RESEARCH NEWSLETTER AT THE BANK OF ALBANIA

Contents

This newsletter presents a short summary of the Bank of Albania's research projects during 2017 H2. More concretely, it reflects the most recently concluded research papers, research papers in progress, articles, and the main research activities organised mainly by Bank of Albania's economists in the course of this period.

I. RECENTLY CONCLUDED RESEARCH PAPERS

Scientific research at the Bank of Albania throughout this period was oriented towards empirical studies and analyses focused on: the demand for consumption of Albanian household based on micro data, remittances and their role on the economy, bank prudentential behaviour, the impact of ECB policies on the Albanian economy etc. Following is a summary:

"Households' demand for consumption: An application of a Quadratic Almost Ideal Demand System on micro data", by Ola Çami, Research Department.

This paper solves a Quadratic Almost Ideal Demand System (QUAIDS) model with cross-sectional data of Albanian households for the period 2005-2012. The system is comprehensive of eight commodity groups matching the classification of INSTAT's goods and services, by which we obtain income and price elasticities in their compensated and uncompensated form for each commodity group. Results suggest that only food and utilities are considered necessities with an income elasticity of less than "1", while the other budget shares are considered luxury by Albanian households. On the other hand, the estimated price elasticities suggest a very elastic demand for clothing and entertainment as per their own price and also cross-price elasticity related to necessity goods, while food demand is very inelastic towards all price changes.

"Remittances: A support for development", by Argita Frashëri, Valentina Semi, Rudina Lilaj, Enian Çela, Lindita Vrioni, Arlinda Koleniço, Bank of Albania.

On the International Day of Remittances, the Bank of Albania published the magazine titled: "Remittances, a support for development". The magazine argues about remittance flows as an important source of financing for the Albanian economy, which have often shown resilience even in periods of economic crises. Despite the positive figures, the use of these sources remains far from potential, where the complete

economic utilisation of these flows, would turn remittances into an important catalyser for the economic, financial and social development of the country in the future.

II. RESEARCH PAPERS IN PROGESS

"The Potential Impact of ECB Quantitative Easing Policies on the Albanian Economy", by Bledar Hoda, Research Department.

The aim of this study is to assess the implications of Quantitative Easing (QE) policies of the European Central Bank (ECB) and of the potential risks following the eventual exit from these policies. Both the implementation of QE and their eventual phase out can have a potential impact on financial conditions and macroeconomic variables of non-EU economies with high trade or financial linkages with the EU. These policies may potentially put pressure on trade and financial flows as well as in the real activity of non-EU economies. In the particular case of economies with a high euroization level like Albania, the ECB policies may add pressure on the exchange rate, on the country risk spread as well as on inflation. This study will potentially shed light on the transmission channels of QE policies of the ECB for a small economy with trade openness up to 75% of GDP like Albania.

"What drives bank prudential behaviour? A statistical evaluation based on the principal component analysis", by Gerti Shijaku, Research Department.

This paper analyses the factor that influence mostly bank prudential behaviour. The aim is to understand whether bank prudential behaviour is more a matter of constrains imposed by regulation or a consequence of bank decision-making itself. For this reason, first, we identify a set of correlated indicators related both to the discretionary and non-discretionary patterns of bank prudential behaviour, in addition to LLP or reserve funds. Then, we use the principal component analysis to identify a new variable, the principal component, which is a linear combination of the original variables, which we refer to as an optimal proxy of measuring bank prudential behaviour. In conclusion, we use this component to assess similarities and differences with the set of data used to estimate it so that we may be able to understand whether bank prudential behaviour is more a matter of constrains imposed by regulation or a consequence of bank decision-making itself.

"What drives bank capital structure in the case of the Albanian banking sector?", by Gerti Shijaku, Research Department.

This paper analyses the determinants of bank capital ratios in the case of the Albanian banking sector using quarterly data for the period 2004 – 2017. In the finance literature, regulatory capital requirements have typically been considered the main factor influencing the choice of capital structure by banks. Therefore, in this paper we try to investigate which capital structure theories can explain the capital structure choice of the banks that operate in the Albanian banking sector.

"Differences in wage-based earnings related to formal education level and occupation classification – a repeated cross-section analysis", by Orion Garo, Research Department.

The aim of this paper is to conduct an empirical analysis of the differences in

wage-based earnings for participants in the Albanian job market. The analysis is to be conducted employing the Living Standards Measure Survey data, gathered by the Institute of Statistics (INSTAT) during the 2002-2012 period. Its objective is to identify the typical earnings' differences between Albanian workforce participants, based on their formal education level and their occupation classification.

III. ARTICLES

This section presents a summary of the articles to be published in the Economic Journal of the Bank of Albania, 2018 H1, as well as a number of scientific research materials from other central banks and international research institutes.

"Households' consumption response to changes in income and real wealth using micro data", by Elona Dushku and Ola Çami, Research Department.

The way consumers adjust their behaviour in response to different income and wealth shocks is one of the major topics in macroeconomics, taking into account the importance and implications of this issue for decision-makers. The article, based on micro data from the Living Standards Measurement Survey (LSMS) conducted by INSTAT, analyses the consumption behaviour of around 17,000 Albanian households during the period 2002-2012, focusing on their reaction towards movements in income and real wealth. The empirical estimates show that the marginal propensity to consume out of income falls in the range 0.14-0.17 and the one out of real wealth falls in a range of 0.01-0.06 depending on the financial situation and household wealth as well as on the age of the head of the household. Estimates are consistent with a simple life cycle theory.

"A dual-index measurement of income inequality for Albanian households", by Ola Çami, Research Department.

This article presents an alternative method to the Gini coefficient to measure income inequality for Albanian households by presenting two distribution indexes: the Rawlsian and the Gini dispersion indexes. The article uses data on Albanian household income for 2002, 2005, 2008 and 2012 from the Living Standards Measurement Survey (LSMS). The results suggest that inequality has decreased as a result of the redistributive effect among higher income households, while the magnitude of inequality has remained almost unchanged.

"Assessing real wage flexibility in Albania", by Meri Papavangjeli, Research Department.

Based on aggregate level data for the period 2000 Q1-2017 Q2, this article aims at assessing the degree of real wage flexibility in Albania within a vector error-correction model, where real wage flexibility is conceptualized using two indicators: the responsiveness of real wages to unemployment rate and their responsiveness to changes in productivity. The Johansen co-integration tests confirm the existence of one co-integrating relation among the three indicators, but real wages need more than two years to converge to their long-run

equilibrium values. In addition, the variance decomposition analysis reveals that in the short-run most of the variation in real wages forecast errors is explained by their past values (more than 70%) rather than by labour productivity or unemployment rate, which confirms the fact that real wages in Albania are rigid towards these two indicators.

"Bank prudential behaviour in Albania: a statistical analysis based on a new index", by Gerti Shijaku, Research Department.
This article presents a new approach on how to measure bank prudential behaviour. Different from the set of traditional indicators, this approach consists of a wide set of information and therefore covers different aspects related to bank prudential behaviour, rather than focusing only on one aspect, e.g., loan loss provisions and/or loan loss reserve. This new index supplements qualitatively existing prudential risk analysis by providing a timely reading of markets' perceptions on the degree that banks behave prudently. Based on the results of this approach, results suggest that most of banks have been more prudent after the global financial crisis, in particular during the Greek default debt crisis. Similarly, we found a relatively considerable correlation between bank prudential behaviour and bank stability.

"Credit shocks and the European labour market", by Katalin Bodnár, Ludmila Fadejeva, Marco Hoeberichts, Mario Izquierdo Peinado, Christophe Jadeau, Eliana Viviano, European Central Bank
More than five years after the start of the Sovereign debt crisis in Europe, its impact on labour market outcomes is not clear. This paper aims to fill this gap. The authors use qualitative firm-level data for 24 European countries, collected within the Wage Dynamics Network (WDN) of the ESCB. They first derive a set of indices measuring difficulties in accessing the credit market for the period 2010-13. Second, they provide a description of the relationship between credit difficulties and changes in labour input both along the extensive and the intensive margins as well as on wages. The authors find strong and significant correlation between credit difficulties and adjustments along both the extensive and the intensive margin. In the presence of credit market difficulties, firms cut wages by reducing the variable part of wages. This evidence suggests that credit shocks can affect not only the real economy, but also nominal variables.
http://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2124.

"On the Economics of Digital Currencies", by Jesús Fernández-Villaverde and Daniel Sanches, Federal Reserve of Philadelphia.
Can a monetary system in which privately issued cryptocurrencies circulate as media of exchange work? Is such a system stable? How should governments react to digital currencies? Can these currencies and government-issued money coexist? Are cryptocurrencies consistent with an efficient allocation? These are some of the important questions that the sudden rise of cryptocurrencies has brought to contemporary policy discussions. To answer these questions, the authors construct a model of competition among privately issued flat currencies. They find that a purely private arrangement fails to implement an efficient allocation, even though it can deliver price stability under certain technological conditions. Currency competition creates problems for monetary policy implementation under conventional methods. However, it is possible to design a policy rule that uniquely implements

an efficient allocation by driving private currencies out of the market. The authors also show that unique implementation of an efficient allocation can be achieved without government intervention if productive capital is introduced.
https://www.philadelphiafed.org/-/media/research-and-data/publications/working-papers/2018/wp18-07.pdf

"Could a higher inflation target enhance macroeconomic stability?", by José Dorich, Nicholas Labelle St-Pierre, Vadym Lepetyuk, Rhys Mendes, Bank for International Settlement.

Recent international experience with the effective lower bound on nominal interest rates has rekindled interest in the benefits of inflation targets above 2 per cent. The authors evaluate whether an increase in the inflation target to 3 or 4 per cent could improve macroeconomic stability in the Canadian economy. They find that the magnitude of the benefits hinges critically on two elements: (i) the availability and effectiveness of unconventional monetary policy (UMP) tools at the effective lower bound, and, (ii) the level of the real neutral interest rate. In particular, they show that when the real neutral rate is in line with the central tendency of estimates, raising the inflation target yields some improvement in macroeconomic outcomes. There are only modest gains if effective UMP tools are available. In contrast, with a deeply negative real neutral rate, a higher inflation target substantially improves macroeconomic stability regardless of UMP.
https://www.bis.org/publ/work720.htm

"Deconstructing monetary policy surprises: the role of information shocks", by Marek Jarociński and Peter Karadi, European Central Bank.

Central bank announcements simultaneously convey information about monetary policy and the central bank's assessment of the economic outlook. This paper disentangles these two components and studies their effect on the economy using a structural vector auto-regression. It relies on the information inherent in high-frequency co-movement of interest rates and stock prices around policy announcements: a surprise policy tightening raises interest rates and reduces stock prices, while the complementary positive central bank information shock raises both. These two shocks have intuitive and very different effects on the economy. Ignoring the central bank information shocks biases the inference on monetary policy non-neutrality. The authors make this point formally and offer an interpretation of the central bank information shock using a New Keynesian macroeconomic model with financial frictions
http://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2133.en.pdf?88c3d359ff106633 6a838 7648 a9abff

IV. RESEARCH ACTIVITIES

FRIDAY SEMINARS

Below you can find a summary of the set of papers presented during the period of January-June 2018, in the Friday Seminar series, at the Bank of Albania's premises.

"The unusual normal: novelties, challenges and dilemmas of monetary policy", by Dr. Ilir Miteza, Vice Dean for Graduate, Global and Digital Education, University of Michigan Dearborn.

The paper presents a review of the novelties, challenges and dilemmas that monetary policy around the world is facing. Through a review of literature mainly of recent years, the audience discussed how monetary policy has changed and will evolve in the future in the context of developing new instruments, new objectives closely linked to the way of communicating the policy, its foresights, independence, and coordination with the other policies of the central bank. Special attention is paid to the future as well as to the challenges faced by central bank fintech not exclusively in the framework of monetary policy implementation, but also in reporting, banking supervision and financial stability.

"Agricultural enterprises and their financing in Albania", by Elona Dushku and Kliti Ceca, Research Department

The agricultural sector has been and continues to be a sector with considerable contribution to the Albanian economy both in terms of value added and in terms of the number of employees. It is, therefore, of interest to analyse and evaluate the financial and borrowing situation of the agricultural enterprises in Albania. The paper presents a summary of the main sources of financing of agricultural enterprises, as well as the problems and difficulties faced by the agricultural sector in providing funds for the further development of its activity.

"Use of external funding from micro enterprises (1–4 employees) in Albania", by Elona Dushku and Kliti Ceca, Research Department.

A very important factor for the further development of enterprises is access to finance and the availability of finding funds to expand the activity and increase investments. Since micro and medium size enterprises in Albania have a substantial input in terms of employment, value added and number of enterprises in the economy it is important to analyse and evaluate their financial and borrowing situation to identify problems and difficulties they are facing. The survey results on micro-enterprise financing show that micro enterprises face difficulties in securing funds from banks for sustaining their business. The main challenges are related to the high cost of obtaining funds from banks, as well as the terms of the loans.

"The impact of banks' and firms' financial health on borrowing costs: What do data suggest?", by Bledar Hoda, Research Department.

This material aims at a quantitative assessment of: (i) the relative impact that the financial health of banks has on borrowing premium fluctuation versus the relative impact of the financial health of firms, (ii) the impact of fluctuations in macroeconomic fundaments, productivity, monetary policy and 'inclusion of technology in investments', in the dynamics of borrowing, premium and even the financial health of banks and firms. Results were estimated in the framework of a DSGE model, where key calibrations were made for the American and British economies.

TECHNICAL SEMINARS

"Econometrics for central bankers", training activity by Elona Dushku and Gerti Shijaku, Research Department.

In the framework of further developing the training activities, the Human Resources Department in cooperation with the Research Department organized for the employees of the Bank of Albania the training activity "Econometrics for Central Bankers": The

seminar aimed to increase the expertise and analysis related to econometric techniques on multiple-model building techniques, their estimation, the structure of shocks in the economy, and the use of estimates in order to predict key macroeconomic indicators. More concretely, topics were focused on: Vector Autoregression (VAR); Structural Vector Autoregression (SVAR); Vector Error Correction Model (VECM); as well as their application in Eviews.

"An empirical non-linear estimate of money demand in an open economy", by Altin Tanku, Research Department.

Demand for money is one of the areas of economics that has received a great attention. Identifying various factors such as income, interest rate, exchange rate, and also testing for indicator integration, long term relationships, and the stability of the money demand function are some of the important aspects of the literature in which researchers have focused. The main purpose of this seminar was to present and discuss some preliminary results regarding the non-linear demand for money in Albania.

"A Forecasting VAR Model for the Albanian Economy", by Ilir Vika and Meri Papavangjeli, Research Department.

Forecasting the economy is an important issue for policy-making in central banks. In this context, this research project aims to build a forecasting Vector Autoregressive (VAR) model for the Albanian economy, as a useful tool and a benchmark to other time series techniques or more complicated econometric models. The recent technical seminar presented two specifications of an intended VAR model structure for the Albanian economy, which includes the most representative indicators from all economic sectors – the real private sector, the fiscal gauge, the financial part and the external shocks. Both specifications are compared to each other by their predictive performance horizon one to four years ahead. Moreover, the selected VAR model is re-estimated with Bayesian methods, to understand how much uncertainty can be reduced by adding Bayesian inference to the baseline unrestricted VAR model. The preliminary findings suggest that the forecast performance improves for most variables when the number of time lags rises.

"What drives bank prudential behaviour? A statistical evaluation based on the principal component approach", by Gerti Shijaku, Research Department.

This material analyses the factor that influences the most bank's prudential behaviour. The aim is to understand whether bank prudential behaviour is more a matter of constrains imposed by regulation or a consequence of bank decision-making itself. For this reason, first, we identify a set of correlated indicators related both to the discretionary and non-discretionary patterns of bank prudential behaviour, in addition to LLP or reserve funds. Then, we use the principal component analysis to identify a new variable, the principal component, which is a linear combination of the original variables, which we refer it as an optimal proxy for measuring bank prudential behaviour. In conclusion, we use this component to assess similarities and differences with the set of data used to estimate it so that to be able to understand whether bank prudential behaviour is more a matter of constrains imposed by regulation or a consequence of bank decision-making itself.

"Households' demand: An application of a Quadratic Almost Ideal Demand System

on micro data", by Ola Çami, Research Department.

The purpose of this seminar was to present the results of QUAIDS (Quadratic Almost Ideal Demand System) applied for Albanian households. This system aims to assess the elasticity of income and prices (compensated, uncompensated and cross-price) for eight crucial budget shares. The results serve to build and understand better the behaviour of aggregate demand and consumption of Albanian households.

"Introduction to the Bayesian Estimation Methods and BEAR Toolbox", by Meri Papavangjeli, Research Department

This seminar aims to present the Bayesian methods in estimating the econometric models, mainly VARs, compared to the classical estimation methods, as well as to introduce the use of BEAR toolbox, a MatLab interface widely used and considered by central banks of developed countries (such as Bank of England, the European Central Bank, Deutsche Bundesbank, etc.) as a very effective tool in evaluating these models.

"Interpolating Missing Observations with State Space equations", by Bledar Hoda, Research Department.

In this seminar, we illustrate the use of state space models for interpolating missing observations or high frequency series. The Kalman Filter algorithm is e powerful tool employed in State Space models used to model unobserved variables, like rational expectations, measurement errors, or missing observations. In addition, these models can be used to model unobserved components like trends & cycles or the non-accelerating rate of unemployment. The use of these models is illustrated by the interpolation of monthly GDP and of monthly government bond yield's with maturity 5, 7 and 10 years based on quarterly series and other monthly indicators.

V. LINKS OF OTHER INSTITUTIONS:

Banca d'Italia
(http://www.bancaditalia.it/studiricerche)

Bank of Canada
http://www.bankofcanada.ca/research/

Banco de Espana
(http://www.bde.es/informes/be/docs/docse.htm)

Bank of England
(http://www.bankofengland.co.uk/publications/workingpapers/index.htm)

Bank of Finland
(http://www.bof.fi/en/julkaisut/bofit_julkaisut/index.htm)

Bank of Greece
(http://eng.bankofgreece.gr/en/publications/research.asp)

BIS Central Bank Research Hub
(http://www.bis.org/cbhub/index.htm

Czech National Bank
(http://www.cnb.cz/en/research/))

Deutsche Bundesbank
(http://www.bundesbank.de/vfz/vfz_diskussionspapiere_2009.en.php)

European Central Bank
(http://www.ecb.int/home/html/researcher.en.html)

Federal Reserve
(http://www.federalreserve.gov/econresdata/default.htm)

International Journal of Central Banking
(http://www.ijcb.org/)

National Bureau of Economic Research
(http://www.nber.org/)

International Monetary Fund
(http://www.imf.org/external/pubind.htm)

Oesterreichische Nationalbank
(http://www.oenb.at/en/presse_pub/research/research.jsp)