario M2, we assume Germany and Japan to target inflation; all other assumptions remained as in scenario MF1. Scenario M3 assumes all countries pursuing autonomous monetary policies to target inflation. In scenario M4, the assumptions of MF1 were kept except for the UK and Italy, which were assumed to target nominal income. The reason for this scenario was an attempt to model currencies leaving the Euro Area or the UK staying off the Euro Area, which can only done in the model by assigning to them an autonomous monetary policy. Scenario M5 assumes all countries with autonomous monetary policy to keep money supply constant, which is more restrictive than nominal income targeting. For fiscal policies, two alternatives to scenario MF1 were considered: In scenario F2, we assumed all countries to keep the ratio of public consumption to GDP constant. In scenario F3, we assumed all countries to keep the ratio of public-sector deficit to GDP constant. As scenario F2 (which includes monetary policy according to MF1) turned out to deliver those results which we considered as most realistic, it was used as global framework for the simulations of Austrian scenarios to be described in the next section. As a further alternative, in [3] we fixed public consumption and the deficit, respectively, relative to baseline GDP instead of setting the ratios equal to the baseline ratios, or fixing public consumption and the deficit, respectively, relative to simulated GDP, as was done here.

Results of some of the simulations described above are given in the figures in the appendix for a few key variables. Results for most countries or regions explicitly modeled are displayed. In particular, Figs. 1-5 show results from scenario MF1, and Figs. 6-10 those from scenario F2 for the following countries: Austria (AU), USA, Germany (GE), REA, and ROECD (RO). For an interpretation of long-run effects, the figures are more helpful; additional tables and figures, which also contain more detailed information about short-run adjustments as well as about the other simulations can be obtained on request from the corresponding author.

It must be stressed that these results are deviations from a baseline of the model that was projected before the shocks were anticipated. The baseline solution was generated assuming no change in productivity and in the budget conditions in each country or region, i.e., the ratios of budget positions to GDP were held at pre-"Europe 1993" values. This implies slowing world growth for several years, gradually rising real and nominal interest rates and small changes in external trade positions. In the tables, values for real GDP, the budget deficit and the capital stock are deviations of the respective variable from baseline as a percent of baseline real GDP, those for labor demand and the consumer price index are percent deviations from baseline values. As the results

were calculated from a linearization of the model at a time point, they would not be very sensitive with respect to changes in the baseline projection. Using a rather long time horizon is justified as we consider only differential effects of the Single Market shock and not forecasts of actual values of endogenous variables.

In scenario MF1, it is assumed that the USA, Japan and ROECD hold government consumption at their baseline shares of GDP; the EU members adjust government consumption such that the budget deficit as a share of GDP is unchanged; and Austria stays outside the EU (no separate productivity shock) and holds government consumption at the baseline shares of GDP. The results show that real GDP rises quickly in the EU member countries, with maximum effects of about 7 to 9 percent around five to seven years after the shock and converging to steady-state levels which are above their baseline values by more than 5 percent in each of the countries affected by the productivity shock. The largest effects are obtained in Germany, with GDP 8.6% higher than in the baseline in the short run and 6% in the long run. These values are comparable (though somewhat higher) with those obtained in the Cecchini Report. Among the components of GDP, effects are strongest for private consumption. Private consumption rises above the baseline values because both income and wealth rise; private investment rises because of the increase of both capital productivity and cash flow. Government consumption increases considerably, too (by about 2% of baseline GDP in the long run); the same is true for tax revenues. The growth rate of output is higher during the first years of the shock and eventually returns to the underlying rate of population growth and technological change, with the level of output remaining permanently higher than in the baseline. Part of the increase and overshoot in output is due to increased capital accumulation (in the long run, the capital stock in Germany is 10% of baseline GDP above baseline values), capturing an effect emphasized by Baldwin [10]. Employment also grows quickly in line with GDP (in Germany up to 5.8% of baseline value), but returns eventually to the baseline level in the long run.

The spillovers to US, Japanese and ROECD GDP are small, transitory and mostly negative, which is due to the assumptions about fiscal policies in this scenario. As the size of European governments expands, this results in long-run higher world real interest rates (by about 0.5 percentage points) and, given our assumptions about monetary policy, nominal interest rates. This is transmitted to the regions outside Europe as lower capital stocks and lower output levels in the steady state, to which adjustment starts immediately in the first year. The increased demand for capital in Europe induces capital flows from the USA (and other non-EU countries), which improves the US trade balance and current account, but raises interest rates and lowers output in the USA. The spillovers are higher to ROECD than to the USA and Japan because of the closer trade links with Europe. Among the countries outside of the EU, Austria exhibits the most favorable effect on GDP, which is positive in the short run (maximum 0.9% above baseline).

By our assumptions about monetary policy, prices react in a symmetrical way to GDP in the EU countries, falling quickly below their baseline levels and returning to a steady-state level below that of the baseline (by about 5%), with inflation rates overshooting and finally returning to their baseline values. A similar time pattern is exhibited by nominal wages, which react, however, with some time lag; in the long run, the effect on wages disappears. During the adjustment process, the EU currencies appreciate against the dollar and the yen; in the long run, they exhibit real depreciation. The current account in these countries deteriorates, with an improvement for the regions not directly affected by the productivity shock, most notably ROECD because of its close trade links with the EU. This is mainly due to demand effects on imports being stronger than supply effects on exports in the EU countries: in the short run, the rise in consumption in the EU due to a rise in perceived wealth is financed by borrowing from the rest of the world, and the same is true for investment in anticipation of a higher return to capital. In the Euro Area, nominal interest rates and exchange rates are determined by monetary policies, with parallel developments in Germany, the other Euro Area members and Austria.

Scenarios M2 and M3 differ from MF1 by assuming inflation targeting for some or all countries with autonomous monetary policy. Apart from slightly smaller spillovers to the USA in scenario M2, their results are virtually identical. Moreover, real economic variables show nearly the same development as in scenario MF1. This indicates “neutrality” of monetary policy in this model to some extent. Money supplies in the countries targeting inflation are higher than in the baseline solution (in Germany up to 8%) to prevent inflation from falling below baseline values. By assumption, prices in countries with autonomous monetary policies are the same as in the baseline solution; in most Euro Area countries they are slightly lower, in Austria slightly higher than in the baseline solution. The effect on Austrian prices is due to its higher money supply (linked to that of Germany) without participation in the Single Market. Nominal interest rates first are slightly above baseline values. EU currencies first appreciate, then depreciate in the long run. Also in scenario M4 where the UK and Italy are not in the Euro Area and target nominal income, the results are quite similar as in scenario MF1, with prices falling less in the UK and more in Italy as compared to the development within the Euro Area. Finally, in scenario M5 with money supplies kept at baseline values in the countries pursuing autonomous monetary policies, prices fall more below baseline levels than in scenario FM1, especially in Germany (maximum 8.1%) due to the more restrictive monetary policy. Again, real variables are not much affected by this change in assumptions about monetary policies.

In scenario F2, we assume that the share of public consumption in GDP remains at its baseline values. For the countries directly affected by the productivity shock, this implies public consumption to rise above baseline values by 1.2 to 1.7% of baseline GDP in the short run and 1 to 1.2% in the long run (cf. Figs. 6-10). Tax revenues rise by more than

public expenditures, hence public debt is below baseline values in the EU countries. The same is true for the budget deficit and for lump-sum taxes which serve to guarantee that the government budget constraint is fulfilled in the long run. This means that under this kind of fiscal policy, budget consolidation is made much easier in the EU countries by the Single Market and can be accomplished without the necessity of raising taxes or cutting expenditures in a discretionary way. Real rates of interest, although higher due to higher demand for capital in the long run, in this scenario fall below baseline values in the long run due to the policy of budget consolidation. Capital stock and human and total wealth rise considerably above baseline values in the EU countries, in the long run more than in scenario MF1. This implies higher long-run levels of GDP in the EU countries than in scenario MF1. The spillovers to GDP in the USA, Japan and ROECD (and Austria) are now all positive, though still small and transitory, showing the dependence of their signs on the assumptions about fiscal policies in the EU countries. Government debt and budget deficit in the countries not directly affected by the EU shock are also slightly lower than in the baseline. Thus, budget consolidation in the EU countries exerts positive externalities to budgets of the rest of the world through lower interest rates. Only short-run effects on GDP, employment and prices in the EU countries are slightly less favorable than in scenario MF1, indicating that a policy of budget consolidation pays off mainly in the long run.

Scenario F3, with all countries and regions keeping the ratio of deficit to GDP constant, gives very similar results as scenario FM1, especially for the EU countries. Spillovers to GDP for the USA and Japan are again negative. In both scenarios MF1 and F3, global developments are dominated by those in the EU countries, which pursue relatively expansionary fiscal policies. Public consumption in the EU is higher than in the baseline by 2.3 to 3% of baseline GDP in the short run and 1.6 to 1.9% in the long run, with virtually no change in the budget deficit. Thus it is possible to raise public expenditures under the Single Market shock without negative side-effects on the budget, which is due to endogenously higher taxes in this scenario.

As an overall conclusion it can be said that the effects of the European Single Market on the world economy are not very sensitive with respect to the assumptions about monetary and fiscal policies in different countries and regions. Some difference can be found for the signs of the spillovers to countries not directly affected by the European shock, but in all scenarios considered the amounts of these spillovers are very small. An interesting question would be whether spillovers of similar developments outside Europe, for instance the formation of NAFTA in North America, were similarly small. Although it is not possible to model NAFTA effects directly using version of the McKibbin-Sachs Global Model used here as Canada and Mexico are not separate blocks in it, a simulation experiment can be run where the USA undergo exactly the same productivity shock assumed here to characterize the European Single Market. The results show that GDP spillovers from the USA to the rest of the world including Europe are also weak but stronger than those from Europe to the rest of the world. For instance, while GDP in the USA rises by not more than 0.2% above baseline in scenario F2 of the Single Market shock experiments, GDP in the EU countries rises by 0.2 to 0.4% after an analogous productivity shock in the USA. The spillovers to Japanese and ROECD are also higher; those for Austria are of similar magnitude (in spite of Austria's closer trade links with the EU than with the USA). This shows that the USA has a greater potential as an “engine of growth” for Europe (and the global economy) than vice versa.

IV. Simulations of Austrian Scenarios

So far, we have assumed that Austria did not become a member of the EU. Actually, Austria joined the EU at the beginning of 1995 and the Euro Area from its start in 1999. To estimate the effects of this entry into the Single Market, we consider two sets of scenarios including the Single Market for the EU countries; one of them assumes Austria to stay outside the EU, the other one assumes its membership by the beginning of 1995. The non-membership scenarios assume that the productivity shock affects directly only the current EU members and examine the spillovers to Austria, which is assumed to stay outside the EU. This is an extreme assumption as it neglects the possibility that parts of the productivity gain could have been realized in Austria through membership in the European Economic Area or through autonomous measures parallel to those set by the EU. The second set of scenarios models an Austrian membership in the EU by introducing a separate productivity shock for the Austrian economy in addition to the spillover effects from the current EU members. Here we assume the same time pattern for the Austrian productivity gain as for the EU economies, but with a lag of two years. Thus we assume total factor productivity in Austria to rise by 0.5 percent in the third year of the simulation (corresponding to 1992), 1.0 percent in the fourth year, 1.5 percent in the fifth year, 2 percent in the sixth year (corresponding to 1995, Austria’s Entry into the Single Market), 3.5 percent in the seventh year, and 4.0 percent in the eighth and subsequent years as compared to the baseline solution. Again, the estimates of this scenario may be biased downwards for earlier years if Austria succeeded in realizing productivity gains before an actual membership; they may be biased upwards, on the other hand, if the magnitudes of the productivity shock are smaller for Austria than for previous EU members.

In our simulations of the effects of the Single Market on Austria, we apply the assumptions of scenario F2 for the global economy. That is, all countries fix their shares of public consumption in GDP; monetary policies, if autonomous, target nominal income; and Austria and the members of the EU peg their currencies to the DM or adopt the euro. For Austria, we consider three alternative scenarios for its fiscal policies. In scenario A1, we assume the Austrian government to continue its policy of consolidating the budget by keeping its share of public consumption in GDP constant. In this case, positive spillovers from the EU and (for the EU-membership scenario)

direct productivity gains are used to reduce the budget deficit. Scenario A2 assumes that the Austrian government keeps its deficit-to-GDP ratio constant and uses possible output increases to raise government spending on goods and services. In both versions, which correspond to those already investigated for global fiscal policies, taxes adjust endogenously both to higher real incomes and to the need to service changes in government debt.

In contrast, we also examine an adjustment of tax policy to the possibilities opened up by the Single Market in scenario A3. Here we assume both government consumption and fiscal deficit in Austria to remain at constant of GDP and ask whether it is possible to reduce taxes on households in the aftermath of the Single Market productivity shock. Technically, this is done by letting lump-sum taxes adjust, which always react on the need to service future changes in public debt. This policy can be interpreted as a continuation of Austrian tax reforms aiming at reducing direct taxation provided economic conditions and the need for budget consolidation permit such a policy. Obviously, none of the above versions can be regarded as a "realistic" scenario for Austrian budgetary policies, but they may serve as benchmarks for some alternatives open to the government. In its present version, the model does not allow for a detailed treatment of more specific tax policy issues, such as changes in value-added tax rates or Austrian payments to the budget of the EU which may be necessary as a consequence of an EU-membership.

The results of these simulations differ mainly with respect to Austria. As has to be expected, the effects of changing these assumptions on the global economy are negligible, but for Austria, we obtain considerable differences, especially between the scenarios with and without an Austrian participation in the European Single Market. These differences are most pronounced in the first years because of the assumed delay in the Austrian productivity shock.

Figs. 6-10 show that if Austria stays outside the EU and keeps public consumption at a constant share of GDP, it nevertheless does better than other (larger) countries outside the EU. There are modest (maximum less than 1 percent) though transitory increases in GDP and its components. Prices are considerably below baseline values and show a similar time pattern as in the EU countries. This is due to the strong trade links between Austria and the EU (especially Germany) as well as to the hard-currency policy, which implies a more restrictive monetary policy than in the baseline. Increased demand from expanding EU countries improves the Austrian trade balance in the short run, although the current account deteriorates slightly in the long run. Employment rises above baseline levels for several years and returns to its baseline value in the long run in a similar way as does GDP. The Austrian currency appreciates in real terms in the long run. Keeping government consumption at baseline values helps reducing government debt, as the budget deficit is slightly lower during most years as compared to the baseline. Overall, the outcome of this scenario can be characterized as a temporary shock, which is favorable in the short run for the Austrian economy. Fears of being put into an outsider's position by the Single Market are not justified, but the gains from the spillovers are small and transitory.

A much better result can be obtained if Austria joins the EU in 1995. Here the stimulus to GDP and the fall of prices are much larger, with the former culminating in 7 percent and remaining at about 6 percent in the long run. The same is true for the components of GDP: Private consumption is raised above its baseline level (by more than 3% of baseline GDP in the long run) because of income and wealth increases, and private investment is raised (by 1.7% of baseline GDP in the long run) because of higher profitability of investment due to the increase in capital productivity and because of higher cash flow. The Austrian capital stock exceeds that of the baseline by 10.4% of baseline GDP in the long run. Government consumption rises in line with GDP. Given the assumptions about the hard-currency policy and German nominal income targeting, prices remain below baseline values by more than 5 percent in the long run. Starting in the first year of the shock, employment remains above baseline values for several years, although it returns to its steady-state value in the long run.

The budget deficit can be considerably reduced due to endogenous tax increases; the maximum effect occurs in 1997 with a reduction by 0.9 percent of baseline GDP. In the long run, the corresponding figure is 0.8%. Budget consolidation also implies lower real rates of interest, with favorable effects on investment and capital stock. The development of the current account is also better than in the scenario assuming Austria to stay outside the EU. If the (admittedly optimistic) assumptions about the productivity effects of an Austrian membership in the European Single Market hold true, then policy-makers and the electorate in Austria can be congratulated for having joined the EU, because virtually all macro policy goals are considerably improved by such a step.

Similar conclusions emerge from comparing the effects of the Single Market productivity shock without and with an Austrian membership under alternative assumptions about fiscal policies. The effects on GDP are even higher in the short run if the government does not reduce the deficit but instead increases government consumption, with maximum GDP increases of 1.2 percent without EU-membership and 7.4 percent with EU-membership. The same is true for employment, whereas prices fall slightly less than in the previous scenarios. In the long run, however, raising government consumption does not result in any effect on real economic variables as compared to the previous simulations. Finally, there is also some scope for tax reductions, although only in the case of an EU-membership. Assuming government expenditures and the budget deficit to remain at baseline values (as shares of GDP), only minor tax reductions are possible, however, even in the case of an Austrian participation in the Single Market. In addition, in this case the improvement of the trade balance is much less than under the alternative fiscal policies, as lower taxes increase private consumption and hence also imports. Therefore, this policy option should seem less attractive to Austrian policy-makers.

As the negative spillovers from the EU productivity shock

to the United States, Japan, and ROECD do not seem very appealing to our intuition, we have tentatively examined their sensitivity to assumptions about fiscal policies. We conducted a simulation which was built on the same assumptions as that resulting in Figs. 1-5, except that now for all countries government consumption remains at its baseline share of GDP. This simulation results in smaller growth effects for the EU countries, but positive (though small) spillovers to the rest of the world. As can be seen from a comparison with the results assuming Austria's participation in the European Single Market, the integration effects for this country are not much affected by the change in assumptions about fiscal policies in the EU countries.

V. Concluding Remarks

In this paper, we used the McKibbin-Sachs Global Model to assess the impacts of the European Single Market, emphasizing macroeconomic consequences especially for Austria. Comparisons between different simulation runs gave empirically based evidence as to the size of the dynamic gains obtained in Austria due to the European reforms without and with a full participation of that country in the Single Market. Feedback effects on the global economy and consequences of the long-run changes on short-run dynamics were included in all scenarios as were implications for the years prior to the respective productivity shock of announcing the policy changes in advance of their implementation. It has been shown that the macroeconomic policy objectives can be met more easily by Austria's participation in the Single Market.

One may question how useful these simulations are for an assessment of possible integration effects in countries like Macedonia, Serbia or other countries planning to enter the EU sometimes in the future. It must be stressed that the simulation methodology is the only one available to obtain information on the effects of an isolated move in economic policy. Some may who argue that the actual development of the Austrian economy since its entry into the Single Market and, even more, of the other EU economies following the establishment of the Single Market program was less fortunate and successful than our simulations seem to suggest. But this neglects the fact that other developments (such as business cycles and the Great Recession) were mainly responsible for the mediocre performance of European economies in the late 1990s and the 2000s. If one wants to examine isolated effects of the change in the competition framework such as the Single Market program, the only possibility is to compare scenarios with and without such a change *ceteris paribus*. To the extent that the economies of potential entrants into the EU are structurally similar to that of Austria, our results can provide hints as to the macroeconomic advantages of such a move towards a more competitive policy regime.

Appendix

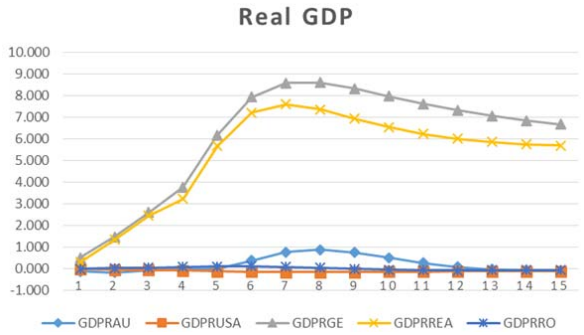

Fig. 1 Real GDP – Scenario MF1

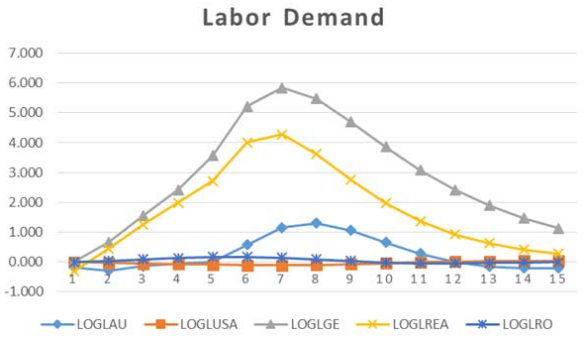

Fig. 2 Labor Demand – Scenario MF1

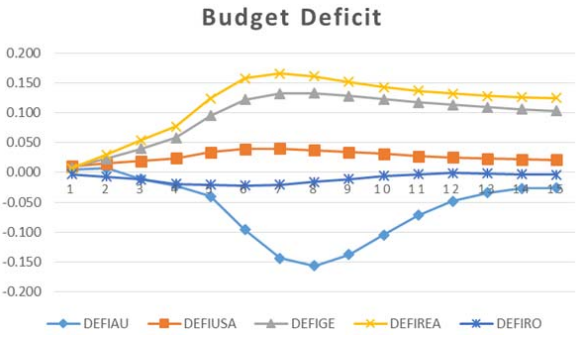

Fig. 3 Budget Deficit – Scenario MF1

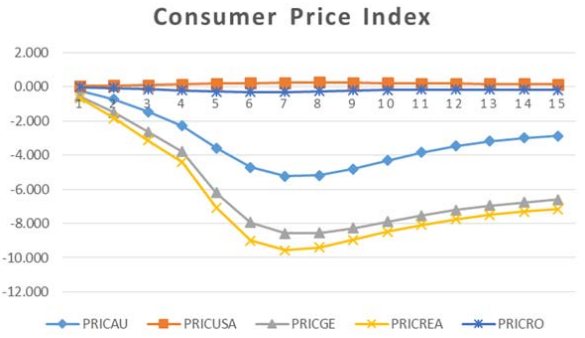

Fig. 4 Consumer Price Index – Scenario MF1

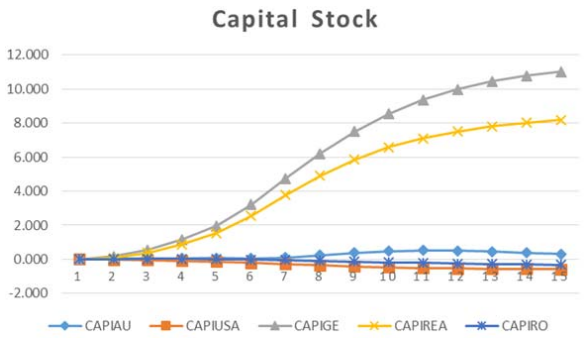

Fig. 5 Capital Stock – Scenario F2

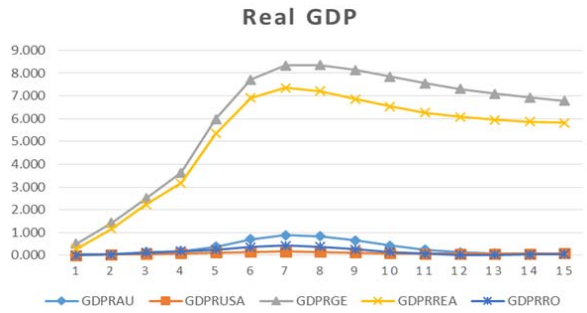

Fig. 6 Real GDP – Scenario F2

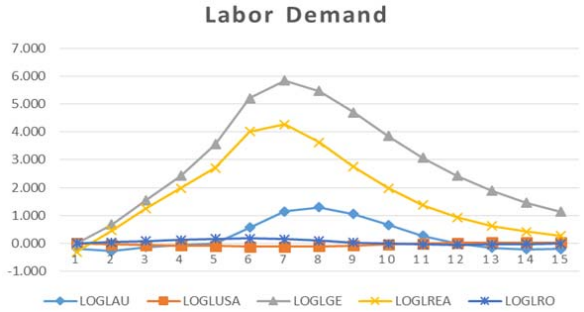

Fig. 7 Labor Demand – Scenario F2

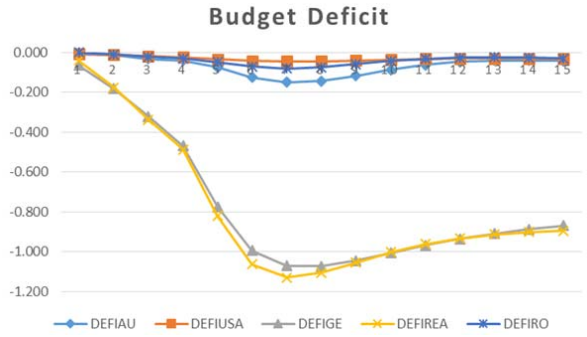

Fig. 8 Budget Deficit – Scenario F2

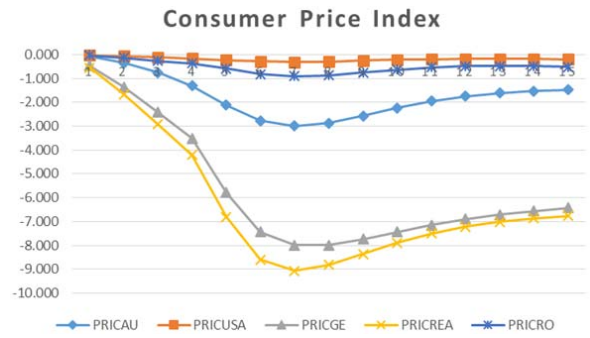

Fig. 9 Consumer Price Index – Scenario F2

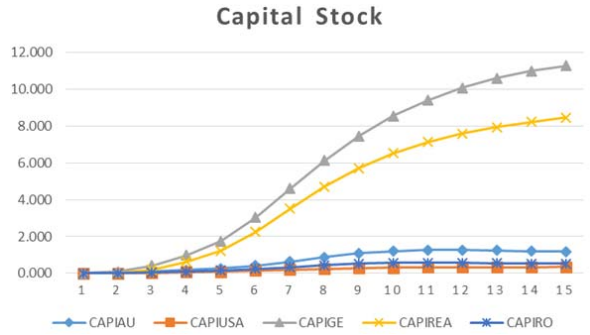

Fig. 10 Capital Stock – Scenario F2

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References

[1] F. Breuss and F. Schebeck, *Die Vollendung des EG-Binnenmarktes. Gesamtwirtschaftliche Auswirkungen für Österreich.* Vienna, 1989.

[2] F. Breuss and F. Schebeck, *Der EG-Binnenmarkt und Österreich. Nichtbeitritt, Beitritt und EWR.* Vienna, 1990.

[3] W. J. McKibbin, R. Neck and G. Schäfer, Macroeconomic Implications of the European Single Market for Austria: A Simulation Analysis. *Atlantic Economic Society, Best Papers Proceedings* 3 (2), 1993, 25–32.

[4] W. J. McKibbin and J. D. *Sachs, Global Linkages. Macroeconomic Interdependence and Cooperation in the World Economy*. Washington, D.C., 1991.

[5] M. Emerson et al., *The Economics of 1992. An Assessment of the Potential Economic Effects of Completing the Internal Market of the European Community*, Commission of the European Communities, European Economy, 1988.

[6] C. Keuschnigg and W. Kohler, Austria in the European Union: Dynamic Gains from Integration and Distributional Implications. *Economic Policy* 22, 1996, 150–190.

[7] E. J. Dockner, Österreich und der EG-Binnenmarkt: eine Simulationsstudie. In: R. Neck and F. Schneider, *Österreich und der EG-Binnenmarkt*, Vienna 1993.

[8] W.J. McKibbin, The New Europe and its Economic Implications for the World Economy. *Brookings Discussion Papers in International Economics*, No. 89, Washington, D.C., 1991.
[9] W.J. McKibbin, Short Run Implications of Long Run Shocks: Lessons from the 1980s and the 1990s. *Brookings Discussion Papers in International Economics*, No. 93, Washington, D.C., 1992.
[10] R. Baldwin, On the Measurement of Dynamic Effects of Integration. *Empirica* 20, 1993, 129–145.