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REPORT ON DOCTORAL DISSERTATION
of Tigran Phogosyan
"Essays on International Currency Markets"
CERGE-EI Charles University Prague

The reviewed dissertation by Mr. Tigran Phogosyan contains three essays aimed at devising models and examining sources of foreign exchange (FX) risk in several new EU Member States, as well as analyzing integration of their financial markets with the EU markets. The degree of financial integration is measured by the linkages of sovereign bond yields.

All three essays are clearly motivated and supported with appropriate analytical models and up-to-date empirical testing methodology. In fact, each of them makes a meaningful contribution to the existing literature on financial stability in the emerging economies of Europe. The background literature of the essays is thoroughly researched and adequately utilized.

The first essay entitled *'Modeling Foreign Exchange Risk Premium in Armenia'* attempts to devise robust techniques for assessing exchange rate risk in a small-open economy with under-developed financial markets, lacking particularly exchange-traded foreign exchange derivatives. Armenia is chosen as an appropriate country case for empirical testing. The paper employs a range of testing methods, including generalized auto-regressive conditional heteroscedasticity with in-mean conditional variance (GARCH-M), stochastic discount factor (SDF) and affine term structure (ATS) – all of which are appropriate for investigating various aspects of exchange rate risk. In particular, the M-component in GARCH-M provides valuable information about the directional change in the exchange rate risk. I wish to express several points of caution, however. I would be very careful advocating FX derivatives other than currency forward contracts in the examined case of Armenia. Volatility of the underlying currency seems to be too high, thus derivatives will have to entail a very high price, thus also a high cost of hedging. In addition, it would be helpful to learn whether the term spread on Armenian sovereign debt is flexible enough for providing useful information for guiding inflation expectations. Also, the rationale for inclusion of some of the regressors in the GARCH-M-GED model needs to be further explained. In hindsight, I find the model outlined by Eq. 2.13 to be very interesting, but I would like to learn why the net sales of foreign currency by the central bank as well as the ratio of foreign to local currency

deposits are used as regressors in the conditional variance equation. The empirical tests yield some useful results.

The second essay - *'Macroeconomic Sources of Foreign Exchange Risk in New EU Members'* - argues that the foreign exchange rate risk in the New EU Member Countries has been influenced predominantly by nominal monetary variables, while real variables play a relatively small role. Consistently with my own research, I fully endorse the underlying statement. The motivation of the paper is clearly-stated and the analysis is well-argued. The underlying model and the empirical tests based on GARCH-M and SDF (stochastic discount factor) models are appropriate and relevant to the subject matter. For the purpose of publication in a peer-reviewed journal, I wish to identify two points for relatively minor revisions. They shall be viewed as suggestions rather than corrections of errors. First, I remain rather skeptical about the treatment of the straight industrial output variable. It is used in its first-difference in the model and proven to play a minor role in the determination of foreign exchange risk. A better proxy for the ouput dynamics would be to apply a differential between the index of industrial output and the smoothed index with the Hodrick-Prescott filter or alternative smoothing modules. Second, I recommend expanding the conclusions pertaining to appropriate monetary policy regimes for nominal convergence. At minimum, the author might address whether the existing inflation targeting policies are robust and optimal for such convergence.

Integration of selected financial markets among the new EU Member States and among the new members and Germany is the main analytical subject of essay number 3 entitled *'Financial Integration in New EU Member States: A Threshold Vector Error-Correction Approach'*. As oppose to the majority of published papers that rely on the beta convergence or Johansen cointegration simplified frameworks, the reviewed study employs threshold VEC testing, which allows to show important results showing an on-going progress in financial market integration. I would recommend emphasizing early on in the introduction that only the sovereign bonds as well as bank deposit and credit markets are a subject of the analysis. The paper tackles an important analytical subject, which is presently widely debated within the context of designing appropriate policies for adoption of the euro. The empirical results are consistent with those of Orlowski and Lommatzsch (2005, Bond yield compression in the countries converging to the euro, W. Davidson Institute WP # 799), while different from earlier research by Kim, Lucey and Wu (2006, JIFMIM) and Holtemöller, O., (2005, Uncovered interest rate parity and analysis of monetary convergence of potential EMU accession countries, International Economics and Economic Policy 2(1), 33-63.). The paper could benefit from references to Holtemöller, Orlowski/Lommatzsch papers as well as to the analysis of the reasons for the existing imperfect integration of EU bond markets in Codogno, L., C. Favero, A. Missale (2003, Yield Spreads on EMU Government Bonds, Economic Policy, Vol.18, Issue 37, pp.503-532). Several minor corrections are needed in the reviewed study. Most importantly, by definition, T-bills are money market instruments since their maturity does not exceed one year. In general, however, the paper relies on innovative TVECM methodology and shows important new evidence supporting the ongoing financial market integration among new EU members and their integration with the EU markets.

In sum, the reviewed Ph.D. dissertation fully meets the general standards and expectations set for doctoral thesis at the leading academic research institutions. The literature survey is exhaustive and up-to-date. The modeling effort is competent and creative. The applied empirical testing methodology ranging from extended GARCH-class models to SDF and TVECM is appropriate for examining the stated objectives of assessing FX risk and financial market integration. Several empirical findings are innovative and make a productive

contribution to the existing body of knowledge. Due to the competent modeling effort, advanced technical analysis and creative findings, the reviewed essays constitute a publishable material in refereed journals. Therefore, I recommend accepting Mr. Tigran Phogosyan's thesis as his doctoral dissertation.

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