Referee Report for "The effects of income and inflation on financial development: Evidence from heterogeneous panels"

This paper studies the long-run relationship between finance and growth in a large sample of countries. It accounts for the impact of inflation and allows for non-linearities and finds, as most previous research, significant heterogeneities in the relationship across countries, levels of development and inflation rates. While the paper is rich in results, it does not integrate them in a meaningful way, which makes it hard to grasp its contribution to the large literature that has looked at this issue.

Below I offer some comments and suggestions that might help the authors as they further improve their work.

1. There is a large literature assessing the finance-growth nexus. Central to this debate has been the endogeneity of financial development (see Beck, 2008; Ang, 2008; Valickova, Havranek and Horvath, 2014). Financial sectors perform many functions that can spur economic growth, but finance can also follow the development of the real economy, as the latter creates the need for different financial services. This two-way causality has been addressed in several ways, including IV and GMM estimations (Beck, Levine and Loayza, 2000; Beck and Levine, 2004; Arcand, Berkes and Panizza, 2015) or cointegration techniques (Arestis, Demetriades and Luintel, 2001; Christopoulos and Tsionas, 2004; Luintel, Khan, Arestis and Theodoridis, 2008; Peia and Roszbach, 2015). The authors opt to investigate the demand-leading hypothesis and use GDP as their main independent variable. Yet, most of the literature employing GMM estimations looks at the opposite relationship, and regresses GDP growth rates on financial development (Beck et al., 2000; Beck and Levine, 2004; Rioja and Valev, 2004; Arcand et al., 2015; ROUSSEAU and WACHTEL, 2011). The authors need to address this two-way causal relationship or carefully interpret their results as simple correlations and not causal relationships. They follow the empirical specification in Baltagi, Demetriades and Law (2009), yet this paper is concerned with the impact of openness on financial development and not GDP growth. A more thorough motivation for the empirical strategy employed and how this relates to previous literature is needed.

2. The non-linear relationship between GDP and private credit is explored in other papers, which the authors fail to mention. Notably, Rioja and Valev (2004) and Arcand et al. (2015) are important contributions. Again, how does the empirical strategy employed in this paper compare to previous research? Rioja and Valev (2004) split a panel of 72 countries into three regions and show that there is no statistically significant relationship between finance and growth at low levels of financial depth, there is a strong and positive relationship at intermediate levels of financial depth, and that there is a weaker but still positive and statistically significant effect of finance at higher levels of financial depth. Arcand et al. (2015) argue that there can be "too much" finance and find that the marginal effect of financial depth on output growth becomes negative when credit to the private sector reaches 80-100% of GDP. What is the theoretical argument for the non-linear relationship the authors investigate, i.e. that "too much" GDP growth can have a negative effect on the development of the financial sector?

3. Similar to the previous comment, the empirical relationship between inflation and financial development is not very thoroughly motivated. As the authors acknowledge on page 2, higher inflation rates might be a signal of other things such as high interest rates, which might impede the functioning of the financial sector. In general, one would expect that very high

inflation rates reflect other institutional characteristics such as low central bank independence, all of which might also affect financial sector development. As such, I am having a hard time interpreting the interaction term between inflation and GDP in equation (2). I would expect that less developed countries are also the ones associated with high inflation rates. At the same time the fact that the authors only find an effect in middle income countries is equally puzzling. The average inflation rate of 57% in middle income countries, reported on page 10, is most likely due to some large outliers. Are results consistent after these are eliminated? I am more sympathetic to the second empirical strategy (in Table 3) that splits countries into groups based on their level of inflation. Yet how do the authors address the fact that there has been a world-wide trend towards lower inflation rates over the sample period considered?

4. Many results found are hard to justify and appear as econometric artifacts. For example, on page 12, the findings suggest that "higher GDP could be beneficial to financial development in high inflation countries". Why is that?

5. The empirical strategy in Table 7 is not very clear. Do the authors still employ 5-year non-overlapping periods? If so, what is the statistical power of this econometric exercise?

6. Overall, the country-specific results in Tables 7 and 8 are hard to interpret. Is there a way to integrate the results and show some consistent patterns across groups of countries, in particular in the light of the panel estimations in previous sections?

7. The authors need to better articulate their results and how these relate to previous literature. Claims such as "high inflation moderates the effect of GDP on financial development in over 70% of the countries" or "We also show the countries where higher GDP is better for financial development and where it is not" are difficult to grasp. Is inflation "high" in 70% of countries? Which are the countries where GDP growth hinders financial development and why? A better reflection on the theoretical channels behind the results uncovered is needed.

8. Minor comments

    (a) The introduction is not fully developed and articulated. For example, the findings and how they relate to previous literature are not discussed.

    (b) The choice of some expressions might be reconsidered. Examples include: "engenders households", "throws open", "deleterious".

    (c) On page 1, the sentence "there may be a threshold level beyond which further increases in GDP may only have negligible positive effects on GDP" is a typo?

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