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The Global Economic Crisis Smash Effect Simulation: Theoretical Framework

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June 2009

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1. Abstract

This paper proposes the uses of the global economic crisis smash effect simulation theoretical framework to evaluate the final effects of the global financial crisis on the world economy. We present different scenarios and results according to different levels of devastation that the global financial crisis can generate on the world economy. It is based on the evaluation of the unemployment and the world wide poverty dissemination. We suggest the application of economic modeling in real time and multi-dimensional economic modeling to visualize different scenarios and the final impact of the global financial crisis.

Keywords: *Econographicology, Economic Modeling, Macroeconomic Policy, Economic Teaching, Multi-Dimensional graphs and Multi-Dimensional Physical Spaces*
JEL: E60

2. Introduction to the Global Economic Crisis Smash Effect Simulation (GECSE-Simulation)

In the construction of the global economic crisis smash effect simulation (GECSE-Simulation), it is based on the application of economic waves modeling (Ruiz Estrada, 2009.a.). To build each economic wave in our simulation, we suggest the application of multi-dimensional economic modeling (Ruiz Estrada, 2009.b.) and economic modeling in real time (Ruiz Estrada, 2009.c.) simultaneously. Initially, the GECSE-simulation is using "n" number of economies "E" into its analysis. Each economy has its general axis, at the same time, each general axis exist a large number of sub-axis. All the sub-axis is interconnected by strait lines until the end of each general axis. We like to remain that each sub-axis is running with different partial differentiations ($\partial Y/\partial X$) in real time (☼). The idea to apply partial differentiation in real time is to generate a effect of movement in real time in our simulation in the same graphical space.

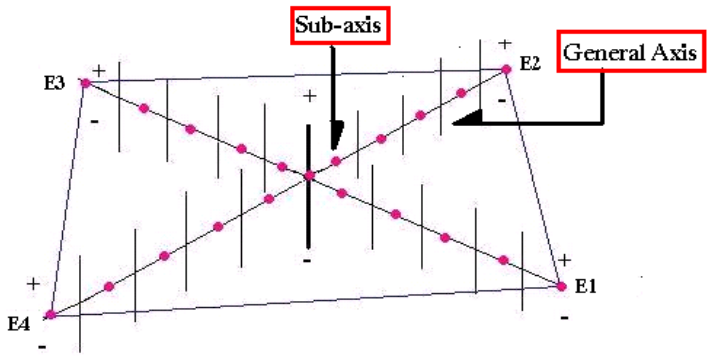
According to the GECSE-simulation each sub-axis are interconnected into the same general axis by the application of the inter-liking sub-axis system "╬". It is to make available to join each sub-axis into the same general axis. Finally, we join all general axis and sub-axis in all levels of analysis under the application of fixed exponential "λ" in the future periods of time (t+1). However, we assume that all sub-axis and general axis are moving under the application of economic modeling in real time "☼" (See Expression 1). We suggest also the application of the Omnia Mobilis assumption (Ruiz Estrada, Nagaraj and Yap, 2007) to help in the relaxation of this simulation into each sub-axis and the general axis in our modeling. At the same time, it is to reduce the uses of Ceteris Paribus. Finally, we can observe a large surface in permanent movement according to our simulation. The movement of this surface starts from the epicenter of its multi-dimensional coordinate system until the end in the last sub-axis into the same general axis. The real impact of this simulation is located on the last sub-axis (See Figure 1). The final analysis in the results of our simulation is based on the analysis of all general axis and the general surface.

1.

$$\text{☼}\boldsymbol{S} = \begin{pmatrix} \boldsymbol{E_1} = \text{☼}[\partial \boldsymbol{Y}^{i}_{1\text{-}0}/\partial \boldsymbol{X}^{i}_{1\text{-}0}]^{*}L_j \Vdash \text{☼}[\partial \boldsymbol{Y}^{i}_{1\text{-}1}/\partial \boldsymbol{X}^{i}_{1\text{-}1}]^{*}L_j \Vdash \text{☼}[\partial \boldsymbol{Y}^{i}_{1\text{-}2}/\partial \boldsymbol{X}^{i}_{1\text{-}2}]^{*}L_j \Vdash \ldots \Vdash \text{☼}[\partial \boldsymbol{Y}^{i}_{1\text{-}\infty}/\partial \boldsymbol{X}^{i}_{1\text{-}\infty}]^{*}L_j \\ \boldsymbol{E_2} = \text{☼}[\partial \boldsymbol{Y}^{i}_{2\text{-}0}/\partial \boldsymbol{X}^{i}_{2\text{-}0}]^{*}L_j \Vdash \text{☼}[\partial \boldsymbol{Y}^{i}_{2\text{-}1}/\partial \boldsymbol{X}^{i}_{2\text{-}1}]^{*}L_j \Vdash \text{☼}[\partial \boldsymbol{Y}^{i}_{2\text{-}2}/\partial \boldsymbol{X}^{i}_{2\text{-}2}]^{*}L_j \Vdash \ldots \Vdash \text{☼}[\partial \boldsymbol{Y}^{i}_{2\text{-}\infty}/\partial \boldsymbol{X}^{i}_{2\text{-}\infty}]^{*}L_j \\ \vdots \\ \boldsymbol{E_\infty} = \text{☼}[\partial \boldsymbol{Y}^{i}_{\infty\text{-}0}/\partial \boldsymbol{X}^{i}_{\infty\text{-}0}]^{*}L_j \Vdash \text{☼}[\partial \boldsymbol{Y}^{i}_{\infty\text{-}1}/\partial \boldsymbol{X}^{i}_{\infty\text{-}1}]^{*}L_j \Vdash \text{☼}[\partial \boldsymbol{Y}^{i}_{\infty\text{-}2}/\partial \boldsymbol{X}^{i}_{\infty\text{-}2}]^{*}L_j \Vdash \ldots \Vdash \text{☼}[\partial \boldsymbol{Y}^{i}_{\infty\text{-}\infty}/\partial \boldsymbol{X}^{i}_{\infty\text{-}\infty}]^{*}L_j \end{pmatrix}^{\text{☼}\lambda_{t+1}}$$

Partial differentiation: i= {o,1,2,3…∞} and Level: j= {o,1,2,3…∞}

Figure 1: The GECSE-simulation Coordinate System



3. The Application of the GECSE-simulation

The application of the GECSE-simulation is going to be applied to five different economies simultaneously. These five economies are followed by United States that is fixed as the epicenter of the simulation. The four general axes (economies) are represented by ASEAN (E_1), China (E_2), E.U. (E_3) and Japan (E_4) (See Expression 2). Each general axis or economy in our case is divided by five sub-axis follow by GDP of United States (GDP_{US}), Imports of United Stated from this specific economy (M), Foreign Direct Investment (FDI) from this country to United States and vice verse, the Stock Market integration between United States and this economy (SM), the unemployment rate from this economy (E.U.) and finally the Poverty level of this

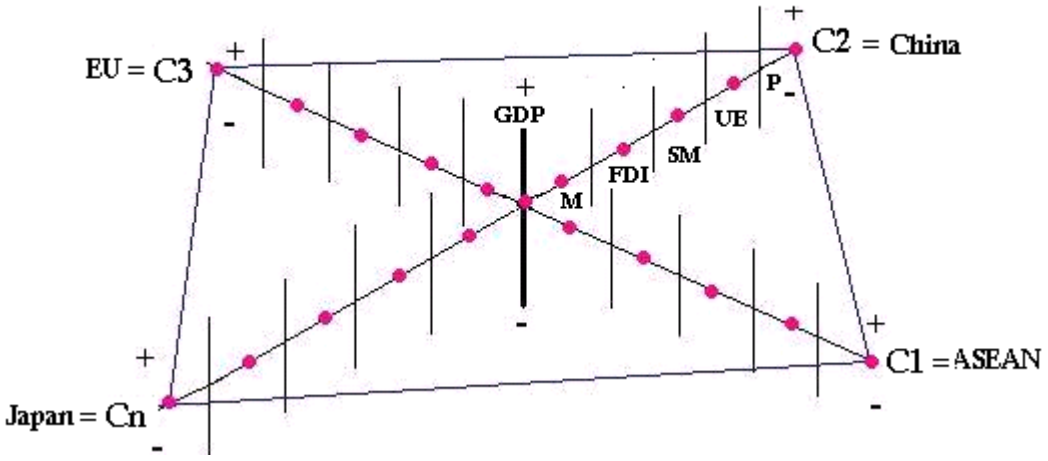
economy (P). Each sub-axis is multiplied by a coefficient that is called the level of devastation of the global financial crisis (L). Actually, this coefficient is a discount rate that can help to observe the final impact of the global financial crisis in each economy or in the global economy. We apply partial differentiation in real time between GDP of U.S. and Imports (M), GDP of U.S. and Foreign Direct Investment (FDI), GDP of U.S. and Stock Market (SM), GDP of U.S. and Unemployment rate (UE), GDP of U.S. and Poverty rate (P). Each partial differentiation is multiplied by the level of devastation of the global financial crisis (L). It is to generate possible scenarios and the level of impact of the global financial crisis on each economy in analysis simultaneously. At the same time, we suggest to apply an exponential of real time ($☼\lambda_{t+1}$) to join all partial differentiation in each sub-axis and general axis until we can build a single surface. If we observe on a large screen is possible to observe a large surface that is moving such as waves in the same space and time from the epicenter until the end of each general axis, in our case each economy. The final objective to build this GECSE-simulation is based on show different scenarios and the impact of the global financial crisis according to the level of devastation of the global financial crisis (L). Now it is possible to visualize the destructive effect of a global financial crisis from a global perspective. Hence, it can permit to present different scenarios and effects of the global financial crisis on the world economy into the same graphical space and time (See Figure 3).

2.

$$☼\lambda_{t+1}$$

$$☼S = \begin{pmatrix} E_1 = ☼[\partial GDP_{US}^{\,i}/\partial M_1^{\,i}]*L_j \Vdash ☼[\partial GDP_{US}^{\,i}/\partial FDI_1^{\,i}]*L_j \Vdash ☼[\partial GDP_{US}^{\,i}/\partial SM_1^{\,i}]*L_j \Vdash ☼[\partial GDP_{US}^{\,i}/\partial UE_1^{\,i}]*L_j \Vdash ☼[\partial GDP_{US}^{\,i}/\partial P_1^{\,i}]*L_j \\ E_2 = ☼[\partial GDP_{US}^{\,i}/\partial M_2^{\,i}]*L_j \Vdash ☼[\partial GDP_{US}^{\,i}/\partial FDI_2^{\,i}]*L_j \Vdash ☼[\partial GDP_{US}^{\,i}/\partial SM_2^{\,i}]*L_j \Vdash ☼[\partial GDP_{US}^{\,i}/\partial UE_2^{\,i}]*L_j \Vdash ☼[\partial GDP_{US}^{\,i}/\partial P_2^{\,i}]*L_j \\ E_3 = ☼[\partial GDP_{US}^{\,i}/\partial M_3^{\,i}]*L_j \Vdash ☼[\partial GDP_{US}^{\,i}/\partial FDI_3^{\,i}]*L_j \Vdash ☼[\partial GDP_{US}^{\,i}/\partial SM_3^{\,i}]*L_j \Vdash ☼[\partial GDP_{US}^{\,i}/\partial UE_3^{\,i}]*L_j \Vdash ☼[\partial GDP_{US}^{\,i}/\partial P_3^{\,i}]*L_j \\ E_4 = ☼[\partial GDP_{US}^{\,i}/\partial M_4^{\,i}]*L_j \Vdash ☼[\partial GDP_{US}^{\,i}/\partial FDI_4^{\,i}]*L_j \Vdash ☼[\partial GDP_{US}^{\,i}/\partial SM_4^{\,i}]*L_j \Vdash ☼[\partial GDP_{US}^{\,i}/\partial UE_4^{\,i}]*L_j \Vdash ☼[\partial GDP_{US}^{\,i}/\partial P_4^{\,i}]*L_j \end{pmatrix}$$

Figure 2: The GECSE-simulation Graphical Modeling

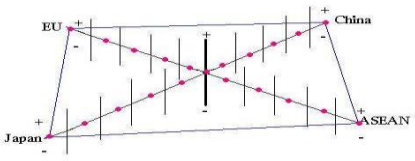


The level of devastation of the global financial crisis (L) is classified by ten levels from level 1 (weak impact) to level 10 (strong impact). We can observe in the figure 3 that the Level-10 is the more strong level of devastation of the global financial crisis on the world economy. We can observe that the levels of unemployment among the four economies in analysis such as ASEAN (E_1), China (E_2), E.U. (E_3) and Japan (E_4) are located between 15% to 20% average and poverty growth of 25% average, both indicators can show the higher records of unemployment and poverty in case of the most deep global financial crisis. The most affected by the global financial crisis in Level-10 they are E.U. and Japan, it is originated by the strong trade and investment relationship that they keep until today according to our simulation. In the case of China and ASEAN shows large amounts of unemployment and poverty but in less proportion than the E.U. and Japan. In the case of China and ASEAN the unemployment rate is located on 11% and 9% average respectively, but the poverty rates for both economies is equal to 15% and 16% average (See Figure 3). If we continue analyzing until the Level-7 then it is possible to be observed a better performance of the GDP of U.S. but continues strike E.U. and Japan with large amounts of unemployment rates (10% and 12% average) and poverty rates (20% and 15% average). For China and ASEAN cannot show any improvement into its unemployment rate and poverty rate under the Level-7 (See Figure 3).

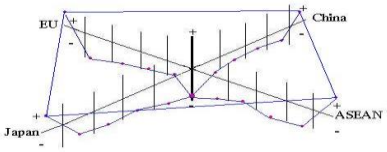
In the specific case of Level-5, it is possible to observe that the GDP of U.S. is equal to 0. But the unemployment rate (8%) average and poverty rate (18%) average don't show any improvement and continue higher in E.U. and Japan. The Level-5 has better impact on China and ASEAN economy according to our research because the unemployment rate show less expansion, when the American economy start to get better performance of its GDP. The good performance of the Chinese and ASEAN economy by the improvement of the GDP of U.S. under the Level-5 shows better performance than the E.U. and Japan economies, but in the case of the poverty rate of China and ASEAN don't exist any improvement (20%) average (See Figure 3). The Level-6 shows a positive but weak GDP of U.S. that despite being positive. We can observe that the levels of unemployment and poverty rates show a better performance but continue little higher unemployment rates but in the case of the poverty rate continue around 16% average according to our simulation in the case of the E.U. and Japan. For China and ASEAN both economies shows better performance but the unemployment rate only decrease to 7% and 6% average respectively (See Figure 3). Finally, the Level-3 and Level-0 are the lower devastation rates of the global financial crisis on the world economy. These levels are exceptional but hard to be catch up by the American economy because we are referring about huge expansion of the GDP growth rates between 11% average and 15% average annually. And the final impact on these four economies show a considerable reduction of the unemployment rate between 0.5% and 1.5% average and reduction of the poverty to 5% average. We can observe that among the four economies in analysis who receive more benefit from a higher performance of the GDP of U.S., they are E.U. and Japan more than ASEAN and China respectively. For China and ASEAN economies under the Level-3 and Level-0 both economies can decrease its unemployment rate to 3% and 5% average, but the poverty level of China and ASEAN can only decrease to 12% and 11% average (See Figure 3) according to our research.

Figure 3: The Global Economic Crisis Smash Effect under Different Levels

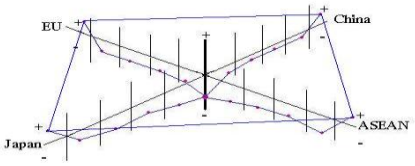
Initial-Level



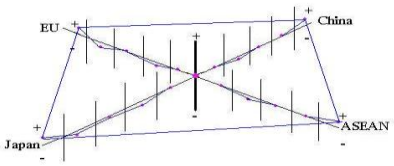
Level-10



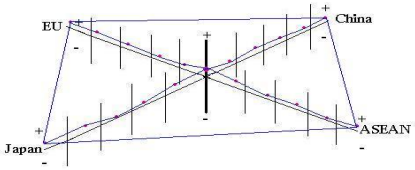
Level-7



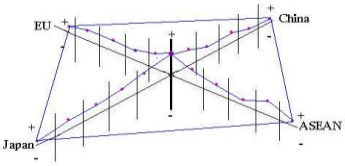
Level-5



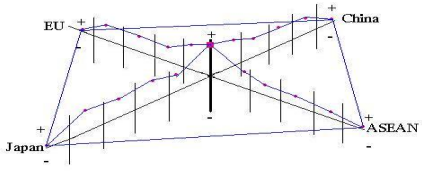
Level-6



Level-3



Level-1



4. Conclusion

This paper offers to policy makers, central banks, academics and students in economics an alternative multi-dimensional graphical modeling approach to analyze the final impact of the global financial crisis from a multi-dimensional perspective. We can observe with the GECSE-simulation show a large number of scenarios and the final impact of the global financial crisis according to the level of devastation of the global financial crisis (L) coefficient. The main idea is to build different simulations to measure the catastrophic effect of any global financial crisis on the world economy in the same graphical space.

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