Disih Sugianti, 2017, **Analisis Model Matematika order Fraksional Makroekonomi *Investment Saving- Liquidity Money* (IS-LM) di Indonesia**. Skripsi ini di bawah bimbingan Dr. Mohammad Imam Utoyo, M.Si. dan Dr. Windarto, M.Si. Departemen Matematika, Fakultas Sains dan Teknologi, Universitas Airlangga, Surabaya.

ABSTRAK

Pada skripsi ini, dibahas analisis model matematika order fraksional makroekonomi *Investment Saving-Liquidity Money* (IS-LM) di Indonesia. Model tersebut dikonstruksikan oleh John Maynard Keynes. Model matematika makroekonomi IS-LM dalam bentuk sistem persamaan diferensial biasa (SPDB) mengkaji tentang dinamika pendapatan nasional, suku bunga dan uang beredar di masyarakat. Pada skripsi ini, SPDB diperumum menjadi sistem persamaan diferensial order fraksional (SPDF). Estimasi parameter dilakukan dengan menggunakan algoritma genetika (AG) dan solusi numerik diperoleh dengan menggunakan metode runge-kutta orde ke empat. Berdasarkan analisis model matematika makroekonomi IS-LM order fraksional di Indonesia diperoleh satu titik setimbang. Titik setimbang tersebut stabil asimtotis pada order turunan fraksional tertentu.

Kata kunci : Makroekonomi, *Investment Saving-Liquidity Money*, Model Matematika, Order Fraksional, Runge-Kutta, Algoritma Genetika, Kestabilan

Disih Sugianti, 2017, **Analysis of Mathematical Model of Fractional Differential Equation about *Investment Saving- Liquidity Money* (IS-LM) Macroeconomics system in Indonesia**. This Thesis is Supervised by Dr. Mohammad Imam Utoyo, M.Si. and Dr. Windarto, M.Si. Mathematic Departement, Faculty of Science and Technology, Airlangga University, Surabaya

ABSTRACT

In this thesis, we discussed a mathematical model of fractional differential equation about Investment Saving-Liquidity Money (IS-LM) Macroeconomics system. The model has developed by John Maynard Keynes. IS-LM macroeconomic mathematical model in an ordinary differential equation system (ODEs) described the dynamic of national income, interest rate dynamics and amount of circulating money dynamic. ODEs was generalized into a fractional differential equation system (FDEs). Parameter estimation have done by genetic algorithm (GA) and numerical solution have got using the fourth Runge-Kutta's method. Base on studied in Indonesia, the model has one equilibrium. The equilibrium was asymptotically stable for certain fractional order.

Keywords: Macroeconomics, Investment Saving-Liquidity Money, Mathematical model, Fractional Order, Runge-Kutta, Genetic Algorithm, Stability.