National Bank of the Republic of Macedonia

4th Research Conference

Addressing Structural Rigidities in View of Monetary Policy Transmission Effectiveness

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Comments to the papers presented in the 4th Session
"Structural features of the financial system"

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Conducting monetary policy in a dollarized economy during the crisis: the case of Montenegro *(by Velibor Milosević)*

a) **Objective**

To find out the impact of (changes in) reserve requirement rates on (the growth rates of) deposits, loans and economic activity in Montenegro.

b) **Econometric procedure**

Lineal partial adjustment of a monetary demand model.

c) **Main results of the paper**

There appears to be an active transmission mechanism between a change in reserve requirement rate and growth in deposits and bank lending.

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d) Comments

1. "Dollarisation" or "euroisation"?

2. Is there any reason why estimation ends up in June 2010? Any plan to extend it to the more recent period (to cover, e.g., the sovereign crisis in the EA)?

3. A more detailed description of both dependent and independent variables, along with the expected sign of the relationship between the former and the latter, would greatly increase the clarity of the exposition.

4. Independent variables: reserve requirements

   4.1 Why use both the (changes in the) levels and the (changes, through dummy variables, of) regimes? Are not they intended to measure the same phenomenon?

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4.2 In the former case (i.e. changes in the level of reserve requirements) <u>this variable would not change very frequently</u>, therefore implying the presence of <u>many zeroes</u> in the regression estimation. Wouldn't it be better to use just dummies?

4.3 <u>Just one aspect is assessed in the paper</u>, i.e. what happens when the central bank changes the "rate" commercial banks have to adhere to. But, as the author correctly reports, <u>the reserve requirement is a much more complex</u> (and flexible?) <u>instrument available to CB</u>. Any project to extend the paper to touch further relevant aspects as well?

5. <u>Other independent variables</u>. They are fundamentally the same in each of the three different specifications. There is a great risk of incurring in <u>an omitted variable bias</u>: any plan, maybe as a robustness check, to introduce other potential determinants? No role, e.g., for external conditions or foreign capital?

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6. <u>Econometric procedure and results</u>

6.1 In all specifications the current growth rate of the dependent variable is regressed on its own lagged value (only the first one) and on current growth rates of the set of chosen regressors. <u>This lag structure seems to be arbitrary</u>, since any ARDL model would account also lagged values of the regressors as well.

6.2 The coefficients reported in the tables are only <u>the betas</u> - i.e. the coefficients of the transformed model - but these <u>are not the actual coefficients of interest, which should be the alfas and the lambdas</u> that describe the long-run equilibrium level of the variable of interest and how it changes in the short-run once a shock leads its current value far from the equilibrium one. A thorough <u>co-integration analysis</u> is necessary when estimating these models.

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6.3 The damages brought about by <u>endogeneity/simultaneity bias</u> is much more widespread than the author actually recognizes. Every single variable in each of the three specifications is influenced (currently or on a lagged form) by all the others. <u>Is there really not enough time depth to implement a VAR (or, better, a VECM) estimation</u> (see Comment #2)?

6.4 The results of the econometric exercise could be accompanied with those stemming from an <u>event study analysis</u>.

An interesting paper to look at might be "Credit Growth and the Effectiveness of Reserve Requirements and Other Macroprudential Instruments in Latin America", IMF Working Paper, 12/142.

Forensic analysis of credit activity in Croatia *(by Mirna Dumičić and Igor Ljubaj)*

a) Objective

To uncover what drives the observed dynamics of credit to the private sector in Croatia: is it demand or is it supply? Attention devoted to the identification of the determinants of both credit demand and credit supply, for both the household and the corporate sector, in the period 2000Q1-2014Q2.

b) Econometric procedure

Disequilibrium framework, which has seemingly become common in the "credit crunch/supply rationing" literature; econometric results cross-checked with evidence from bank lending surveys (from 2012 onwards).

c) Main results of the paper

Constraints to a rebound of bank lending to the private sector seem to stem more from demand factors than from a credit rationing by banks.

Forensic analysis of credit activity in Croatia *(by Mirna Dumičić and Igor Ljubaj)*

d) Comments

1. <u>Dependent variable</u>. It is not clear what you are <u>actually measuring</u>: stock or new flow of loans? Only the share in domestic currency or also that in FX or those in Kuna but with currency clauses?

2. <u>Independent variables</u>.

   2.1 It would be good to have a <u>more detailed description of the regressors</u>: where (and why) did you get them? What (and why) is your *a-priori* about their expected sign? Are you reporting in the paper just the regressors that turned out to be significant? Why? What are the main differences among the regressors for the supply and the demand schedule for the corporate and household sector?

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2.2 Notwithstanding the frequent clear references made in the text there are, in my view, <u>many missing (though relevant) aspects</u>. No role for <u>domestic monetary policy</u>? For the state of <u>external conditions</u>? For the changing role of <u>financing from parent banks</u>? For the relevance (maybe more for corporates) of sources of <u>financing</u> different from bank loans? For the level of private sector <u>indebtedness</u>? For variables measuring the <u>health of banks' current and expected profitability</u>?

2.3 <u>Other questions</u>.

- Why does <u>the lending rate appear</u> explicitly in the supply equation (for both the corporate and household sectors) <u>only in difference form</u> (w.r.t. the deposit rate)?

- On the <u>credit potential</u> of banks: conceptually, the maximum banks can lend is the excess capital over minimum required regulatory capital plus deposits after complying with reserve requirements.

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3. <u>Econometric procedure and results</u>.

3.1 Initial values for <u>ML estimation</u>: OLS or 2SLS? In the latter case, what instruments? Any difference between the two procedures?
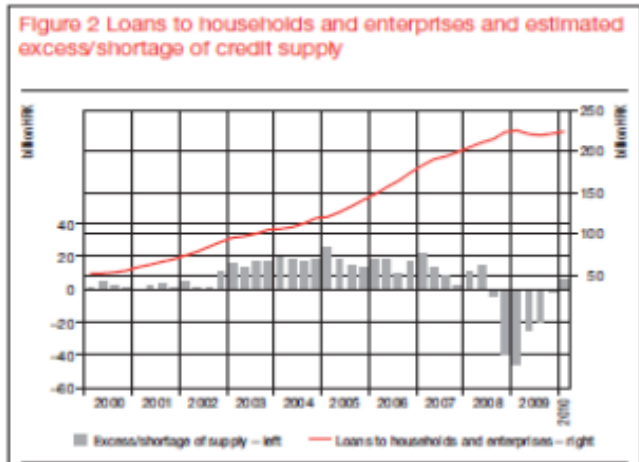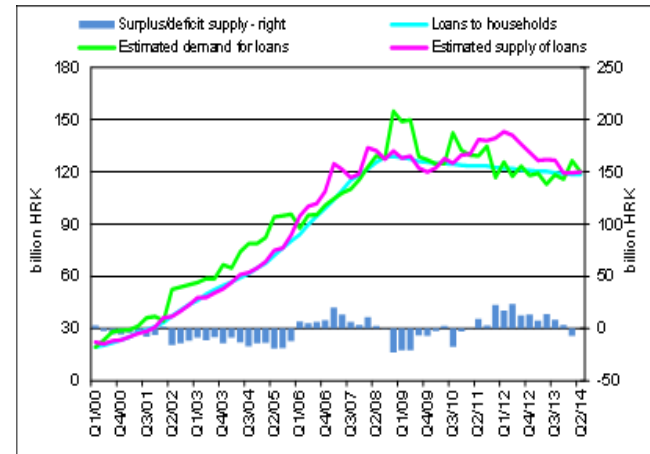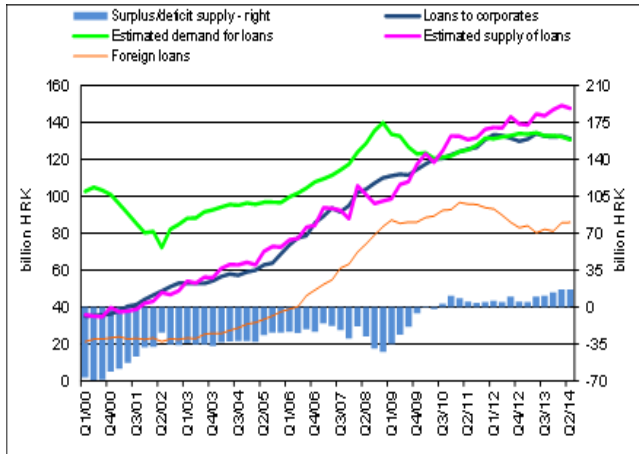
3.2 <u>Unit roots and co-integration</u>: test results? A too short time dimension?

3.3 <u>Unconvincing conclusions</u>.

- <u>Role of the EMBI spread</u>: its interpretation is not immediate; wouldn't it be better to use a simpler, but easier to interpret, "interest rate differential" w.r.t. advanced economies?

- <u>NPLs</u>: the positive relationship with the supply of loans (to both corporates and households) is at odds to what we can read from all the financial stability reports around the world; therefore, the justification put forward (i.e. to "dilute the share of bad payments") is not very convincing.

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- • <u>Comparison with the conclusions of another paper of yours (2011)</u>

Figure 2 Loans to households and enterprises and estimated excess/shortage of credit supply

How do you relate the two competing results? To which story do we have to believe? Problems in the estimation of the corporate demand schedule? Maybe.

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Forecasting mortgages: internet search data as a proxy for mortgage credit demand *(by Branislav Saxa)*

a) Objective

To examine the usefulness of Google Trends data for forecasting (the growth of) mortgage lending in the Czech Republic.

b) Econometric procedure

Simple autoregressive models (AR1), augmented with search engine data to produce near-term forecasts both in- and out-of-sample.

c) Main results of the paper

Growth in Google Searches are strongly correlated to growth in mortgages, with a lag of two months; evaluation of both in- and out-of-sample forecasts shows that Google Searches improve mortgage lending predictions significantly.

Forecasting mortgages: internet search data as a proxy for mortgage credit demand *(by Branislav Saxa)*

d) Comments

First part

1. Any acknowledgment of <u>critical aspects/limitations/problems</u> in the selection of Google Searches volumes? After all <u>the indicator captures overall mortgage search activities</u>, i.e. the sum of searches performed by both those who are actually looking for a mortgage and those who already have a mortgage. <u>Any comparison</u> between how often people look for "mortgages" on the internet and the actual mortgage applications to commercial banks?

2. Individuals looking for "mortgages" through the internet may not be <u>randomly selected</u> (i.e. risk of repeated searches by the same users over a relatively short time span). The author says to have averaged ten (*the number of words in note 4?*) data series obtained using the same query at different times. But <u>how many "different times"</u>, 10? Is it enough? <u>No other, more robust, methods</u> (bootstrapping, PC analysis, …)?

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3. <u>Other problems</u> related to the instrument.

   3.1 <u>Lack of transparency</u> in the way in which Google produces the data series disseminated on Google Trends.

   3.2 <u>Processing, normalisations and scaling procedures</u> applied to queries and categories <u>are not specified</u>.

   3.3 The tool has potentially <u>damaging limitations</u> in the production of statistics with <u>long-lasting usability</u> (see, e.g., the Google Flu tool).

4. <u>Econometric procedure and results</u>.

   4.1 Once <u>seasonality</u> is properly taken into account (indeed, the only correct way to proceed), the improvement brought about by the presence of Google Searches is greatly reduced. Are Google Searches better at detecting the "turning points" of a phenomenon rather than its overall dynamics?

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4.2 The <u>proper comparison</u> between competing forecasting models should take into account the <u>appropriate length of the time series</u>. (Good) Google Searches are available since 2007M1; series on new mortgages available to a Central Bank more back in time (I hope!). The exercise of comparing the forecasting performance of models estimated on samples starting in 2007M1 <u>with and without Google Searches</u> would be of little practical relevance if models estimated <u>without Google Searches but exploiting a longer time span</u> would turn out being better at predicting mortgage dynamics.

4.3 Is a simple AR1 (or ARX1) <u>enough</u> to conclude about the goodness of such an instrument for nowcasting and forecasting purposes? Any plan of conducting a deeper in- and out-of-sample comparison by means of <u>many other competing models</u>, i.e. AR(p), ARMA (p,q), ARMAX (where X a set of "other" leading indicators of mortgage demand)?

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4.3 Google Searches are used as a forecasting tool for the "growth rates" of new mortgages; <u>any idea of conducting</u>, maybe as robustness check, <u>the same set of models on the "level"</u> of the variable?

4.4 Extant literature point to the usefulness of Google Searches in nowcasting and/or short-term forecasting; <u>still little evidence</u> that it can also be successfully used for <u>long-term forecasting</u>. <u>Any plan to explore this aspect, maybe by means of non-linear models</u> (i.e. Threshold Auto-Regressive, with all its variants)? (On this, in any case, see Comment #3.3).

Second part

1. <u>Problem of interpretation</u>. How often people search for "mortgages" does not necessarily imply that they will actually ask for "mortgages" afterwards. So, <u>how reliable</u> is the assumption that Google Searches can effectively serve as a proxy for actual demand (see Comment #1, First part)?

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2. <u>Problem of estimation</u>. The econometric exercise is actually the same as the one conducted in the first part to assess the nowcasting/short-term forecasting abilities of Google Searches, but <u>with a notable difference</u>. Now a relevant causal factor – i.e. the lagged growth rate of mortgages, which is both <u>significant</u> in explaining the current growth rate <u>and correlated</u> (according to the overwhelming evidence reported by the author) with the other independent variable (Google Searches) – ends up being relegated in the error term. The estimation conducted to build up the experimental indicator of restrictively tight bank lending conditions <u>clearly suffers from an omitted variable bias</u>. Therefore, I would doubt about its reliability as an "experimental" indicator of the extent of tightness of bank lending standards.