## **NO.4**

## SCIENTIFIC NOVELTIES AT THE BANK OF ALBANIA

### Contents:

- Friday Seminars
- II. Recently Concluded Research Papers
- III. Articles and Working Papers in Progress
- IV. Articles, Interviews, Press statements by Bank of Albania Administrators and Employees
- Other items

## I. FRIDAY SEMINARS

Between January and June 2010 the Friday Seminars series welcomed seven presentations by Bank of Albania staff, staff of other central banks as well as researchers from academia. The papers presented issues regarding monetary and financial stability, the exchange rate, economic development policy, etc. A more detailed description of these papers is as follows:

The Friday Seminars series started off with a presentation by Oriela Kodra from our Research Department, "Monetary and Financial Conditions Index: The Case of Albania". This paper estimates the relative weights of interest rates and the real exchange rate in the case of Albania and calculates an index of monetary and financial conditions. The Bank of Canada was the first to adopt this type of index, but it was in turn adopted by other central banks and international institutions as a mechanism for orienting monetary policy and understanding its effect on the economy. The MFC index is a weighted average of real interest rates and the real exchange rate which determines whether monetary conditions in an economy are loose or tight expressing with a single number the pressure that monetary policy exerts on the economy and, consequently, on inflation. The weights of the real interest rate and the real exchange rate are estimated by the Ordinary Least Squares (OLS) Method and the data is quarterly, from 1998 to 2008. Empirical results show that the MFC for Albania is 3.8, which means that an appreciation of the REER by 3.8 percentage points can be counteracted by a 1 percentage point increase in the interest rate.

The subsequent seminar introduced the paper "An investigation of the effects of exchange rate volatility on Exports in East Asia" by Dilara Das, PhD, University of Southern Illinois. The main objective of this paper was the estimation of the long term effect of the exchange rate on the trade flows of Southeast Asian countries before and after 1997. Another subject of research was the evaluation of the persistence of the exchange rate effect on export flows based on several volatility measures. The author has used ARCH (1) and GARCH (1,1) models for her estimation. Empirical results show that the

long term demand for exports depends on relative export prices, world income, the volatility of the exchange rate, and the real effective exchange rate. Results also reveal a negative correlation between exchange rate volatility and export demand in the long run for countries like South Korea and Malaysia. This shows that riskaverse producers prefer to carry out their transactions domestically as opposed to in the international markets.

"The Equilibrium of the Real Lek-Euro Exchange Rate: How far from Equilibrium?" by Erjon Luci, The World Bank and Ilir Vika, Research Department, was the next paper to be presented at the Friday Seminars Series. This paper seeks to identify the factors determining exchange rate developments, estimate an equilibrium exchange rate, and evaluate whether the actual exchange rate deviates from the equilibrium rate. The exchange rate determinants taken in consideration were the productivity differential, net foreign assets, government expenditure, the interest rate differential, the degree of openness of the economy, remittances, and terms of trade. The paper relies on the Autoregressive Distributed Lag (ARDL) methodology developed by Pesaran and Shin (1999). The authors conclude that the real exchange rate does not appear to be deviating from its medium term equilibrium.

Another paper presented at the seminar was "The Use of the Euro in Central, Eastern and Southeastern Europe: Extent, Causes and Impacts of the Global Financial Crisis" by Ms. Doris Ritzberger-Gruenwald, Head of the Foreign Research Sector, Bank of Austria, Mr. Helmut Stix, Economist, Economic Research Sector, Bank of Austria, and Mr. Thomas Scheiber, Economist, Foreign Research Sector, Bank of Austria. The purpose of this paper was to present the results of a survey carried out in ten European countries, five of which are EU members and the other five candidates for EU accession. The central questions of the survey concerned cash holdings in foreign currency, the number of deposits in foreign currency, and the amount of credit extended in foreign currency, among others. Some of the key findings from the survey are that these countries have high degrees of euroization, that they suffer from a high persistence of euroization, and that the financial crisis has had an impact on each individual's portfolio.

The following presentation was "The Institutional Model of Socio-economic Development: The Role of Education and Training and Related Issues" by Mr. Oliver Deasy, EU CARD program representative in Albania. The purpose of this presentation was the introduction to the institutional model of economic development, with special reference to the Irish model. Results show that the role of education and individual training is very important for a country's economic development, and that education and training helps attract Foreign Direct Investments (FDI).Indeed, it is everybody's duty to promote public training and education through strategy development policies.

Mr. Krishna Kamath, economist at the Finance Department of the Wharton School of Business, presented his paper "Match - Making and Rent - Seeking: An empirical analysis of mergers of Venture - Backed Companies". This paper studies the rent-seeking behavior accompanying the "keiretsu" effect of venture capital companies. Using examples

3

750 mergers among venture-backed companies, the author concludes that deals where the acquiring company and the target company are backed by a common venture capital firm achieve lower announcement CAR and produce lower post-merger operational performance by the acquirer. In addition, venture backed acquirers pay more for the acquisition of companies backed by the same venture. Lastly, stock as a method of payment is used more in the case of mergers between companies backed by the same venture. The results of this study show that venture capitalists facilitate the merger between by reducing information companies asymmetry and use their influence to extract rent from the stockholders of the acquiring company.

The last paper to be presented in the seminar for the first half of 2006 was "Bank Credit and GDP" by Mr. Arjan Kadareja, member of the Supervisory Council of the Bank of Albania. This paper aims to identify the importance of bank credit for the transmission of monetary policy in the Euro Area, as well as the real effects of the 2007 alobal financial crises on banks. The method used for evaluation is the instrumentalized panel method and the data which is quarterly covers the period 1999-2008. The countries under study are Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal and Spain. The results reveal that in the Euro Area the bank credit transmission mechanism of monetary policy is important, in that changes in bank credit (in volumes and/ or standards) have important effects on output, unlike the case of the US (Driscoll, 2004). This finding suggests that bank credit developments can be taken into consideration for monetary policymaking in the Euro Area. Moreover, the results of this study can be used to measure the real impact of the negative shocks on banks in the context of the global financial crisis that started in the middle of 2007.

## II. RECENTLY CONCLUDED RESEARCH PAPERS

## 1. "MONETARY AND FINANCIAL **CONDITIONS INDEX: THE CASE OF** ALBANIA" - BY ORIELA KODRA, RESEARCH DEPARTMENT.

This paper aims to estimate the relative weights of the interest rate and the exchange rate for the case of Albania. Until now the MCI has been calculated using a calibration method suggested by the IMF in 2004. This paper seeks to calculate the ratio between the main two monetary policy transmission channels - the interest rate and the exchange rate - using the Ordinary Least Squares estimation method.

## 2."FINANCIAL DEVELOPMENT AND INFLATION IN ALBANIA" - BYVASILIKA KOTA, RESEARCH DEPARTAMENT.

The paper assesses the relationship between inflation and financial development in Albania. Generally, studies have shown that this relationship is nonlinear. Normally an increase in the inflation rate has a small positive effect

when the initial rate of inflation is low and negative if the initial rate is high. This study seeks to test whether this hypothesis holds true, in the case of Albania, by studying the relationship between inflation and financial deepening by controlling for variables such as GDP per capita, the country's openness to trade, and the share of public consumption to GDP.

## 3."NOWCASTING REAL GDP", BY ARMELA MANÇELLARI, THE RESEARCH DEPARTMENT

This study aims to build models which can be used to nowcast the value of Gross Domestic Product in the current quarter. A better decision-making process needs the assessment of the current economic situation in various ways and

short-term projections on real economic performance. Since data on quarterly GDP in Albania are published 12 weeks late. This study uses data from real sales; from sales and repairs of vehicles and; from components of confidence indices in predicting the GDP in the current quarter by using econometric models.

## 4. "THE OPTIMUM LEVEL OF RESERVES: THE CASE OF ALBANIA", BY GERTI SHIJAKU, THE RESEARCH DEPARTMENT

The aim of this paper is to present an empirical model on the optimum level of international reserves for a small open economy, such as Albania, by taking into consideration the various exogenous shocks which can hit the macroeconomic

## III. WORKING PAPERS IN PROCESS

environment.

During this period, the research activity at the Bank of Albania has focused on the following topics:

## 1. "THE STABILISATION AND ASSOCIATION AGREEMENT", BY ALBAN PLLAHA, THE RESEARCH DEPARTMENT

This paper analyses bilateral free trade relationships between Albania and the European Union. The main focal points of the paper are the Stabilization and Association Agreement (SAA), Free Trade Agreement with the countries in the region,

results derived from trade exchanges between the parties, and the application of the "Gravity Model". This model generates predictive data that enable the comparison between the actual trading volumes with the potential ones.1

The results of the model suggest that trade volumes between Albania and the EU countries, like Greece and Italy, are close to the possible potential equilibrium. Regarding trade with Germany, there is a possibility for further intensification of trade exchanges. Also, the findings of

<sup>1</sup> The model is applied to Albania's three main trade partners, members of the European Union (Greece, Germany and Italy), as well as to four main regional partners.

the model show that trading volume with countries in the region is well below the equilibrium potential. A good opportunity to intensify trade exchanges between Albania and the countries in the region is the improvement of the infrastructure networks. Furthermore, a complete application of the SAA would substantially enhance the trading volumes of Albania, not only with its traditional main partners, but also with the other EU countries.

## 2. "FISCAL POLICY STABILITY: THE CASE OF ALBANIA"- BY GERTI SHIJAKU. THE RESEARCH DEPARTMENT

This study aims to evaluate the stability of fiscal policy in Albania following Taylor's approach (2002). The main focus is dedicated to the diagnostic tests, linear and nonlinear models (STAR). We can refer to the study findings when we want to evaluate and identify the form of the fiscal rule, but we cannot assess the behavior of fiscal policy in the future.

## 3. "MACROECONOMIC EFFECTS OF FISCAL POLICY IN ALBANIA: THE SVAR APPROACH", BY ARMELA MANCELLARI, THE RESEARCH DEPARTMENT

This study aims to assess the effect of fiscal policy in the Albanian economy. The main question this papers addresses is the assessment of the GDP multiplier of fiscal policy. The study deals separately with two types of fiscal policy: tax cuts and increase in government spending. The method employed for evaluation is SVAR-D (the Structural Autoregressive Vector). To identify pure fiscal shocks, we make use of the following information.

First, the use of quarterly data ignores the simultaneous fiscal policy responses to changes in GDP, or to other economic indicators, since decision-making process and implementation of changes requires more than a quarter.

Second, using OLS linear regression, we compute the elasticities of tax capital transfers revenues, expenditures as a share of GDP, interest inflation and rates. calculated elasticities represent the automatic stabilizers which are the simultaneous responses of fiscal policy to macroeconomic changes. Preliminary findings identify a neoclassical behavior of fiscal policy in the case of Albania.

## 4. "IS THERE ANY SUBSTITUTION EFFECT OF DOMESTIC PUBLIC **BORROWING IN THE PERFORMANCE** OF PRIVATE INVESTMENTS", BY BLEDAR HODA, THE RESEARCH **DEPARTMENT**

The neoclassical approach claims that an increase in public investments tends to crowd out the private investment, by engaging the financial resources of the economy, by increasing the interest rates and by engaging the production factors through price competition. The focus of this study lies on the effect of domestic public debt on the performance of private investment. The substitution effect of domestic debt on the performance of private investments would be confirmed by the existence of a long-term relationship between these indicators and the adjustment of private investments against an increase in the public debt.

## 5. "THE KEY MACROECONOMIC FACTORS DEFINING CREDIT RISK: THE CASE OF ALBANIA", BY IRINI KALLUCI AND ORIELA KODRA, THE RESEARCH DEPARTMENT

This paper aims to study the relationship between various macroeconomic factors and credit risk indicators, during the period 2002-2009. Assessing the relationship between these indicators is important in the decision-making of macroeconomic policy.

## 6. "EVALUATION OF LONG-TERM IMPACT OF TOURISM ON THE ALBANIAN ECONOMIC GROWTH", BY JONEL KRISTO, THE RESEARCH DEPARTMENT

This study aims to measure the impact of tourism sector on the overall economic growth of our country during the period 1995-2008. The long-term relationship between tourism and economic growth is studied by analyzing the inflows of foreign visitors and total real earnings in the economy.

# 7. "STRESS-TESTING ON INDIRECT CREDIT RISK, BASED ON BANKS' CHARACTERISTICS", BY KLITI CECA (THE RESEARCH DEPARTMENT) AND HILDA SHIJAKU (THE FINANCIAL STABILITY DEPARTMENT)

This paper investigates the response of the nonperforming loans ratio to macroeconomic conditions which cause deterioration in the solvency of borrowers. This influence can be seen through the channels of credit risk under banks specific

characteristics, such as size, ownership, capitalization and other features of the loan portfolio. Empirically, the model is enabled through the assessment of panel data of banks in Albania and, also, it adds value to the evaluation of parameters used in stress-testing individual banks.

## 8. "MACROECONOMIC DETERMINANTS OF REMITTANCES IN ALBANIA", BY ESIDA ABAZAJ, THE RESEARCH DEPARTMENT

This paper aims to study the behavior of migrants' remittances in Albania during the period 1996-2009. The main focus of this material is to assess empirically the remittances determinants, on a macro level, and to analyze their impact on economic situation of migrants' households and on the economic growth of Albania. Knowing the macroeconomic determinants of remittances and their impact on the economy is crucial in designing appropriate macroeconomic policies aimed to attract such an important financial source.

## **IV. ARTICLES**

The articles prepared during this period are as follows:

## "MONETARY AND FINANCIAL **CONDITIONS INDICES: THE CASE OF** ALBANIA", BY ORIELA KODRA, THE RESEARCH DEPARTMENT.

This study, based on OLS estimations, evaluates the MCI (Monetary Conditions Index) and the FCI (Financial Conditions Index) for the case of Albania, and observes their performance during the period January 1996 - April 2010. Based on the performance of MCI, the beginning of financial crisis is characterized by tightening monetary conditions, mainly due to the rising real interest rates on treasury bills.

In the first months of 2010, we observe that MCI after a period characterized by improved monetary conditions, since March, it started to indicate a contraction of monetary conditions. This deterioration of the index came as a result of further increase in the treasury bills interest rates, while the national currency continues to depreciate. Like MCI, the Financial Conditions Index (FCI) even in the beginning of the financial crisis, showed that financial activity is characterized by tightened conditions, mostly attributed to increases in loans real interest rates. Just after mid-2009, financial conditions started to improve because of LEK depreciation and the decline in loans real interest rates.

## "DETERMINANTS OF ECONOMIC **GROWTH IN ALBANIA", BY VASILIKA** KOTA, THE RESEARCH DEPARTMENT.

This paper presents an analysis of economic growth sources after the transition period. The assessment of basic determinants of economic growth is crucial in understanding their role in the past and what their development prospects in the future will be. Compared to South-Eastern European countries, the economic growth in Albania after the '90s was higher than most of these countries. The main findings show that the main economic growth source in Albania has been the improvement in total factor productivity (TFP), whereas after the year 2000 the capital stock has played an important role. Therefore, given that after the transition period, the TFP growth, resulting from the reorganization of the economy, will gradually decline and as developments in the investment growth showed year-to-year fluctuations, it is important that Albania creates alternative sources of economic growth.

Within this context, the accumulation of capital through investment enhancement takes on special importance. Also, it is important for Albania to create further improvement in TFP from other alternate sources, such as benefits from technological changes as well as entrepreneurial efficiency growth and so on. Finally, considering the conversion of sectors towards labor productivity growth in Albania, it is important to improve the quality of this factor.

## V. OTHER ITEMS

Scientific round-table: "Economic growth in Albania-The quest for a new model"

On May 3rd 2010, the Institute of Economic Research and Banking at the Bank of Albania, organized a scientific round-table in the city of Berat. The discussion focused on "Economic growth in Albania, the quest for a new model," with broad participation from both academia and international institutions such as the World Bank, IMF and USAID, and of course with the participation of employees of the Bank of Albania.

The main purpose of this activity was to encourage a productive scientific discussion on the current model of economic growth, the main factors that currently determine economic growth and the key elements that will support economic growth in the future, including the following: increasing competitiveness, technology, foreign investment, tourism, agriculture, the role of immigration, as well as plenty of other factors.

The event was organized in three sessions. The first session focused on studies and reflections on the current model of economic growth in Albania, where some of the main issues discussed involved the role of production factors and their impact on the current model of economic growth, the competitiveness of the Albanian economy and a regional comparison in terms of competitiveness in attracting FDI (foreign direct investment) and increasing exports, and so forth. Some of the most important conclusions presented in this session were:

- Investments are a major factor in increasing the stock of capital and contribute to greater economic growth
- Total factor productivity is growing slowly, so it demands new sources of growth;
- The level of competitiveness of the Albanian economy remains low based on international reports, which means that improving competitiveness of the Albanian economy is a major challenge in the future;
- There is an immediate need to increase the quality of human capacities, professional education, and training in using new technologies and investing in R&D.

Presenters in this session were Vasilika Kota (Research Department, Bank of Albania), Kasem Seferi (economic advisor to the President of the Republic of Albania), Dr. Erion Luci (World Bank expert) and Prof. Dr. Ahmet Mançellari (professor, Faculty of Economics, University of Tirana).

At the end of the session, Dr. Bahri Musabelliu (Dean of Faculty of Agriculture) discussed the current state of agriculture in our country, underlining that this sector uses only 50% of its capacity. A further increase in capacity of this sector will bring productivity increases to support growth in agro-business.

In the second session, the focus of the discussion was mainly on the capital market and its impact on economic growth in the future. Prof. Dr. Salvatore Messina (European University for Tourism), Jonel Kristo (Research Department, Bank of Albania), Armela Mançellari (Research Department, Bank of Albania), Professor. Dr. Agim Kukeli (A. Mojsiu University) and Dr. Ilir Gedeshi (Center for Economic and Social Studies) were the presenters in this session, focusing on issues involving the role of FDI, migrant remittances and the role and impact of tourism, as basic elements for further development and economic growth of the country. Some of the conclusions of this session were as follows:

- Attracting FDI requires skilled labor force.
- Tourism is one of the main competitive advantages of the Albanian economy, but ample attention should be given to environmental protection, better point-of-entry management at harbors and airports, all based on strong marketing and promotional campaigns and at the same time ensuring that quality standards are set for further development of the sector;
- Income from emigrants has played an important role in alleviating poverty, being used mainly as funds for consumption. However, this income source did not affect the development of the country. It shall be the duty of second tier banks to promote financial products that enable the consumption of income for emigrants mainly in the form of investment.

The third and last session focused on the role of agriculture and technology in the new growth model, being attentive to the negative environmental externalities to growth. The presenters in this session were Prof. Dr. Skender Sala and Prof. Dr. Perikli Qiriazi (both from the University of Tirana), Prof. Asst. Dr. Adrian Shehu (Polytechnic University of Tirana), and Juan M. Estrada-Valle (USAID, New Agriculture Competitiveness). This session concluded with the following:

- The economic growth of the last two decades has brought negative effects on production factors, especially soil erosion and misuse of other resources. Scientific management of natural heritage means a balanced use of natural resources and continuity of their sustainable use through the utmost protection of natural values.
- Technology is one of the primary factors in the selection of new models of economic development.
   As technology brings in changes in lifestyles, it is important in defining and supporting economic development.

In conclusion, scientific tables brought out the lack of well-defined strategies for a new growth model. Debate on the new model of economic growth will continue in later series of this activity, involving other groups of interest, with the aim to bring back the discussion on giving specific recommendations and finally selecting the several key priorities for the future development of the Albanian economic model.

## Satellite Models

Achieving and maintaining price stability is the primary objective of monetary

policy at the Bank of Albania. Due to the important role that inflation plays in maintaining macroeconomic stability, holding its control is the best contribution that central banks can provide to support growth. To achieve its objective, BOA uses several instruments of monetary policy, however, their effect in the economy and inflation is felt with some time lag. It is therefore important that monetary policymakers be knowledgeable about not only the expected performance of inflation as the main target, but also about other macroeconomic variables due to their interdependence in the economy.

Estimating key macroeconomic variables 12 months in advance is especially important at the Bank of Albania. Since the beginning of 2009, the Research Department is engaged in building forecasting models that also serve as satellite models for the Macroeconomic Model of Albania, called MEAM. MEAM is used not only to project the future, but also to see the overall outcome of specific projections of economic variables, which are later integrated in a single interdependent projection. Satellite models are both univariate (one variable) and multivariate (many variables) equations, and are used to forecast variables such as: economic growth, the performance of financial intermediation, interest rates, exchange rate, inflation, trade balance, and so forth. Also, each model is evaluated for its forecasting accuracy by means of several error checking indicators, such as: the mean error, mean absolute error, mean root square error, etc. Based on the entire analysis of forecasting errors for the period between 2009 and 2010, the quality of forecasts has been satisfactory, which confirms the accuracy and quality of our forecasting.

## **Technical Seminars**

Another activity conducted by the Research Department within the framework of the Medium Term Development Strategy of Research at the Bank of Albania is the Technical Seminar organized bimonthly. In this seminar, the participants aim at presenting the latest scientific news in the field of economics, new methods of solving various problems, the development of original mathematical models of processes and phenomena and the results obtained from using them, among other topics. The presentations held between January and June 2010 covered the following three topics:

- 1. Econometric ARDL models.
- 2. Evaluation of forecasting errors.
- Monte-Carlo simulation, principles and methods.

The topic on "Specification of ARDL models" was presented by Altin Tanku, head of the Research Department. This model empirically analyzes the short term dynamics and long term relations between variables evaluated using bounds tests in the cointegrating procedures developed by Pesaran and Shin (2001). The advantages of using this method are the following: First, bounds tests procedures are simple and, unlike other cointegration techniques such as the one developed by Johansen and Juselius, the long term relation is estimated using OLS with the integrating order identified. Second, this method applies regardless of whether the variables in the model are only I(0), only I(1) or I(0) and I(1). Third, this procedure is more efficient in a sample with fewer observations.

The topic on "Evaluation of forecasting errors" was presented by Vasilika Kota from the Research Department. It is known that predictions of economic variables have particular relevance to central banks, but the future is always difficult to predict and involves great uncertainty. For this reason, it is necessary to parallel the forecasting process with the analysis of forecasting errors. Therefore, some of the key indicators used in the literature for measuring forecasting errors are:

- The mean error (ME), which serves to assess the deviations of forecasted values from the actual value, determining if there is any bias in the forecast.
- The mean absolute error (MAE) assesses the extent of forecast errors.
- The mean root square error (RMSE) is an indicator that assumes that errors of greater value are worse than errors of lower value.
- The mean percentage error (MPE) shows the weight the forecast error on the actual value of a certain indicator.
- The mean absolute percentage error (MAPE) is a comparative indicator, and does not include processes of averaging positive and negative deviations from the forecast.

Besides evaluating the accuracy of forecasting, it is necessary to assess the ability of models to predict direction of movement, to show whether an indicator will decrease or increase in a given forecast period. The statistics used in this case compare the percentage of those instances where the prediction moves in the same direction with the actual value, versus the opposite case of direction mismatch between forecasted and actual value of a given indicator.

The last topic covered "The simulation of random variables: principles and methods," and was presented by Kliti Ceca of the Research Department. This presentation addressed concepts such as the Monte-Carlo simulation, generating variable  $f \sim U(0,1)$ , modeling a random variable, and general modeling methods.

Generating a random variable with a given probabilistic distribution involves finding mathematical methods of forming a set of real numbers for which one can accept the statistical hypothesis of the probabilistic distribution of the given random variable. Studying methods of variable generation is theoretically important because they allow one to see how to achieve any law given a uniform law of a probabilistic distribution. These methods are widely used in practice for solving both real problems as well as deterministic problems, such as finding the value of the number  $\pi$ . Compared with numerical methods, the random variable generation method is notable for the simplicity of algorithms they form.

## LINKS:

## RESEARCH AT OTHER CENTRAL BANKS

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

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

Deutsche Bundesbank (http://www. bundesbank.de/vfz/vfz\_diskussionspapiere\_ 2009.en.php)

Oesterreichische Nationalbank (http://www.oenb.at/en/presse\_pub/research/research.jsp)

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

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

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

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

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

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

### **OTHER**

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

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