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2019 ICM Summary Sheet

the Future is Coming: the Revolution of Currency

With the advent of Information Age, digital technology application like digital currency became prevalent and be of common use all over the world. Our study construct a model to represent a global decentralized digital financial system, mainly with the tools of *Mathematical analysis* and *Economic Model*. Based on our model, we analyze the choices of different countries and the long-term effects. Besides, we also put forward mechanisms for oversight of such a global digital currency and test our model's robustness.

First, we choose key factors that would limit or facilitate the digital financial system, and we integrate these factors into the return and the cost. Then we build *cost-return analysis model* to identify the viability of the global decentralized digital financial market, which are simplified and rationalized under our assumptions. We quantify the return and the cost by combining *Analytic Hierarchy Process (AHP)* with *Fuzzy Comprehensive Evaluation (FCE)*. We give different weights based on the importance of these factors to quantify the total *NI (net income)*. Also we give different weights based on the impact on the individual, national, and global to quantify the *NI* at different levels.

Second, we analyze different choices of different countries by their willingness and needs. We simplify different countries into *small-scale country* and *large-scale country*, then we make our analysis and draw conclusions in reference to *Mundell Fleming's Open Economy Theory*. Otherwise, we take whether a country would abandon their own currency into consideration. In this part, we introduce *Impossible Trinity* into our model, and we can come to the conclusion whether they abandon their own currency, a fixed exchange rate regime may be the most effective.

Third, combining the analysis of our model with the reality, we put forward mechanisms for oversight of such a global digital currency system.

Fourth, we extended our model to the long-term. We use the *logistic model* to simulate changes in the outlook for the banking industry. In the long run, the banking industry will almost loses all its on-balance sheet business, which means it may change to an investment intermediary. We transform our cost-benefit model to analyze the effects of the system on the local, the regional, and the global three levels. Furthermore, we take a view of the international relations between countries in the long term.

Lastly, we test the stability and the sensitivity of our model, what is the next and the weaknesses of our model. In addition, we write a policy recommendation on our work.



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