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2019 Interdisciplinary Contest in Modeling (ICM) Summary Sheet
(Attach a copy of this page to each copy of your solution paper.)

A New Era of World Finance:The Strategy For A Global Decentralized Digital Financial Market

Summary

In the current situation, people attach greater importance to digital currency for the sake of convenient transactions. Therefore, based on the reality of the financial and economic situation, our goal is to propose a global decentralized digital financial system, and verify its feasibility in addressing the problem of lack of supervision and anonymity of digital currency at this stage. We divide the job into 3 phases.

Firstly, we use the improved DSGE model to describe the system we establish. The model covers four sectors: family, firm, commercial bank and central bank. We consider 3 situations that the country completely abandons the original currency, does not completely abandon the original currency and the central bank does not issue digital currency. For various situations, we all obtain the financial and economic characteristics of the economic steady state. Our model is broad enough to accommodate various situations in different countries. We continue to study the macroeconomic effects of digital currency technology shocks.

Secondly, we select 14 indicators to measure the key factors affecting the system, and divide them into four categories, namely, access factors, growth factors, stability factors and security factors. Based on these key factors, we propose a global regulatory mechanism. In addition, we focus on the risk of money laundering in digital currencies by establishing a KNN (k Nearest Neighbor) classifier model based on vector space model, which can assist a country to judge the risk of money laundering of digital currency.

Finally,aiming at extending our analysis, we modify the SAR model to reflect the long-term effects of the new financial system. We selected the economic freedom indices of 163 countries, and then add space factors to study the spatial spillover effect of the central bank issuing digital currency. As a result, the emergence of a new monetary system model will gradually improve the perfection of the banking industry, the performance of global economy and the economic relationship with each country.

In a nutshell, we simulated the economic steady-state constraints of the proportion of different digital currencies. The results show that when the central bank issues digital currency to completely replace the original currency, it can avoid the violent fluctuation of the economy and reach the steady state as soon as possible.