

Stefan Stojkov¹

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Emilija Beker Pucar²

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Olgica Glavaški³

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MACROECONOMIC ADJUSTMENTS UNDER THE IMPACT OF EXTERNAL SHOCKS: THE CASE OF THE EUROZONE PERIPHERY AND EFTA MEMBERS⁴

ABSTRACT: In the circumstances of global economic crisis and the accompanying external shocks, adjustment macro-mechanisms between economies differ depending on the adopted monetary framework. This research aims to highlight the difference between the Eurozone (EZ) member states which have sacrificed their monetary sovereignty and EFTA members, unwilling to deepen their economic integration and thus give up their monetary autonomy. The period examined is 2001Q1-2021Q1, covering two biggest external shocks in recent times – the Great Recession of 2008 and the 2020 Pandemic Crisis. Empirical findings are based at the estimation of panel VAR model for EFTA and the EZ periphery. The estimation results reveal the influence of two types of external shocks, current account (trade) and capital account (financial) shocks, to the variations of GDP and NEER. The findings confirm that monetary autonomy acts as a shield against external trade

¹ PhD student, Faculty of Economics in Subotica, stefanstojkov023@hotmail.com

² Associate Professor, Faculty of Economics in Subotica, University of Novi Sad; dr Sime Miloševića 19, 21000 Novi Sad, emilija.beker.pucar@ef.uns.ac.rs

³ Assistant Professor, Faculty of Economics in Subotica, University of Novi Sad; dr Sime Miloševića 19, 21000 Novi Sad, olgica.glavaski@ef.uns.ac.rs

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and financial shocks, while the vulnerable monetary union members suffer from higher and prolonged output losses.

KEY WORDS: global crisis, external shocks, adjustment mechanisms, Eurozone, EFTA.

JEL: E52, E58, F33, F45.

Introduction

The economic integration of European economies started after the WWII with the 1950 Treaty of Paris and 1957 Treaty of Rome. In the decades that followed, the European Community evolved from a free trade area to a customs union (1968) to a common market (1987), reaching the highest level of economic integration, i.e., a monetary union with the Maastricht Treaty (1993). However, as a counterbalance to these tendencies, some European economies were reluctant to deepen the level of economic integration with other European economies, beyond the free trade area. These countries formed the European Free Trade Area (EFTA) with the Stockholm Agreement (1960). However, the EFTA membership declined with the transition of its members to the European Community, later the European Union (EU), since some members changed their stance towards further economic integration. Currently, the EFTA consists of four European economies, Switzerland, Norway, Iceland, and Liechtenstein. The EU (formerly the European Community) consists of 27 member states, 19 states being the members of the European Monetary Union (EMU) or the so-called Eurozone (EZ).

The aim of this research is to compare and contrast the two groups of European economies: those which have kept their monetary sovereignty (EFTA) and those which gave it up (EZ members), in terms of their vulnerability to external shocks in a crisis. The main difference between these groups is the fact that the main assumption of a monetary autonomy is that all monetary instruments can be used counter-cyclically to withstand external shocks. The EFTA members, therefore, would be able to use their sovereign monetary policy, including the exchange rate policy, to stabilize their economies under the impact of any crisis.

However, the EZ members are unable to do the same, as these countries gave up their monetary autonomy, which acts an important tool or a buffer under the pressure of external shocks.

The study examines the economies of Switzerland, Norway, and Iceland, as the representatives of the EFTA countries, and the economies of the most vulnerable EZ members, the so called EZ periphery (Greece, Portugal, Spain, Iceland). The EZ periphery is used, instead of the whole EZ, because this group of countries (widely known under the acronym PIIGS) are the EZ members which have suffered the most from the loss of their monetary sovereignty. The aim of this research is to highlight the difference between the adjustment mechanisms of two groups of European countries, under the impact of external trade and financial shocks as accompanying effects of the global economic crisis in the 2001Q1-2021Q1 period. Since VAR models are best suited for investigation of the shock transmission, the authors have applied panel VAR model in order to differentiate between the EFTA and the EZ periphery and to register the difference in shock transmission to their economic activities and currencies. External shocks are represented with current account (trade) shock and capital account (financial) shock. The impact of external shock to the variations of gross domestic product (GDP), as well as nominal effective exchange rate (NEER), has been tracked via impulse response functions of estimated panel VAR models.

To summarize, this research aims to highlight the losses suffered by the EZ members, especially the most vulnerable members (the EZ periphery), in contrast to the European countries which chose not to deepen their economic integration (the EFTA members). The monetary sovereignty of the EFTA members operates under the assumption that their currencies fluctuate counter-cyclically to withstand the impact of external shocks. The opposite holds for the EZ periphery in the absence of their national currencies under the crisis impact. The paper is structured as follows: after the Introduction section, Section 1 deals with the overview of European monetary and exchange rate arrangements, followed by a descriptive analysis concerning the adjustment mechanisms of the EZ periphery vs EFTA members (Section 2). Section 3 contains the methodological framework: the model, key findings, and discussion. Finally, Section 4 comprises the concluding remarks of this research.

1. European monetary and exchange rate arrangements

From a European perspective, the two-angle theory seems to be valid, having in mind a domination of rigid exchange rate arrangements (Aizenman, Chinn & Hiro, 2013). In other words, 19 EU member states are in a monetary union, two states have implemented the currency board regime, and only one state has implemented the euroization. On the other hand, the flexible arrangement has been implemented by 10 countries. Intermediate regimes are the least represented, implemented by only three European economies (International Monetary Fund, 2020). However, we should bear in mind that six out of 10 countries with a flexible arrangement, and two out of three countries with a soft peg, will become members of the EZ in the near future. Therefore, the perspective further supports the two-angle theory in Europe with the dominance of rigid arrangements, along with free capital movement (Bakker, 2018).

All forms of rigid exchange rate arrangements involve the sacrifice of monetary sovereignty. The rigid exchange rate regimes compared in terms of growing flexibility are official dollarization/euroization, monetary union, and the currency board. In contrast to an official dollarization/euroization or currency board, which are predominantly forced solutions (high/hyperinflation, chronic macro-instability, or political instability), a monetary union is a carefully thought-out solution which incorporates an assessment of the benefits and costs of joining the currency zone. The participating countries accept the common currency, renouncing their national currencies, monetary and exchange rate policies (Dabrowski, 2019). Those economies are not economically unstable or under risk; therefore, the impact of renouncing monetary sovereignty is *de facto* enormous. Tighter commercial and financial integration between countries and higher mobility of production factors can make the loss of monetary sovereignty minimal and the benefits of joining the currency union higher (Beker Pucar & Glavaški, 2020). If the member countries of the monetary union are closely connected and key macro-indicators have converged (inflation rate, public finance indicators, interest rate, exchange rate), then the division of the same currency is justified. A single central bank and monetary policy will suit most of its

members, because the more similar and connected the economies are, the less the occurrence of asymmetric shocks will be.

The most famous monetary union is the EZ, as the final phase of the constant deepening of the economic integration between European economies since the end of WWII. The EZ currently consists of 19 countries: Germany, France, Italy, Belgium, the Netherlands, Luxembourg, Ireland, Portugal, Spain, Greece, Austria, Finland, Slovenia, Cyprus, Malta, the Slovak Republic, Estonia, Lithuania, Latvia. However, the EZ is not an Optimum Currency Area (OCA), since wages are not flexible enough, labour mobility is not sufficient, and the joint efforts towards political criteria fulfillment regarding fiscal transfers, homogeneous preferences and solidarity are inadequate (Rose, 2008; Furrutter, 2012; Baldwin & Giavazzi, 2016). At the same time, the EZ members are heterogeneous, despite undergoing a convergence process before accession to the EZ. With such heterogeneous membership, the European Central Bank (ECB) will conduct a countercyclical policy for one member group (mainly core states) and procyclical policy for the other member group (mainly the periphery) (Bonatti & Fracasso, 2017; De Grauwe, 2018; Franks et al., 2018).

The EFTA members, namely Switzerland, Norway, and Iceland, have kept their monetary sovereignty. What these EFTA members have in common is that they perform a delicate and dynamic balancing act between integration (with the EU members) and preservation of their own autonomy (Damen, 2020). These economies have practiced a flexible exchange rate arrangement with inflation targeting monetary framework (IMF, 2020). The exception is Liechtenstein, the micro-state which uses the Swiss Franc as a legal tender. This, together with the lack of high-frequency data for this micro-state, is the reason for excluding Liechtenstein from the empirical analysis.

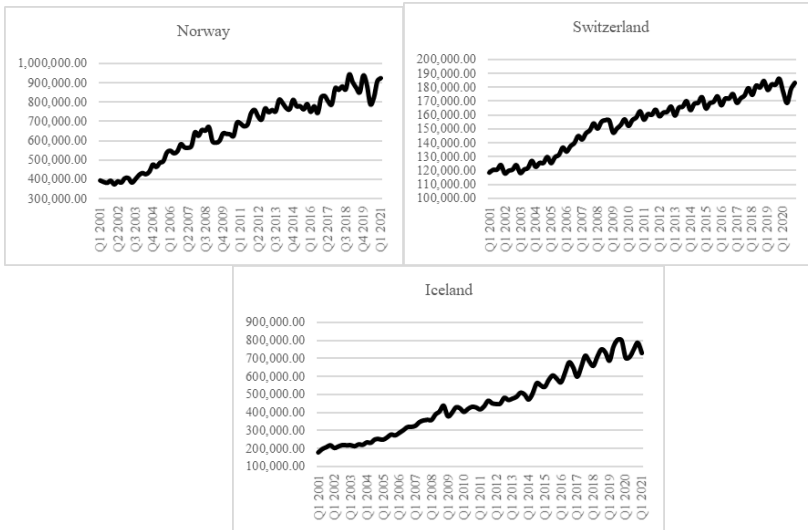
2. Descriptive analysis: EZ periphery vs EFTA

Until recently, the most important external shock was the Great Recession of 2008. Lately, the Covid-19 pandemic crisis has created one of the worst economic shocks with transmission effects to the whole global

economy. Negative external shocks, such as the Great Recession and the 2020 Pandemic Crisis, produce high instability and can lead to persistent periods of weaker economic growth, higher unemployment, falling real incomes and rising poverty (Rodriguez Canfranc, 2020; Greenwood & Burton, 2020; Beljić & Glavaški, 2021). However, contractions in real economy and its duration are closely related to a monetary framework – whether countries are monetary sovereign or dependent from supranational monetary authority (as in a monetary union). Under the impact of external shocks, the sacrifices made by the monetary union members come to the fore (Edwards, 2006). Their recovery due to the crisis circumstances has been hampered and prolonged in the absence of sovereign monetary policy instruments. The research draws a comparison between the most vulnerable part of the EZ – the EZ periphery states (Greece, Portugal, Spain, Italy, Ireland), with the European countries which are not members of the EU and have kept their monetary sovereignty – EFTA States (Switzerland, Norway, Iceland). The time span for the empirical research is 2001Q1-2021Q1, since Greece joined the EZ in 2001, while the last available quarterly data is 2021Q1.

One of the most important distinctions between the EZ periphery and EFTA members is the adjustment mechanisms under the impact of the global crisis. The global crisis produces a spillover effect to the national economies through external shocks and sudden reversals in balance of payments (external imbalance). The external trade shock is reflected in current account deficit, and the external financial shock is reflected in capital account deficit. Both types of shocks, except external imbalance, spill over into output contractions (internal imbalance). However, the issue is how long (temporarily or permanently) or how strong (mild or sharp) are output contraction effects. Figure 1 shows GDP as a measure of economic activity for the EFTA members in the 2001-2021 period. Norway, Switzerland, and Iceland, despite the drop in GDP during the Great Recession and the 2020 Pandemic Crisis, generally follow the rising trend of their economic activities (EFTA, 2021).

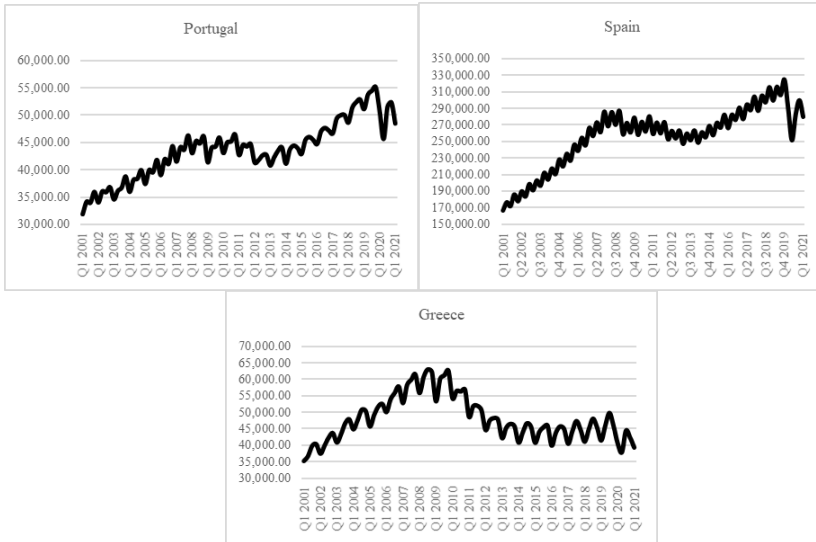
Figure 1: GDP (nominal, in US dollars) of EFTA countries in the period 2001-2021



Source: Authors according to the quarterly IMF data.

Compared to the EFTA countries, which recorded a temporary drop in their output, the EZ periphery recorded a permanent change in this variable (Figure 2). This conclusion is mostly based on the influence of the Great Recession since the effects of the 2020 Pandemic Crisis have yet to be summarized. Portugal and Spain have recorded a prolonged stagnation and very slow economic recovery which eventually ended with another abrupt GDP drop due to the pandemic. In the sample of the EZ periphery, Greece shows the direst situation, since this economy has never recovered from the Great Recession and the European debt crisis that followed (Stanišić, 2012; Bartlett and Prica, 2016; Ehmer, 2017; Onaran, 2018).

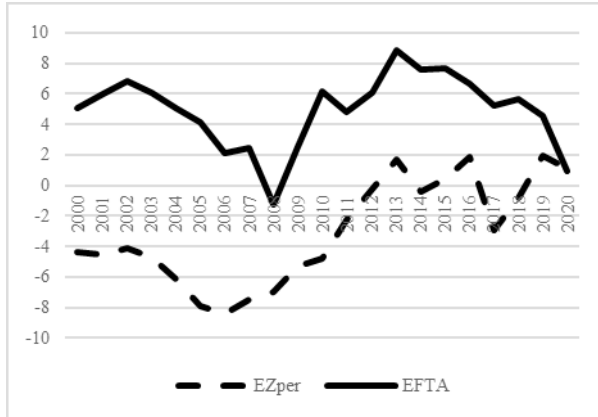
Figure 2: GDP of EZ periphery in the period 2001-2021



Source: Authors according to the quarterly IMF data.

Figure 3 shows the apparent difference regarding the external position of the EFTA members vs the EZ periphery. Except for the temporarily worsened position during the Great Recession and during the pandemic, the EFTA members generally follow the positive (surplus) path of their current accounts. In contrast, EZ periphery has been dominantly in the deficit zone of their current accounts, with the signs of adjustments in the post-crisis period (Baldwin & Giavazzi, 2016; Pierluigi & Sondermann, 2018).

Figure 3: Average current account position (% of GDP) for EFTA members and EZ periphery in the period 2000-2020



Source: Authors' reviews according to the yearly OECD data.

For the most part, the EZ periphery suffers from the absence of sovereign monetary and exchange rate policy during crisis circumstances. Currency depreciation (expenditure-switching adjustment mechanism) and a more relaxed monetary policy could potentially bring relief to their real economies, as well as external position. Moreover, supranational ECB measures prove to be pro-cyclical for them and counter-cyclical for the EZ core states (Micossi, 2015; Wortmann & Stahl, 2016; Botta, Tippet & Onaran, 2018). Nominal (euro) exchange rate is common for all EZ members and cannot adjust according to the national (counter-cyclic) interests of all its members (Figure 4).

Figure 4: Nominal exchange rate (against the US dollar) of the EZ periphery and EFTA members in the period 2000-2020



Source: Authors' reviews according to the yearly OECD data.

Figure 4 shows the nominal exchange rate variations of the EZ as a whole and the EFTA members in the 2000-2020 period. In contrast to the EZ, the monetary sovereign EFTA members have reaped the benefits from higher nominal exchange rate variations. Their currencies more freely depreciate and appreciate to act counter-cyclically, representing thus the buffer against external shocks (Ghosh, Qureshi & Tsangarides, 2014; Josifidis, Allegret & Beker Pucar, 2014).

3. Methodological framework

3.1 Panel VAR model

The sample of European economies consists of two panels: EFTA members (Switzerland, Norway, Iceland) and EZ periphery (Greece, Portugal, Spain, Italy, Ireland). The motive for the exclusion of Liechtenstein from the EFTA sample is the absence of the data for this micro-state in the databases of the World Bank, IMF, OECD, Eurostat, as a state using the Swiss Franc as a legal tender. All variables are in quarterly frequency, obtained from the IMF International Financial Statistics for the observed period 2001Q1-2021Q1. Since Greece joined the EZ in 2001, this is the starting year of the research, ending with 2001Q1 as (currently) the last available quarterly data. Empirical research includes following variables: (i) net current account, excluding transfers, US dollars; (ii) net capital account, excluding reserves, US dollars; (iii) nominal GDP, no seasonal adjustment, national currency; (iv) nominal effective exchange rate (NEER), index.

Panel VAR techniques are widely applied to obtain impulse response functions (IRFs) to detect different transmission channels of external shocks in the analyzed sample of EFTA and EZ periphery states (Cannova and Ciccarelli, 2013; Lesuisse, 2019). Cross-section dependence in macro panel data has received a lot of attention in the emerging panel time series literature over the past decade (Eberhardt, 2009). The first step was to investigate variable and residual cross-sectional dependence in macro panel with the Pesaran cross-sectional dependence test (De Hoyos & Sarafidis, 2006). For variables where the null hypothesis of cross-sectional independence is accepted, the first-generation Maddala and Wu panel unit root test has been administered. In the cases where the null has been rejected, the second-generation Pesaran panel unit root test has been administered (Pesaran, 2003). NEER and GDP are non-stationary variables, as the null hypothesis of the unit root presence has been accepted. Current account and capital account variables are stationary variables since the null hypothesis is rejected. Therefore, the panel VAR model includes first differences of non-stationary variables, while stationary variables enter the panel VAR model in the levels.

The panel VAR is estimated using the package provided by Abrigo and Love (2015) through Stata15 software. According to the procedure by Love and Zicchino (2006) and Love and Abrigo (2015), forward mean differencing or orthogonal deviation (the Helmert procedure) has been applied. All variables in the model are transformed in deviations from forward means in order to remove the fixed effects (Arellano & Bover, 1995). The procedure allows the use of the lagged regressors as instruments, while the coefficients are estimated with the Generalized Method of Moments (GMM). For the purpose of choosing the optimal lag order, Andrews and Lu (2001) proposed consistent moment and model selection criteria based on Hansen's (1982) J statistic, analogous to commonly used maximum likelihood-based model selection criteria, Akaike, Bayesian and the Hannan-Quinn information criteria.

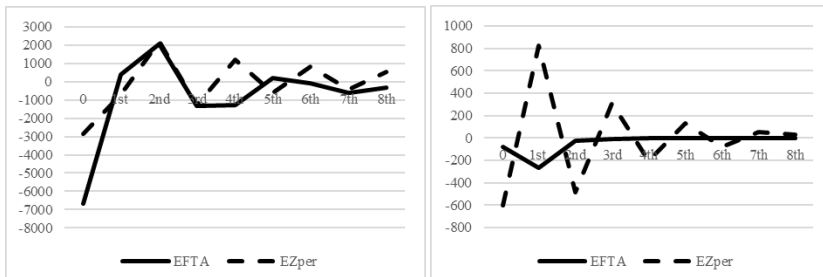
3.2 The results

Derived IRFs are used to track the transmission of current account shock and capital account shock to the variations of GDP and NEER. Namely, the external trade shock is reflected in a current account, mainly in its crucial section of net trade of goods and services. At the same time, the external financial shock is reflected in a capital account which comprises inflows/outflows of external capital (excluding foreign exchange reserves). A stronger and longer impact of external shocks to the GDP (real economy) shows a higher sensitivity of these economies, as well as costly adjustment mechanism accompanied with output and employment losses. At the same time, a relatively stronger and longer impact of external shocks to NEER points to the higher variability of nominal exchange rate which represents a buffer against external shocks and, assumably, implies milder impact of shocks to the real economy.

The influence of external trade and financial shocks to the GDP variations, during eight quarters, is shown in Figure 5. As a result of a negative external trade shock (worsening of current account position), there is a sharp drop of GDP of the EFTA members. However, it has recovered and stabilized after fifth quarter (Figure 5, left). In the case of EZ periphery, the impact of external trade shock to the GDP variations is

milder, but prolonged until eight quarters. If we observe the influence of external financial shock, i.e., abrupt outflow of external capital (Figure 5, right), the EZ periphery is more affected, considering the sharp drop of economic activities and output destabilization until the seventh quarter. Output contractions of the EFTA members as a reaction to external financial shock is relatively weak with the stabilization until the second quarter. Economic activities of the EFTA members are, according to the empirical findings, much more affected by external trade shocks. The EZ members are susceptible to both types of shocks, but output destabilization is apparently longer for this group of European economies.

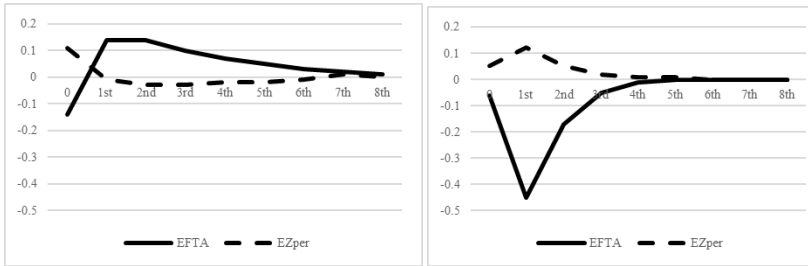
Figure 5: The influence of current account shock (left) and capital account shock (right) to the change of GDP during eight quarters, IRFs



Source: Authors' estimations.

The influence of both types of shocks could be mitigated if countries have at their disposal a nominal exchange rate as a shock absorber, which assumes the combination of a flexible exchange rate arrangement and sovereign monetary policy. This is the case for the EFTA members. In this sense, currency weakening (nominal exchange rate depreciation) automatically improves price competitiveness, current account position, implying weaker and shorter output contractions. Figure 6 shows the reaction of NEER to the external trade shock (left) and external financial shock (right).

Figure 6: The influence of current account shock (left) and capital account shock (right) to the change of NEER during eight quarters, IRFs



Source: Authors' estimations.

As a reaction to external trade shock, the nominal exchange rate of the EFTA members depreciates expressing thus counter-cyclical effect under the immediate impact of the shock. Pro-cyclical effect of NEER is evident in the case of the EZ periphery since the nominal euro exchange rate initially increases, with relatively weak euro depreciation from the first until the eighth quarter. The nominal euro exchange rate is common to the whole EZ, and its fluctuations cannot be counter-cyclical for all (otherwise heterogeneous) member states. For the EZ periphery, the results show that the movement of the nominal (common) euro exchange rate cannot serve as a buffer against external trade shocks. The situation concerning the external financial shock is even more unfavourable since the nominal euro exchange rate increases, acting pro-cyclically for the most vulnerable part of the EZ. The nominal effective exchange rate for the EFTA members depreciates until the fourth quarter, showing thus counter-cyclical effect during one year after the shock occurs.

4. Concluding remarks

Global economy has been recently confronted with unprecedented external shocks with spillover effects to the national economies, namely the Great Recession and the 2020 Pandemic Crisis. The transmission effects of trade and financial external shocks differ, among other factors, due to the adopted monetary frameworks. To shed more light into this

issue, this research examines two different groups of countries. The EFTA member states chose not to deepen the level of their economic integration with other European countries, above all, the EU member states. The EFTA countries (Switzerland, Norway, Iceland, and Liechtenstein) retained their economic sovereignty, i.e., trade, monetary and fiscal policy. The EU members gave up their sovereign trade policy, but 19 of them also gave up their monetary autonomy – the EZ member states. However, the EZ has not been shown as an optimum currency area, due to the heterogeneity of its members. Such heterogeneous monetary union members, in the absence of wage and price flexibility, political solidarity, as well as labour mobility, have made the ECB monetary measures incompatible with the most vulnerable part of the EZ – the EZ periphery.

The focus of this research is to accentuate the difference regarding macro-adjustment mechanisms in the case of European economies which have kept (EFTA States) or renounced their monetary sovereignty (the EZ periphery). The main distinctions between these groups are adjustment mechanisms in a crisis and under the impact of external shocks. Monetary union members must use restrictive adjustment mechanisms which affect the real economy and result in higher and prolonged output and employment losses). It is not possible to use nominal exchange rate depreciations in order to improve competitiveness and avoid significant output contractions. Consequently, the EFTA countries have benefited from their flexible exchange rate arrangement as a buffer against external shocks.

The panel VAR model is used to highlight the difference between these two groups in the 2001Q1-2021Q1 period. A current account shock is used as a proxy for external trade shock. A capital account shock is used as a proxy for external financial shock. The transmission of these external shocks to the variations of GDP and NEER has been tracked separately for EFTA States (Switzerland, Norway, Iceland) and the EZ periphery (Greece, Spain, Portugal, Italy, Ireland). The results of panel VAR estimation show that the output destabilization is more prolonged in the case of the EZ periphery under the impact of both types of shocks. Also, EFTA States under the impact of both types of external shocks have benefited from NEER depreciation as an automatic stabilizer, in contrast to the EZ periphery. The variations of NEER have proved to be

pro-cyclical in the case of the EZ periphery and counter-cyclical in the case of EFTA States.

Therefore, we should bear in mind the higher burden of countries which renounce their monetary autonomy under the impact of external shocks when deciding whether to join the monetary union. These implications may be important to consider for the policy makers of European economies which are in the convergence process towards the EU and, eventually, the EZ. The global economic crisis raises the opportunity costs of giving up the economic autonomy, especially the monetary autonomy. Further research should include a more detailed analysis of specific countries within the EFTA and the EZ periphery, since heterogeneity is the feature of these groups as well. For that purpose, a traditional time series analysis could be interesting, but also the estimation of heterogeneous and non-stationary panel (mean group estimators) in order to obtain heterogeneous coefficient estimates for each country with (preferably) coefficient of adjustments towards equilibrium.

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