Report on **Master Thesis**

Institute of Economic Studies, Faculty of Social Sciences, Charles University

Student:	**Martin Keblúšek**
Advisor:	**doc. PhDr. Tomáš Havránek, Ph.D.**
Title of the thesis:	**Do Central Bank FX Reserves Matter for Inflation?**

OVERALL ASSESSMENT:

Contribution

The thesis explores empirically whether the level of FX reserves relative to country's GDP affects its inflation rate. The answer is negative, i.e. there is no empirical link between the two variables. Personally, I am not surprised to see such an outcome, as I would not expect a strong – if any – relationship as my personal prior. To this end, I would welcome a better explanation of the motivation of the thesis, i.e. what was the expected relationship between the two variables, through which channels, how the short-term effects might differ form the long-term ones, etc. The thesis stays in this regard on the level of general statements, e.g. that „these reserves expose economies to external risk" (page 1); this particular one is moreover debatable, as FX reserves should actually serve as an important buffer against external shocks.

As a by product, the thesis confirms some stylised facts from earlier literature, e.g. that inflation targeting, higher GDP level and greater capital account openness tend to be associated with lower inflation. These findings could be highlighted more clearly in the conclusions.

There is also a finding that one particular (and broad) measure of central bank financial strength, NNIBL, is systematically negatively linked to inflation in a vast majority of estimates. Here, however, I miss some discussion of the results in terms of the direction of causality (see my comments below), comparison to the earlier literature, policy implications etc.

The author also finds out that the ratio of broad money to GDP has a significant link to inflation. But there is no discussion of this outcome, apart from a statement that „monetary base is not sterilized from inflation rate" (page 36) and that „inflation is far from sterilized from money supply" (page 37). One should note that the estimated relationship is negative, i.e. one can hardly resort to any to kind of monetarist explanation of it (if this is what is meant by the word „sterilized"). A better discussion of this finding would thus be needed, too.

Methods

The applied BMA method is appropriate for this kind of research. I appreciate that the author has carried out a number of robustness checks of his results. However, in my opinion there should be much more discussion of the potential endogeneity issues. For example, the negative link between the NNIBL variable and inflation may be due to the fact that low inflation – and thus low nominal interest rates – increase the demand for currency in circulation (by reducing the opportunity cost of holding it), which is part of the NNIBL variable. Similarly, low inflation may cause higher demand for broad money, and less nominal exchange rate depreciation, i.e. the causality may run in the opposite direction that the author assumes. While this can be partly addressed by adding lags to the „explanatory" variables, this may not be a perfect fix to such problems. This might be true especially if the estimation outcome were more strongly affected by the cross-country dimension of the data than the time dimension. This aspect is not discussed in the thesis; neither is it explored if it would be appropriate to use fixed country or time affects in the estimation. I also miss more discussion of the potential correlation between the individual „explanatory variables", e.g. the broad money supply ratio to GDP is likely to be strongly correlated in the cross-country dimension of the data sample with the per-capita GDP level. Similarly, the FX reserves are likely to be correlated in the time dimension with exchange rate variables, as the FX reserves are measured in USD, and the exchange rate is defined as the national currency per USD (which also affects the measure of central bank financial strength for small open economies that mark their FX reserves to the market).

The text and chart on page 11 suggest that the FX reserves-to-GDP ratio is available from the year 2000 onwards only. This is a key variable for the thesis. Wasn't is possible to find earlier data in any other source? Does it mean that effectively the data sample is shorter than the author claims (1996-2017)?

Literature

The literature review has about the right length. But if focuses quite a lot on general issues, such as price stability, inflation targeting, FX reserves' adequacy etc., rather than on the main subject of the thesis, i.e. on the assumed link between the level of FX reserves and the inflation rate (even though it is true that the literature on this topic is – unsurprisingly – scarce).

On page 1, the two key papers for the dissertation by Lin, Wang, and by Steiner are initially referenced without providing the publication year in the bracket. Later on, it is stated that both papers were written in 2009, but the list of references provides the publication year 2017 for Stenier.

It is highly questionable if one can say that „inflation targeting is a monetary policy first used in 1970 in Germany and Switzerland" (page 1). None of these countries has ever used an inflation targeting framework officially. The common wisdom is that inflation targeting was first introduced by the RBNZ in 1989/1990.

Manuscript form

The manuscript is relatively easy to read. It is quite brief. In fact, it looks more like a standard working paper than a thesis. In a thesis, there would be more room to explain the motivation, the expected relationship between variables as well to comment form an economic / policy perspective on the outcomes (see my critical remarks above).

There are some imperfections in the manuscript. For example, the author uses broad money supply relative to the GDP as one of his explanatory variables, but in several places in the text refers to it as „the monetary base", which is not appropriate. There are also a few confusing statements in section 2.3 on pages 4-7.

From the formal point of view, numbering of pages is not ideal, as chapter *1. Introduction* starts on page 1, but the same is true for chapter *2. Literature review*.

Summary and suggested questions for the discussion during the defense

To summarize, the thesis brings some interesting results, uses a modern and broadly appropriate econometric method, but it could be improved in quite a few respects.

In my view, the thesis thus fulfils the requirements for a master thesis at IES, Faculty of Social Sciences, Charles University, I recommend it for the defense, but suggest a grade D.

The results of the Urkund analysis do not indicate significant text similarity with other available sources.

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SUMMARY OF POINTS AWARDED *(for details, see below):*

CATEGORY		**POINTS**
Contribution	*(max. 30 points)*	20
Methods	*(max. 30 points)*	20
Literature	*(max. 20 points)*	13
Manuscript Form	*(max. 20 points)*	15
TOTAL POINTS	*(max. 100 points)*	**68**
GRADE	**(A – B – C – D – E – F)**	**D**

NAME OF THE REFEREE: Doc. Mgr. Tomáš Holub, PhD.

DATE OF EVALUATION: 31 August 2020

Digitally signed by
podepsáno

Tomáš Holub

Referee Signature