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ОВОЈ БРОЈ Е ПОСВЕТЕН
НА АКАДЕМИК КСЕНТЕ БОГОЕВ
ПО ПОВОД 100 ГОДИНИ ОД НЕГОВОТО РАЃАЊЕ

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100 ГОДИНИ ОД РАЃАЊЕТО НА КСЕНТЕ БОГОЕВ – ВЕЛИКАНОТ НА МАКЕДОНСКАТА ЕКОНОМСКА НАУКА

Деновиве се навршија 100 години од раѓањето на Ксенте Богоев, еден од доајените на македонската економска наука, еминентен економист, врвен научник и интелектуалец, универзитетски професор, општественик, државник, академик. Тој, без сомнение, е една од најмаркантните фигури во поновата историја на Република Македонија. На Економскиот факултет во Скопје беше од самото негово основање. Втемелувач е на научните дисциплини од областа на фискалната и монетарната економија, со неспорен придонес за нивното модерно конципирање и за нивниот континуиран развој во периодот по педесеттите години на минатиот век. Богоев е и еден од основачите на првиот постдипломски студиум од областа на монетарните проблеми во југословенски рамки – студиум на кој се едуцираа најпознатите експерти од оваа област од поранешната СФРЈ. Како професор на Економскиот факултет во Скопје стекна репутација на врвен предавач, човек со широки и модерни погледи за проблематиката што ја изучуваше и предаваше, научник кој секогаш беше во тек со најновите достигнувања на светската економска наука, а со тоа и голем респект помеѓу студентите на редовните и на постдипломските студии и помеѓу неговите колеги од земјата и од странство. Под менторство на академик Богоев магистрираа и докторираа голем број економисти од земјата и од поранешните југословенски простори, вклучувајќи ги тука и нашите најпознати економисти, денес, главно, универзитетски професори.

Академик Богоев беше вонсериски научник. Неговиот научноистражувачки опус е импозантен – близу 300 научни и стручни трудови, објавени на македонски, српски, хрватски, англиски и на француски јазик се поместени во неговата ретко богата библиографија. Финансиската теорија и фискалната политика (јавните финансии) беа негова супспецијалност. Во овој домен, неговиот научен придонес е повеќенасочен: прво, тој посебно ги елаборираше микроекономските ефекти на даноците (начинот на кој тие дејствуваат врз однесувањето на економските субјекти, т.е. начинот на кој тие го поттикнуваат или дестимулираат работењето, штедењето, инвестирањето и сл.); второ, тој се интересираше за вистинските дострели и лимити на фискалната политика и за нејзините ефекти врз

реалните фактори и врз цените; трето, локалните финансии, фискалната децентрализација и, пошироко, локалниот економски развој, исто така, беа во фокусот на неговиот научен интерес и во оваа сфера академик Богоев остави неизбришливи траги не само во југословенската економска мисла, туку и пошироко; четврто, тој посебно ги истражуваше односите помеѓу фискалната и монетарната политика во осигурувањето на стабилизацијата на вкупните економски текови.

Академик Богоев со еднаков успех и со неспорна научна втемеленост истражуваше и низа други клучни макроекономски прашања и теми, како што се инфлацијата, невработеноста, економскиот раст, надворешнотрговската размена итн. Значаен број од своите трудови академик Богоев ги изложувал пред научни работници и експерти на странски универзитети: Солун, Буенос Аирес, Москва, Париз, Лондон, Монреал, Вашингтон, Лос Анџелес, Стенфорд, Блумингтон, Хале, Регенсбург, Најроби итн. Како гувернер на Народната банка на СФР Југославија, поради неговата неспорна компетентност во областа на јавните финансии и монетарните проблеми, академик Ксенте Богоев уживаше огромен углед помеѓу експертите на Светската банка и ММФ. Тоа му овозможи, со помош на овие институции, да издејствува вонредно поволен аранжман за репрограмирање на тогашниот југословенски надворешнофинансиски долг спрема Парискиот и Лондонскиот клуб. Академик Богоев беше и личен пријател со Роберт Макнамара. Овие резултати му донесоа престиж на врвен економист, мудар интелектуалец и го вброија во редот на најмаркантните интелектуални фигури на Југоисточна Европа. За тоа говори и фактот што тој е член на реномирани странски академии: Европската академија, Медитеранската академија и Академијата на науките во Безансон, како и професор *honoris causa* на Универзитетот во Хале, СР Германија. Економските проблеми на Македонија беа редовна преокупација на академик Богоев. На прашањата на економската транзиција им обрнуваше особено внимание. Беше загрижен секогаш кога економските перформанси на земјата манифестираа тенденција на влошување. Затоа редовно иницираше значајни научноистражувачки проекти, често стратегиски за нашата земја. Такви, на пример, беа националната развојна стратегија,

извозната стратегија на Република Македонија и др. Во почетокот на деведесеттите години, заедно со неговиот близок соработник, професорот Атанасовски, подготвија стратегија за реформи на даночниот систем на Република Македонија, која подоцна беше целосно имплементирана во нашата практика. Фактот што денес нашата земја има модерна даночна структура, речиси идентична со онаа на високоразвиените европски земји, е во голема мера заслуга на академик Богоев. Академик Богоев, и покрај одминатите години, остана интелектуално здрав до крајот на својот живот. Во 2006 година заврши работата на т.н. Син извештај (Blue Ribbon Report) за Република Македонија, финансиран од страна на UNDP. Целта на проектот беше да се селектираат клучните проблеми на македонската економија и да се предложат конкретни чекори за нивно надминување, за тој да служи како еден вид платформа на дејствување на идните македонски влади, без разлика на нивната политичка провениенција. Академик Богоев беше член на македонската истражувачка екипа. Со својата работа даде огромен придонес за успешното финализирање на проектот во целина и посебно за делот за кој беше одговорен – фискалната децентрализација во Република Македонија. За академик Богоев беше иманентна една неверојатна научна скрупула и етика – за себе, за својата работа, поставуваше вонредно високи и строги критериуми и стандарди и истото тоа го бараше од нас, од неговите помлади соработници. Такви критериуми и стандарди тој поставуваше во сите домени на неговото ангажирање: во наставата, во научноистражувачката работа, во работата на МАНУ, во извршувањето на високите, престижни и одговорни државни функции – потпретседател на Владата, претседател на Владата, гувернер на НБЈ итн., функции, кои ги извршуваше чесно, со неспорен научен дигнитет и ерудиција иманентна за експерти од неговиот ков.

Неговата ерудиција, неговата компетентност, професионалност, сериозниот научен пристап во испитувањето на комплексните економски проблеми и неговите бројни трудови претставуваат инспирација за сегашните и идните генерации економисти во нашата земја и остануваат трајно и драгоцено наследство во ризницата на македонската економска наука.

И на крај, што е особено значајно, во личноста на академик Ксенте Богоев имаше една нитка на длабока хуманост, која во односите со неговите помлади соработници попримаше манифестација на духовно татковство. Тој ги сакаше и почитуваше луѓето и посебно неговите блиски соработници.

Имаше моменти кога принципите на научната етика го принудуваа да критикува, дури и да укори. Но и тоа знаеше да го направи само на начин својствен за него, со евидентна академска ширина и култура, со голема доза на човечност, хуманост, без да ја навреди, ниту во еден момент, личноста на студентот, на магистрандот, на докторандот, на неговите помлади колеги. Тоа добро го знаеја и го почитуваа сите негови соработници. Поради тоа, никој и не помислуваше во контактите и работата со него да импровизира, да покаже недоволна сериозност или површност. Тоа е, најверојатно, најдобриот начин да оставите зад себе солиден кадар, луѓе кои ќе го продолжат делото, луѓе кои ќе ја продолжат мисијата. Академик Богоев, без сомнение, успеа во тоа. Има ли подобар начин да ѝ се оддолжите на сопствената земја, на сопствената татковина, која Ксенте толку многу ја сакаше и за која многу направи? Членовите на Македонската академија на науките и уметностите високо го респектираа академик Ксенте Богоев, кој беше и нивни претседател во два мандата (1992 – 1998). За членовите на МАНУ – економисти, академик Ксенте Богоев беше и остана великанот на македонската економска наука. Неговите најблиски соработници, пак, него го перципираат како вистински духовен татко.

Како израз на посебен пиетет, признание и благодарност за сè што акад. Ксенте Богоев направи за македонската наука и образование, за МАНУ и за развојот на Република Македонија, Академијата му се одолжува на најпригодни можни начини: во периодот 2012 – 2015 година, во издание на МАНУ беа објавени *Избрани дела на Ксенте Богоев*, во шест тома, под редакција на академик Таки Фити; во 2009 година, со одлука на Одделението на МАНУ за општествени науки, на академик Ксенте Богоев му беше посветен посебен тематски број на списанието *Прилози*; неодамна МАНУ одлучи, во чест на академик Ксенте Богоев, да го преименува Центарот за стратемски истражувања во Центар за стратемски истражувања „Ксенте Богоев“. Еве, сега, Одделението за општествени науки на МАНУ одлучи, по повод 100 години од неговото раѓање, да објави втор тематски број на списанието *Прилози (Contributions)*.

Во овој број на *Прилози* се поместени вкупно 17 трудови кои, главно, доаѓаат од научни работници од економската фела. Трудовите се доминантно од областите кои беа во фокусот на научниот интерес на академик Богоев. Автори на овие трудови се блиски соработници на академик Ксенте Богоев, но и релативно млади наставници од Економскиот факултет во Скопје, кои немаа можност и чест лично

да го запознаат професорот Ксенте Богоев, но кои многу слушаа и научија за неговиот придонес за развојот на македонската економска наука и за економското образование од нас, повозрасните професори и соработници на Богоев. Дел од трудовите се напишани на македонски, а дел на англиски јазик.

Во овој број на *Прилози* е поместена и ревидирана Библиографија на академик Ксенте Богоев.

Во прибирањето, навременото доставување и средување на трудовите голема помош добивме од д-р Марица Антовска-Митев, соработник – истражувач во Центарот за стратемиски истражувања „Ксенте Богоев“ при МАНУ, а во јазичната проверка на текстовите напишани на англиски јазик (без навлегување во корекција на економската терминологија)

од Гоце Алексоски, советник за меѓународна и меѓуакадемска соработка во МАНУ.

Овој број на *Прилози* на Одделението за општествени науки на МАНУ, Академијата, во соработка со Економскиот факултет при Универзитетот „Св. Кирил и Методиј“ во Скопје, ќе го промовира на Свечен собир во МАНУ, во периодот октомври/ноември 2019 година. Во текот на 2020 година, трудовите поместени во ова издание на *Прилози* ќе послужат како основа МАНУ, во соработка со Економскиот факултет во Скопје, со Министерството за финансии и со НБРМ, да организира научна конференција на Економскиот факултет во Скопје на тема блиска до главната научна преокупација на академик Ксенте Богоев.

Скопје, ноември 2019 година

акад. Таки Фиџи

Gligor BISHEV*
Tatjana BOSHKOV**

ADDRESSING MACROECONOMIC CHALLENGES IN THE RUN-UP TO EU: MACEDONIAN CONVERGENCE

Abstract

Addressing the important challenges through implementation of structural reforms are prerequisite to increase the potential growth and to preserve the macroeconomic stability, to increase the competitiveness and to accelerate the nominal and real convergence, too. The goal of the EU candidate countries is reaching a high degree of market integration and macroeconomic stabilization on the level of potential growth. During the accession process, the EU membership requires convergence of the Macedonian economy with that of the EU, especially in the area of income per capita and structure of the economy, in nominal terms and real terms, meaning convergence of prices, inflation, interest rates, and living standard.

Specialization and upgrading of the economic structure to higher value added production, becoming a part of global value chains and platforms, further increase of openness and integration of the Macedonian economy, would require increase of private and public sector investments, implementing innovations in production processes and upgraded skills of labor force. On short run, competitiveness may be increased through adjustment of the exchange rate, however, on long-run, structural reforms and innovations, reallocation of resources towards more dynamic sectors, are the right medicine for nominal and real convergence towards EU. So, meeting the requirements for joining the EU, we estimate the exchange rate as anchor for inflationary expectations taking in consideration that on long run it has been effective, producing low and stable inflation rates.

Macedonia faces with the challenge of creating a more effective policy, underlining the importance of investigating the growth of the factor of the total productivity as well as the reasons for low business investment. Only an effective tackling of these challenges, will enable the Macedonian economy to face permanent growth and prosperity and de facto to become EU like economy.

Key words: EU, convergence, structural reforms, REER, Macedonian economy.

1. Introduction

Mainly, EU candidate countries are focused on meeting two challenges. The first is to manage the continued and rapid process of future real economic convergence, which will come with high real GDP and productivity growth rates, and large capital inflows. The second challenge is achieving the degree of nominal convergence required to enter into the European Monetary Union (EMU). These two challenges are not unrelated, such as the rapid growth and large capital inflows that can overburden realizing of the nominal convergence, and vice versa, the slower growth may slow down the functional convergence but may strengthen the nominal convergence. For these countries it is very important to deal with large and potential volatile capital inflows and to achieve nominal convergence needed for adopting the euro. In the context of macroeconomic adjustment, macro-fiscal policies will be in the focus of the macroeconomic policies in the years that follow. So, in terms of the Macedonian macroeconomic convergence, the EU membership requires convergence of the Macedonian economy with that of the EU in realistic conditions, indicating income per capita and economic structure, and in nominal terms, meaning convergence of prices, inflation and interest rates.

2. Macroeconomic Challenges for the Countries of South-Eastern Europe on the EU Path

Macroeconomic stability and progress in transition countries are related with sustainable growth, increase in competitiveness and increase in overall productivity. The progress in structural reforms is crucial for achieving macroeconomic stability – to increase potential output, to stabilize economic growth and to have stable inflation. Many, small and open economies, have been using exchange rate as main anchor of

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their stabilization policies. However, exchange anchor must be supported on long-run by structural reforms. Otherwise, the exchange rate anchor must be defended by very high interest rates, and thus under-pine the growth. Thus, the exchange rate anchors and sluggish structural reform put pressure on competitiveness. Fixed or nearly fixed exchange rates can lead to unsustainable real appreciation and loss of competitiveness, unless fiscal and incomes policies remain tight and structural reforms boost productivity. Exchange rate regimes during accession had shown different variations, which indicate the importance of fundamentals and associated policies in the implementation and achievement of macroeconomic stability. Some of the largest recent EU members gradually moved from exchange-rate-based stabilizations to more flexible monetary policy as transition progressed. Using the exchange rate for inflationary expectations has been effective so far, producing low and stable inflation rates. In terms of high import dependence and the relatively slow implementation of the structural reforms realized in the increased export potential, it contributed to the importance of high trade deficit, which was largely financed by high private transfers.

3. Efforts for Accelerating Growth in small and open economy: the case of Macedonia

Maintaining growth and reducing the unemployment in a small and open economy such as Macedonia

depends on the improved performance of net export. Improving the performance of the export can also help to preserve the macroeconomic stability by closing the gap in the current account balance, to avoid wasting supplies and to stop the growth of the external debt. Improving the performance requires improving the export competitiveness. In this respect, on short-run, exchange rate may also be used as instrument for improving competitiveness. However, the effects of adjusting the exchange rate are dubious. On long-run, structural reforms, private sector investments and FDIs have crucial role for increasing the competitiveness.

3.1. Increasing Competitiveness by adjusting the Exchange Rate: Literature Review

This section presents several studies that use the variable nominal effective exchange rate. Also, here is provided an overview of methods used by these studies (Table 1).

3.2. Methodology

Building models with the presence of bilateral causal relationship between two variables is more complex. The analysis uses the method of ordinary least squares. This method is used for estimation of unknown parameters in the ordinary linear model. This method minimizes the sum of squared vertical distances between observed responses in the data set and the answers provided by the linear approximation. This

Table 1. AUTHORS REVIEW OF METHODS USED IN STUDIES WHICH ANALYZE NOMINAL EFFECTIVE EXCHANGE RATE

Studies	Title	Methods
Baxter. M., and Stockman. A (1989)	Business Cycles and the Exchange Rate Regime: Some International Evidence	Correlation analysis
Bollerslev (1989)	Modeling the coherence in short ran nominal exchange rates: A multivariate generalized ARCH model	SUR. ARCH and GARCH model
Flood. Rose (1992)	Fixing exchange rates: A virtual quest for fundamentals	Ordinary least squares method
Oskooee (2001)	Nominal and real effective exchange rates of middle eastern countries and their trade performance	Dickey-Fuller Unit Root Tests. Engle-Granger cointegration test and Johansen cointegration test
Lai. Lowinger (2002)	Nominal effective exchange rate and trade balance adjustments in South east Asia countries	VECM
Tenreiro (2004)	On the trade impact of nominal exchange rate volatility	Poisson pseudo maximum likelihood model
Harbinger C. Albert Wijeweera (2005)	Nominal Exchange Rate Neutrality: The Case of Australia	VAR model

method can examine the linear dependence between phenomena, and the general model could have one dependent and one or more independent variables.

3.3. Data

For analysis we use quarterly data which cover the period from 1993, the first quarter, to 2018, first quarter. The data are for the Macedonian economy. Time series are: the nominal effective exchange rate (NEER), observations for this variable are 1993q1 to 2018q1, or 91 observations in total. For real effective exchange rate, we have 81 observations, further Macedonian gross domestic product which also has quarterly observations from 1993 to 2018. The purchasing power parity is included in the data, but this variable has 78 observations for the period 1994q1, first quarter to 2013q1, first quarter. The interest rate as a time series for the Macedonian economy is represented by the rate of borrowing, and the cover data for it is from 1994q2 (second quarter) to 2018q1 (first quarter). Exports and imports account maximum number of observations, i.e. 81. The data on monetary aggregates M2 and M4 are shorter series 2001 q1 (first quarter) to 2018q1 (first quarter). The data for the index of inflation or the consumer price index where 2005 = 100, all from 1993q1 to 2018 q1, or 91 observation in total. The data were collected from the databases of the International Monetary Fund (IMF) and EconStats™.

3.3.1. Empirical Research and Results

For the empirical analysis of the ratio of the nominal effective exchange rate with all other previously mentioned variables in the model, we use quarterly data for Macedonia covering the period from 1993, first quarter to 2018, first quarter. We put all variables in logarithmic form (logneer, logreer, loggdp, logppp, logm2, logm4, logcpi, loginterestrate). This is done because the functional form of log-log can examine the elasticity of variables. We agree that coefficients estimated with the method of least squares cannot be considered statistically robust because the MLS method has the ability to capture cointegrating ratio variables between two or more variables.

From Table 1 (Appendix 1) we notice that all models suffer from autocorrelation in whose presence the coefficients are still the best linear unbiased coefficients (BLUE-BEST LINEAR UNBIASED ESTIMATOR), but they are not efficient, which means they have a great variance (standard error), although all coefficients and the constant are statistically significant. The functional form is the best model for the logarithm of the nominal ef-

fective exchange rate with the purchasing power parity and the monetary aggregate M2, which is consisted of financial assets that are less liquid than the aggregate M1. The coefficients are interpreted in the usual way, for example, for M2, if the money supply M2 (in Macedonia) grow by 1%, the nominal effective exchange will grow by 0.12%. According to the Ramsey test, the best model is, where t statistics are $t\text{-вредности} = \{63.19-0.85\}$ (Table 2, Appendix 1). All models also suffer from serial correlation. The coefficients are almost all highly statistically significant, but statistically ineffective because of the presence of serial correlation. In the following two tables we present the above functional forms but with differentiated variables (first difference) (Tables 3 and Table 4, Appendix 1). From Table 3 it is notable that the functional form in regressions with differentiated series is much better compared when they are in the level, p value is much greater than zero and this means that it's statistically significant. Also, serial correlation 4 of 9 models is not a problem unlike the two previous tables where the serial correlation was a problem in any of the models. Table 4 presents models with the first difference of the nominal effective exchange rate. With models, where the nominal effective exchange rate is a dependent variable, in 6 of 9 models the functional form is good, which means models do not suffer from a bias to rejected variables. Serial correlation is a problem according to the Breusch-Godfrey LM test when the first difference of logarithm of the consumer price index is a dependent variable and when the growth of exports is a dependent variable. Other equations according to this test don't suffer from serial correlation. In Table 5 based on the results of the above equations we present the causal tests of the nominal effective exchange rate with other variables for which we have data.

The previous tests of causality underline that undermining the confidence autocorrelation disrupts the confidence in the coefficients estimated by the Method of Least Squares, it can even destroy it. However, the purpose of the regressions with the Method of Least Squares is testing the ratio of the nominal effective exchange rate as a variable with other variables in the model, and it can be concluded that there is causality. REER and CPI affect the nominal exchange rate. Interest rates significantly are determined by ER and CPI which is in line with our strategy of fixed exchange rate. The model mainly confirms the current strategy of fixed exchange rate, where ER is used as nominal anchor for our economy and the exchange rate on long-run is determined by the inflation and the REER. On short-run the nominal ER has considerable influence on the money market interest rates and the inflation rates.

With the support of the estimation we showed that in a small and open economy such as Macedonia,

Table 2. MODELS OF CAUSALITY IN MACEDONIA BASED ON THE METHOD OF LEAST SQUARES

	Log-level	First difference
Nominal effective exchange rate (neer) and Real effective exchange rate (reer)	$\log\text{neer}_t \Leftrightarrow \log\text{reer}_t^*$	$\Delta\log\text{neer}_t \Leftrightarrow \Delta\log\text{reer}_t^*$
Nominal effective exchange rate (neer) and Purchasing Power Parity (ppp)	$\log\text{neer}_t \Leftrightarrow \log\text{ppp}_t^*$	$\Delta\log\text{neer}_t \Leftrightarrow \Delta\log\text{ppp}_t^*$
Nominal effective exchange rate (neer) and Gross Domestic Product (GDP)	$\log\text{neer}_t - \log\text{gdp}_t$	$\Delta\log\text{neer}_t - \Delta\log\text{gdp}_t$
Nominal effective exchange rate (neer) and M2 Monetary aggregate (m2)	$\log\text{neer}_t \Leftrightarrow \log\text{M2}_t^*$	$\Delta\log\text{neer}_t - \Delta\log\text{M2}_t^*$
Nominal effective exchange rate (neer) and M4 Monetary aggregate (m4)	$\log\text{neer}_t \Leftrightarrow \log\text{M4}_t^*$	$\Delta\log\text{neer}_t - \Delta\log\text{M4}_t^*$
Nominal effective exchange rate (neer) and interest rate (interest rate)	$\log\text{neer}_t \Leftrightarrow \log\text{interestrate}_t^*$	$\Delta\log\text{neer}_t \Leftrightarrow \Delta\log\text{interestrate}_t^*$
Nominal effective exchange rate (neer) and imports (imports)	$\log\text{neer}_t \Leftrightarrow \log\text{imports}_t^*$	$\Delta\log\text{neer}_t - \Delta\log\text{imports}_t^*$
Nominal effective exchange rate (neer) and exports (exports)	$\log\text{neer}_t \Leftrightarrow \log\text{exports}_t^*$	$\Delta\log\text{neer}_t - \Delta\log\text{exports}_t^*$
Nominal effective exchange rate (neer) and Consumer price index (CPI)	$\log\text{neer}_t \Leftrightarrow \log\text{cpi}_t^*$	$\Delta\log\text{neer}_t \Leftrightarrow \Delta\log\text{cpi}_t^*$

Note: \Leftrightarrow show bilateral causal ratio, $-$ indicates lack of causality, $*$ denotes statistical significance of the relationship between the variables of 10%.

the real exchange rate can be used as an instrument for realizing the opportunity for growth of the export performances, for increase of the aggregate demand and for increasing of the economic growth, thus speeding the convergence process to the EU. So, the exchange rate can be seen not only as an instrument for maintaining price stability but also as an instrument that will contribute for the economic stability of Macedonia and for strengthening the stability of the financial system. Although the estimation of the equilibrium real exchange rate is challenging, measurements show that the exchange rate is generally in line with the macroeconomic fundamentals. In contrast, direct comparison of wages between countries suggests problem with the cost competitiveness, while the heterogeneity of the data makes this comparison quite difficult. Macedonian producers fail to maintain or increase their share in exports.

4. Prospects of Macedonian Macroeconomic Driver Machine

The main driver of the economic growth and convergence in small and open economy should be net export-growth and direct investments.

Foreign direct investment is an integral part of an open, international economic system and a major potential catalyst for development. In this way, the potential benefits of FDI for host economies include in-

creasing the supply of capital, technology and knowledge transfer, the effect on enterprise development. An additional source of capital is clearly important in countries where financial constraints act as a major barrier to development. The extent to which potential positive externalities from FDI are achieved in practice is likely to be affected by a variety of factors at the macro- and micro- levels.

In the last decade there has been a surprising and impressive resumption of activity in the economic growth literature triggered by the endogenous growth theory, which has led to an extensive inventory of models that stress the importance of trade in achieving a sustainable rate of economic growth. The rationale lies in the belief of many economists that trade is the engine of growth, in the sense that it can contribute to a more efficient allocation of resources within countries as well as transmit growth across countries and regions. Exports, and export policies in particular, are regarded as crucial growth stimulators. Exporting is an efficient means of introducing new technologies, both to the exporting firms in particular and to the rest of the economy, so exports are a channel for learning and technological advancement. Moreover, the growth of exports plays a major part in the growth process by stimulating demand and encouraging savings and capital accumulation, and, because exports increase the supply potential of the economy, by raising the capacity to import.

Opening up a country's market to the international markets allows a country more efficient production and allocation of resources as the country can

concentrate on the production of goods in which it has a comparative advantage based on its factor endowments. Thus, world trade markets allow producers and consumers of the participating countries to benefit from lower prices, higher-quality products, more diverse supply of goods, and higher growth. Participating in trade, especially export production and promotion, exposes a country to the latest and most advanced production and marketing techniques, and a “learning-by-doing” process that brings about dynamic innovation and technological diffusion into the economy. It also drives a country to a higher production and to economies of scale, which leads to increasing returns. Many development economists use the “two-gap or three-gap” models of Taylor to justify the need to earn foreign exchange via exports. Regarding the real convergence, we show the movements of net exports and FDI (Figure 2 and Figure 3).

In 2018, the deficit in the trade of goods with international goods decreased by 0.4% or by 1.3 pp. of the GDP on an annual basis. Export activity of goods continues to grow with a two-digit annual growth rate of 17%. The largest contribution to these movements in the export sector is the export of machinery and transport equipment and the export of chemical products, mainly from export-oriented industrial facilities in foreign ownership. However, in 2018, a significant positive impetus towards the export growth was also part of the traditional activities, above all, the export of the metal processing capacities. However, net export of 4.6 percent was not sufficient significantly to affect the GDP growth and employment. Macedonian economy needs net export growth above 7 percent in order to become fast growing economy.

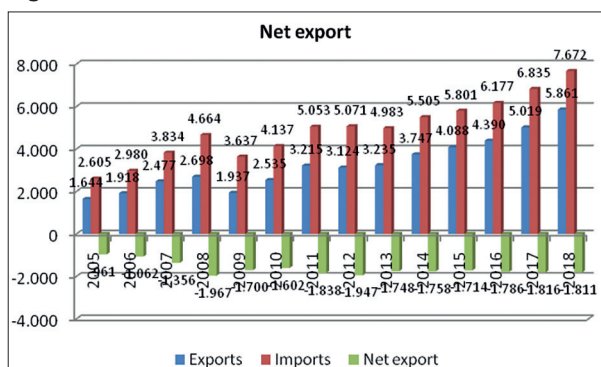
Foreign direct investment, which reached its highest share in GDP in the period after the global financial crisis (of 5.8% of GDP), had the main contribution to the favorable flows in the financial account, which points to the improved perceptions and confidence of the

investors in the domestic economy. The realized direct investments have a mainly favorable structure, with a higher share of the non-debt component, enabled by the growth of reinvested earnings and equity capital, at significant net inflows and on the basis of intercompany debt. The realized net inflows in the debt and non-debt components of foreign direct investments are higher in relation to the realized trends in the previous year. According to the analysis from the aspect of the activities, most of the investments of the direct investors were directed towards the production of motor vehicles and metal and machine products. The importance of access to international competitiveness as a concept is extremely important for the employment and the degree of capacity utilization of Macedonia. It is undisputed that the successful realization of the international economic and financial relations are necessarily aware of what changes are expected in the future in the exchange rates. In addition to the events and challenges for Macedonia, the membership in the EU can improve the industrial situation in Macedonia only if the access largely makes Macedonia a location from which foreign investors can serve the EU markets, and if the domestic industry, with aid of FDI, can take the necessary changes to its output, an issue explored in greater detail in the section of the industry. The priorities for growth and jobs creation include macroeconomic and fiscal stabilization, improved competitiveness and connectivity, enhanced skills and labor productivity, and strengthened governance and anti-corruption.

5. Brief Overview of Croatia’s Macroeconomic Circumstances as EU Country

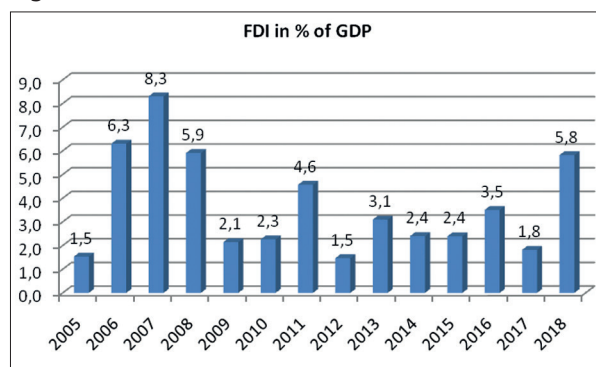
Considering that Croatia is part of the EU, we also focused on its income and transactions with the EU. Reports show that the total net revenues arising from

Figure 1. MACEDONIAN NET EXPORT



Source: Authors’ calculation based on MF data, 2019.

Figure 2. FDI AS % OF GDP (MACEDONIA)



Source: Authors’ presentation based on NBRNM data, 2019.

the transactions with the EU budget were larger in the third quarter of 2018 compared to the same period in 2017. End beneficiaries received more current and capital revenues. The positive balance in transactions with the EU budget, i.e. the surplus of funds utilized from EU funds over payments to the EU budget, reported as the sum of the last four quarters, grew from 1.2% of GDP at the end of 2017 to 1.5% of GDP at the end of the third quarter of 2018. Funds from the EU budget have become an increasingly important financing source for domestic sectors, with the government and households being the main beneficiaries of the European structural and investment funds, while non-financial corporation's accounted for a smaller share. Foreign trade might continue to lose steam in 2019. The expected slump in export growth is above all associated with trends in the external environment, i.e. slower growth both in foreign demand by the main foreign trade partners and the volume of global trade. Also, the positive effects of the entry to the EU, which in the first years of membership contributed strongly to the high growth rates of the Croatian exports, have been gradually declining. At the same time, notwithstanding the slowdown from last year, imports might grow faster than exports as they are supported by the steady rise in personal consumption and investment, the Croatian economy import dependency (including the service sector) and a stronger growth in placements. The deficit based on the investment income is also expected to grow in 2019, due to the rise in profitability of domestic enterprises owned by non-residents. At the same time, net inflows of other income might increase. This primarily relates to a further increase in the use of the EU funds, so that a positive net impact of transactions with the EU budget might grow

to 2.0% of the GDP. Croatia's international investment position also improved, up from -61.9% of the GDP at the end of 2017 to -53.3% of the GDP at the end of the third quarter of 2018. As of the accession to the European Union, Croatia has been eligible for considerable grants from the European structural and investment funds. These funds may contribute considerably to the overall economic development of Croatia, so their use is very important for both the professional and general public. Therefore, financing through ESI funds may mitigate existing structural deficiencies and raise investment and development potential of the private sector.

6. Multiple Linear Regressions

6.1. Macedonia

For better understanding what should be the biggest challenges for the macroeconomic current framework of country which is not part of EU – our country, in this section we provide analysis by multiple linear regression taking into account the fundamental economic variables. Regarding this purpose we take GDP as dependent variable and C, X, I, G and M as independent variables. Also we make comparison with Croatia, estimating the movements of the same variables.

PEARSON CORRELATIONS/Confirmed Hypothesis 1 ≠ 1

The most significant correlations between variables are given in red circles and they are - between C and GDP (0.970), I and C (0.849), net export close zero, although X and M correlations are high (0.991). According to the given results in column Sig. we can conclude that the Hypothesis 1 is confirmed.

Correlations

		GDP	C	I	G	X	M
Pearson Correlation	GDP	1.000	.970	.926	.76	.858	.888
	C	.970	1.000	.840	.642	.787	.838
	I	.925	.840	1.000	.601	.959	.972
	G	.720	.642	.601	1.000	.479	.514
	X	.858	.787	.959	.479	1.000	.991
	M	.888	.838	.972	.614	.991	1.000
Sig. (1-tailed)	GDP	-	.000	.000	.000	.000	.000
	C	.000	-	.000	.001	.000	.000
	I	.000	.000	-	.002	.000	.000
	G	.000	.001	.002	-	.014	.000
	X	.000	.000	.000	.014	-	.000
	M	.000	.000	.000	.009	.000	-
N	GDP	21	21	21	21	21	21
	C	21	21	21	21	21	21
	I	21	21	21	21	21	21
	G	21	21	21	21	21	21
	X	21	21	21	21	21	21
	M	21	21	21	21	21	21

Coefficient of the multiple correlation R, which shows linear correlation between original values of dependent variable (GDP) and the model predicted value of the independent variables and it is 1, which shows the strong connection. Coefficient of the determination R^2 is 100% and it shows the variability degree of the dependent variable in the regression

model. The value of the adjusted coefficient of the determination is also 100% (1) due to the affordable relationship between number of independent variables and the sum of observations. The Durbin-Watson statistical test shows us that there is no autocorrelation into the regression model because the value 1.661 is lower than 4.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	1.000 ^a	1.000	1.000	886.92611	1.000	21603.383	5	15	.000	1.661

a. Predictors: (Constant), M, G, C, I, X

b. Dependent Variable: GDP

ANOVA^b

Model	Sum of Squares	Df	Mean Square	F	Stfl.
Regression	8.615E10	5	1.723E10	21603.383	.000 ^a
Residual	1.180E7	15	788637.821		
Total	8.616E10	20			

a. Predictors: (Constant), M, G, C, I, X

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients Beta	T	Sg.	Correlations			Collinearity Statistics		
	B	Std. Error				Zero-order	Partial	Part	Tolerance	VIP	
1	(Constant)	1083.302	1813.735		597	559					
	C	1.005	.010	.739	99.068	.000	.970	.999	.299	.164	6.103
	I	.983	.028	.517	34.660	.000	.925	.994	.105	.041	24.339
	G	.959	.036	.118	26.774	.000	.726	.990	.081	.469	2.133
	X	.992	.033	.848	30.347	.000	.858	.992	.092	.012	85.565
	M	-.987	.020	-1.135	-33.740	.000	.888	-.993	-.102	.008	124.049

a. Dependent Variable: GDP

For the multiple regression, the equation requires the values in the column Unstandardized Coefficients. It means that the most significant contribution to the dependent variable GDP has variable C. Equation is: $GDP = 1083.302 + 1.005C + 0.983I + 0.959G + (0.992X - 0.987M)$

Tolerance column shows the level of multi-collinearity which should be lower than 1. Opposite from Tolerance, its reverse value Variance Inflation Factor shows the high level of multi-collinearity ($VIF < 10$) when we talk about variables which have Tolerance level lower than 0.2. It means that those variables have some inadequate data in analyzed 20 year period, so we should apply parsimony principle in order to elimi-

Correlations

	I	FDI
I	1	.726**
	Pearson Correlation	
	Sig. (2-tailed)	.000
	N	19
FDI	.726**	1
	Pearson Correlation	
	Sig. (2-tailed)	.000
	N	19

**Correlation is significant at the 0.01 level (2-tailed)

nate redundancy of data. From the table below it could be seen that the Correlation between the Investment and FDI show strong relation for the Macedonian case.

6.2. Croatia/Regression

Correlations

		GDP	C	I	G	X	M
Pearson Correlation	GDP	1.000	.658	.240	.665	.604	.223
	C	.658	1.000	-.158	.401	.307	.106
	I	.240	-.158	1.000	.071	.140	-.035
	G	.665	.401	.071	1.000	.819	.118
	X	.604	.307	.140	.819	1.000	.624
	M	.223	.106	-.035	.118	.624	1.000
	Sig. (1-tailed)	GDP	.	.001	.162	.001	.003
C		.001	.	.259	.044	.100	.333
I		.162	.259	.	.386	.284	.444
G		.001	.044	.386	.	.000	.315
X		.003	.100	.284	.000	.	.002
M		.179	.333	.444	.315	.002	.
N		GDP	18	19	19	19	19
	C	19	19	19	19	19	19
	I	19	19	19	19	19	19
	G	19	19	19	19	19	19
	X	19	19	19	19	19	19
	M	19	19	19	19	19	19

Correlations

		GDP	C	I	G	X	M
Pearson Correlation	GDP	1.000	.658	.240	.665	.604	.223
	C	.658	1.000	-.158	.401	.307	.106
	I	.240	-.158	1.000	.071	.140	-.035
	G	.665	.401	.071	1.000	.819	.118
	X	.604	.307	.140	.819	1.000	.624
	M	.223	.106	-.035	.118	.624	1.000
	Sig. (1-tailed)	GDP	.	.001	.162	.001	.003
C		.001	.	.259	.044	.100	.333
I		.162	.259	.	.356	.284	.444
G		.001	.044	.386	.	.000	.315
X		.003	.100	.284	.000	.	.002
M		.179	.333	.444	.315	.002	.
N		GDP	19	19	19	19	19
	C	19	19	19	19	19	19
	I	19	19	19	19	19	19
	G	19	19	19	19	19	19
	X	19	19	19	19	19	19
	M	19	19	19	19	19	19

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.857 ^a	.735	.633	4970.31233	.725	7.222	5	13	.000

a. Predictors: (Constant), M, G, C, I, X

b. Dependent Variable: GDP

ANOVA^b

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	8.921E8	5	1.784E8	7.222	.002 ^a
Residual	3.212E8	13	2.470E7		
Total	1.213E9	18			

a. Predictors: (Constant), M, G, C, I, X

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Correlations			Collinearity Statistics		
	B	Std. Error				Beta	Zero-order	Partial	Part	Tolerance	VIP
1	(Constant)	80406.680	30297.024		-2.654	.020					
	C	1.789	.583	.498	3.066	.009	.658	.648	.438	.771	1.297
	I	10.086	4.648	.357	2.170	.0490	-.240	.516	.310	.754	1.327
	G	371.718	255.226	.887	1.456	.169	.665	.375	.208	.055	18.203
	X	-962.547	1208.395	-.612	-7.97	.440	.604	-.216	-.114	-.034	29.034
	M	1081.312	1035.537	-.460	1.044	.315	.223	.278	.149	.105	9.540

a. Dependent Variable: GDP

$$\text{Equation: } \text{GDP} = 80406 + 1.789C + 10.086I + 371.718G + (-962.547X + 1081.312M)$$

Regarding the estimation of the GDP, it is obvious that net export for Croatia has positive value, while for Macedonia it does not, i.e. the net export for Macedonia still has negative net export value.

CROATIA/CORRELATION INVESTMENT VS FDI

Correlations

	I	FDI
I	Pearson Correlation	1
	Sig. (2-tailed)	-0.376 →
	N	.113
FDI	Pearson Correlation	1
	Sig. (2-tailed)	-0.376
	N	.113

Regarding these estimations, tables here show a negative correlation, the connection is significant but very often with opposite effect, which is not the case for Macedonia. Confirming the validity of these results we use the alternative tests to check it. We made autocorrelation and applied the Ljung Box test which is a modification of the Box Pierce Test for the two countries in the sample. Estimations confirmed the validity of the model and the results gained in the previous section for Macedonia and Croatia (shown in Appendix 2).

7. Conclusion and recommendations - Macedonian challenges and efforts on the road to EU

In spite of the economic stagnation in 2017, in 2018, a moderate economic growth of 2.7% was achieved, with acceleration mainly from the second quarter of the year. The economic entities from the beginning of the year were relatively more restrained, but the gradual improvement of the environment in the next three quarters still ensured an annual growth that even exceeded our expectations with the October projection. Reducing the domestic risks, along with the retained macroeconomic fundamentals and structural transformation in the recent years, with a still relatively favorable external environment have allowed the return of a solid economic growth path. In 2018, the growth of the economy was realized in conditions of more favorable domestic environment, improved insights of foreign investors, as well as maintaining the dynamic export activity.

For the analyzed period, the elasticity of the GDP to the net export for Macedonia has been close to zero, which leads to the conclusion that on long-run, growth was mainly driven by domestic consumption (public and private) and investments. In Croatia, the coefficient of elasticity of the GDP to the net export is estimated at 0.4, denoting that 1 percent of the net export growth is associated with 0.4 percent GDP growth. Personal consumption, supported by strong wage growth, private transfers and household lending, had a significant positive contribution to the GDP growth, since Q1 2018. The output growth needs to be more broadly based. It is important to mention that many of the larger rates of the capital formation in the new member states is due to high levels of corporate savings and capital inflows, mainly in the form of FDI rather than result of high domestic personal savings. The level of capital formation in Macedonia, appears comparable to other fast growing economies, but it seems efficient allocation is an issue. To formulate effective policy it is necessary to research the growth of the total factor productivity in Macedonia, as well as the causes of low business investment.

How could Macedonia reach and sustain higher rates of economic growth thus speeding up the process of economic convergence too? The research offers options that include increase of the labor contribution to the economic growth by raising labor participation and reducing unemployment. The second option refers to the improvement of allocative efficiency. This considers promotion of the enterprise restructuring and reforming the product market regulation as including regulation in the infrastructure sector. The next option is focused on deepening the trade integration by promoting FDIs with high net export content and developing the supply of exportable goods, meaning that Macedonia would need to integrate its logistics infrastructure. Accelerating the process of economic convergence will be supported by fostering technological progress. The recommendations are focused on policy-makers, inviting them to identify what policies are politically feasible and to be checked for their consistency with the overall objective of raising and sustaining economic growth. Also, stable political environment has crucial role in this process.

Appendix 1.

Table 1. MLS models with logarithm of the nominal effective exchange rate as a dependent variable

	MLS regressions/dependent variable logneer	t-statistics (of constant and independent variable)	Ramsey test	Breusch-Godfrey LM test
1.	$\logneer_t = 7.077 - 0.5497 * \logreer_t$	t-value = { 8.71 -3.15 }	0.0003	0.0000
2.	$\logneer_t = 5.091 - 0.15083 * \logppp_t$	t-value = {13.77 -1.58}	0.6077	0.0000
3.	$\logneer_t = 4.57 - 0.17 * \logGDP_t$	t-value = { 63.19 -0.85 }	0.0000	0.0000
4.	$\logneer_t = 3.2723 + 0.1200 * \logM2_t$	t-value = { 23.9240 9.8070 }	0.3253	0.0000
5.	$\logneer_t = 3.3364 + 0.1059 * \logM4_t$	t-value = { 62.29 23.85 }	0.0013	0.0000
6.	$\logneer_t = 5.1119 - 0.217 * \loginterestrater_t$	t-value = {161.029 -19.63}	0.0000	0.0000
7.	$\logneer_t = 3.28 + 0.188 * \logimports_t$	t-value = { 20.75 7.83 }	0.0000	0.0000
8.	$\logneer_t = 3.21 + 0.214 * \logexports_t$	t-value = { 19.50 7.99 }	0.1303	0.0000
9.	$\logneer_t = 3.82 + 0.35 * \logcpi_t$	t-value = { 13.69 2.49 }	0.0000	0.0000

Note: The null hypothesis in Ramsey RESET test is that the model hasn't rejected variables, while the null hypothesis in Breusch-Godfrey test is that there is no serial correlation.

Table 2. MLS models with logarithm of the nominal effective exchange rate as independent variable

	MLS regressions/dependent variable logneer	t-statistics (of constant and independent variable)	Ramsey test	Breusch-Godfrey LM test
1.	$\logreer_t = 5.57 - 0.203 * \logneer_t$	t-value = {19.15 -3.15}	0.0000	0.0000
2.	$\logppp_t = 4.81 - 0.21 * \logneer_t$	t-value = {8.00 -1.58}	0.0000	0.0000
3.	$\logGDP_t = 4.57 - 0.15 * \logneer_t$	t-value = {63.19 -0.85}	0.9653	0.0000
4.	$\logM2_t = 3.2723 + 0.1200 \logneer_t$	t-value = {23.92 9.81}	0.0000	0.0000
5.	$\logM4_t = 3.3364 + 0.1089 * \logneer_t$	t-value = {62.290 23.85}	0.0000	0.0000
6.	$\loginterestrater_t = 5.12 - 0.217 * \logneer_t$	t-value = {161.029 -19.63}	0.0000	0.0000
7.	$\logunports_t = 3.28 + 0.185 * \logneer_t$	t-value = {20.75 7.83}	0.0000	0.0000
8.	$\logexports_t = -3.31 + 2.055 * \logneer_t$	t-value = {19.50 7.99}	0.0000	0.0000
9.	$\logcpi_t = 1.03 + 0.2055 \logneer_t$	t-value = {2.77 2.49}	0.0000	0.0000

Note: The null hypothesis in Ramsey RESET test is that the model hasn't rejected variables, while the null hypothesis in Breusch-Godfrey test is that there is no serial correlation.

Table 3. MLS models with first difference of logarithm of the nominal effective exchange rate as a dependent variable

	MLS regressions/dependent variable logneer	t-statistics (of constant and independent variable)	Ramsey test	Breusch-Godfrey LM test
1.	$\Delta \log neer_t = 0.011 - 0.847^* \Delta \log reer_t$	t-value = {0.22 7.38}	0.0000	0.0000
2.	$\Delta \log neer_t = 0.0068 - 0.062^* \Delta \log ppp_t$	t-value = {11.79 -0.74}	0.0057	0.9182
3.	$\Delta \log neer_t = 0.0029 + 0.0066^* \Delta \log GDP_t$	t-value = {-0.42 0.47}	0.8553	0.0000
4.	$\Delta \log neer_t = 0.0039 - 0.004^* \Delta \log M2_t$	t-value = {2.76 -0.35}	0.2384	0.4548
5.	$\Delta \log neer_t = 0.0033 + 0.016^* \Delta \log M4_t$	t-value = {2.07 0.70}	0.3055	0.5282
6.	$\Delta \log neer_t = 0.006 - 0.072^* \Delta \log interestrate_t$	t-value = {1.90 -4.32}	0.1538	0.0246
7.	$\Delta \log neer_t = 0.0022 - 0.02^* \Delta \log imports_t$	t-value = {-0.97 -0.48}	0.0003	0.0000
8.	$\Delta \log neer_t = 0.0035 + 0.025^* \Delta \log exports_t$	t-value = {-0.50 0.48}	0.8235	0.0000
9.	$\Delta \log neer_t = 0.011 - 1.53^* \Delta \log cpi_t$	t-value = {2.02 -8.53}	0.0000	0.0000

Note: The null hypothesis in Ramsey RESET test is that the model hasn't rejected variables, while the null hypothesis in Breusch-Godfrey test is that there is no serial correlation.

Table 4. MLS models with first difference of logarithm of the nominal effective exchange rate as an independent variable

	MLS regressions/dependent variable logneer	t-statistics (of constant and independent variable)	Ramsey test	Breusch-Godfrey LM test
1.	$\Delta \log reer_t = -0.0035 - 0.48^* \Delta \log neer_t$	t-value = {-0.88 7.38}	0.0000	0.0246
2.	$\Delta \log ppp_t = -0.0023 - 0.1152^* \Delta \log neer_t$	t-value = {-0.45 -0.74}	0.1799	0.0316
3.	$\Delta \log GDP_t = -0.021 + 0.42^* \Delta \log neer_t$	t-value = {-0.39 0.47}	0.8864	0.1155
4.	$\Delta \log M2_t = 0.0248 - 0.64^* \Delta \log neer_t$	t-value = {1.30 -0.35}	0.2814	0.5973
5.	$\Delta \log M4_t = 0.033 + 0.629^* \Delta \log neer_t$	t-value = {3.24 0.70}	0.2827	0.8024
6.	$\Delta \log interestrate_t = -0.024 - 2.78^* \Delta \log neer_t$	t-value = {-1.33 -4.32}	0.0000	0.1718
7.	$\Delta \log imports_t = 0.024 - 0.143^* \Delta \log neer_t$	t-value = {1.33 -0.48}	0.0843	0.0002
8.	$\Delta \log exports_t = 0.019 + 0.114^* \Delta \log neer_t$	t-value = {1.23 0.48}	0.8494	0.4061
9.	$\Delta \log cpi_t = 0.007 - 0.315^* \Delta \log neer_t$	t-value = {3.51 -8.53}	0.0000	0.0000

Note: The null hypothesis in Ramsey RESET test is that the model hasn't rejected variables, while the null hypothesis in Breusch-Godfrey test is that there is no serial correlation.

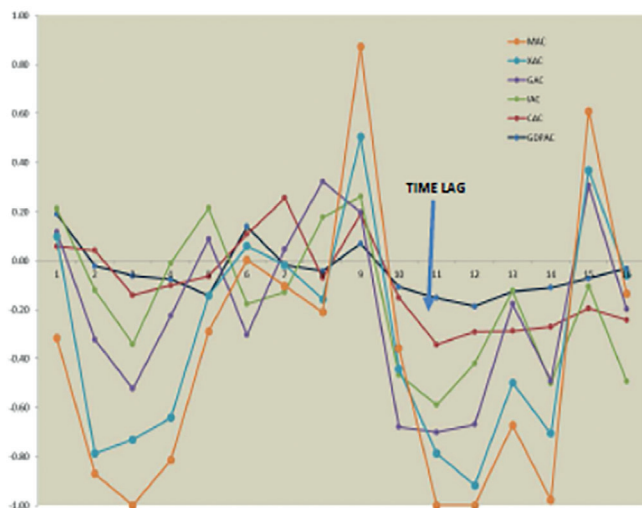
Appendix 2. Alternative ways to test the validity of the results

After these estimations we try to test the value of independent and dependent variables, to confirm its validity. We use Box test and Durbin-Watson test. The Ljung (pronounced *Young*) Box test (sometimes

called the modified Box-Pierce, or just the *Box test*) is a way to test for the *absence* of serial autocorrelation, up to a specified lag *k*.

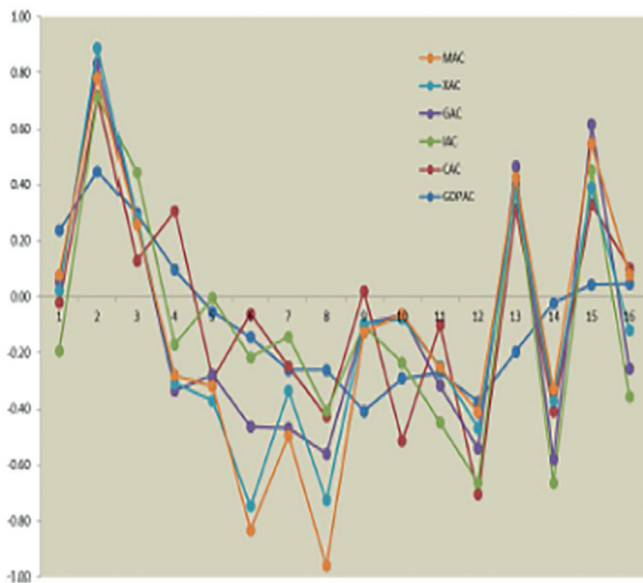
MACEDONIA/AUTOCORRELATION TEST

GDP		C		I		G		X		M	
Autocorrelation	Ljung-Box test	Autocorrelation	Ljung-Box test	Autocorrelation	Ljung-Box test	Autocorrelation	Ljung-Box test	Autocorrelation	Ljung-Box test	Autocorrelation	Ljung-Box test
0.04	0.04	-0.03	0.02	0.03	0.02	-0.02	0.01	0.00	0.00	-0.09	0.17
-0.01	0.04	0.02	0.02	-0.04	0.07	-0.05	0.08	-0.12	0.38	-0.02	0.18
-0.02	0.05	-0.03	0.05	-0.07	0.21	-0.07	0.20	-0.08	0.53	-0.10	0.43
-0.02	0.07	-0.01	0.05	0.03	0.23	-0.06	0.30	-0.12	0.90	-0.05	0.50
-0.01	0.07	0.01	0.05	0.03	0.25	-0.01	0.30	-0.02	0.92	-0.01	0.50
0.03	0.10	-0.01	0.05	-0.06	0.38	-0.03	0.33	0.08	1.13	-0.01	0.51
-0.01	0.10	0.08	0.28	-0.11	0.82	0.05	0.42	-0.02	1.14	-0.03	0.53
-0.01	0.11	-0.01	0.29	0.09	1.09	0.05	0.51	-0.16	2.13	-0.02	0.54
0.02	0.13	0.04	0.36	0.02	1.11	-0.02	0.53	0.11	2.60	0.13	1.21
-0.06	0.28	-0.02	0.38	-0.16	2.29	-0.11	1.08	0.12	3.27	0.04	1.30
-0.07	0.53	-0.09	0.77	-0.12	2.97	-0.05	1.21	-0.04	3.35	-0.10	1.79
-0.06	0.74	-0.03	0.84	-0.04	3.07	-0.08	1.59	-0.08	3.74	-0.03	1.83
-0.06	0.97	-0.08	1.22	0.08	3.47	-0.03	1.64	-0.16	5.28	-0.06	2.28
-0.06	1.24	-0.09	1.75	-0.13	4.68	0.01	1.64	-0.12	6.33	-0.15	3.96
-0.03	1.31	-0.05	1.94	0.04	4.79	0.16	3.95	0.02	6.39	0.10	4.67
-0.02	1.34	-0.12	3.30	-0.14	6.95	0.17	6.97	0.08	7.04	-0.04	4.96



CROATIA/AUTOCORRELATION TEST

GDP		C		I		G		X		M	
Autocorelation	Ljung-Box test	Autocorelation	Ljung-Box test	Autocorelation	Ljung-Box test	Autocorelation	Ljung-Box test	Autocorelation	Ljung-Box test	Autocorelation	Ljung-Box test
.600	7.620	-.649	8.927	-.440	3.991	.628	8.345	-.078	.127	0.14	.406
.450	12.177	.268	10.548	-.002	3.991	.118	8.659	.058	.202	-0.11	.661
.277	14.017	-.156	11.130	.295	5.917	-.167	9.331	.015	.207	-0.02	.673
.085	14.202	.186	12.017	-.420	10.144	-.145	9.878	.022	.220	0.02	.689
-.047	14.263	-.216	13.308	.260	11.916	-.249	11.592	-.084	.417	0.05	.753
-.219	15.702	.127	13.790	-.237	13.533	-.376	15.824	-.432	6.010	-0.13	1.269
-.364	20.035	.018	13.800	.148	14.231	-.458	22.694	.187	7.157	-0.22	2.905
-.435	26.840	-.280	16.631	.033	14.270	-.254	25.022	-.275	9.880	-0.39	8.416
-.286	30.111	.301	20.252	.088	14.586	.005	25.023	.000	9.880	-0.02	8.433
-.224	32.361	-.172	21.582	.216	16.823	.131	25.799	-.011	9.885	0.01	8.441
-.173	33.896	.109	22.192	-.223	19.698	.084	26.162	.046	9.995	0.00	8.442
-.118	34.736	-.104	22.846	.013	19.710	.039	26.252	.023	10.027	0.02	8.452
-.072	35.107	.187	25.357	.034	19.824	.022	26.287	-.034	10.110	0.02	8.489
-.009	35.115	-.181	28.309	-.119	21.876	.039	26.422	.098	10.978	0.02	8.522
.013	35.135	.082	29.108	0.04	4.79	.047	26.684	-.065	11.486	0.05	8.765
.015	35.173	.017	29.150	-0.14	6.95	.030	26.851	.042	11.803	0.06	9.415



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