

The Global Financial Crisis and its Impact on Emerging Markets: A CGE Assessment

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Abstract—The global financial crisis (GFC) began four years ago, but the world economy is still in its shadow. The sluggishness of the economic recovery in the US and the recurrences of the European debt crises destroy the confidence of investors as well as consumers. “Double dip” appears as a threat from time to time. Under these circumstances, it is imperative to understand fully the impact of the GFC and the effectiveness of various policy responses to it. Using the GTAP model, the GTAP database version 7 and macroeconomic data, this paper will gauge the impact of the GFC on emerging markets. The paper also reports the simulation results assessing the effect of policy responses. By analyzing the simulation results, this paper will shed light on the contributing factors of the GFC and the efficient ways to cope with a large negative economic shock like the GFC.

Index Terms—Financial crisis, policy responses, emerging markets, GTAP model, macroeconomic effects.

I. INTRODUCTION

The 2008 global financial crisis (GFC) had devastating effects on the world economy. So far, we have not been completely out of its shadow. The sluggishness of economic recovery in the United States is a constant reminder. Moreover, debt crises seem part of the modern economy, as manifested in the foreign debt problems in the 1997 Asian Financial crisis through the housing mortgage debt in the GFC to the public debt in Europe recently. The recurrence of the European debt crises now may have the consequence of breaking up the European Union. This may be avoided through political cooperation within Europe, but it destroys the confidence of investors as well as consumers. “Double dip” is a threat from time to time. Under these circumstances, it is imperative to understand fully the impact of GFC as well as policy responses.

The effects of the GFC have already played out (although not fully) in recent years. Its influence on GDP and employment has been well documented. As such, this study will not reproduce the effect of the GFC through modelling. Instead, it purports to uncover the contributing factors to the GFC and the influence of these factors. It also gauges the macroeconomic and sectoral effects on emerging economies, and evaluates the role of the selected policy responses. By doing so, we hope to shed light on the causes of the GFC and ways to cope with this kind of events.

The remainder of the paper is organized as follows. Section II provides a review of previous empirical work in the area.

Section III describes the nature of the model employed, the database and simulation design. Section IV provides an analysis of the results of the simulation exercises. The paper ends in Section V with some concluding comments.

II. LITERATURE REVIEW

Financial crises are an area which interests many CGE modellers. After the 1997 Asian Financial Crisis, a number of papers tried to model this event. Reference [1] used a three-region (Poor, Rich and Crisis-hit regions) global dynamic CGE model to investigate the sources of the Asian Financial Crisis. Based on the simulation results, they argued that the crisis was the result of a fundamental incompatibility between an independent financial policy and unregulated capital markets. They claimed that global financial markets precluded governments from having independent exchange rate and interest rate policies to promote industrialization and that international capital flows posed serious threats to economic stability and development.

Reference [2] assessed Singapore’s policy responses towards the Asian economic crisis. A 9-sector CGE model was constructed to simulate the effects of proposed Singapore policy responses during the Asian economic crisis. The policy responses were reducing production costs (a 15% reduction in wage costs), increasing domestic demands (a 6% expansion in government expenditure, or a 6% increase in real private consumption), and nominal devaluation (a 15% devaluation of the Singapore dollar). The results suggested that the wage reduction and devaluation policies would be more effective than domestic demand stimulation.

Reference [3] employed the GTAP model to examine the implications of the Asian crisis for southern African economies. The currency depreciation is used in the baseline simulation. Based on this, three kinds of shocks are imposed on the southern African economies – namely decreases in real investment, in skilled labour and in unskilled labour. The paper claimed that, although southern African economies appeared to have escaped the initial phase of the East Asian economic crisis relatively unscathed, the second stage of the contagion was less benevolent in its influence on southern African economies.

Reference [4] used the GTAP model to investigate the effect of the Asian financial crisis on the forestry sector in Indonesia. It is assumed that there is a decrease in investment and in the prices of non-traded goods. Their simulation results show that the decline in GDP is accompanied by declining production of capital and labour-intensive commodities and by the expansion of natural resource and land based sectors. The results also indicate that there is a decrease in productivity in the forestry and forestry-related

manufacturing sectors, and that the negative impact of the crisis on welfare is serious.

The outbreak of the global financial crisis (GFC) in 2008 restimulated interest in modelling financial crises. In the aftermath of the GFC, reference [5] used the G-Cubed model – an intertemporal general equilibrium model of the world economy – to represent the crisis. Five shocks are used to represent the crisis and policy responses: the bursting of the housing bubble reflected in a decrease in housing productivity, a sharp rise in the equity risk premium, a reappraisal of risk by households, an easing of monetary policy to near zero official interest rates in major developed economies, and an easing of fiscal policy across countries and large run-up in government deficits. The paper shows that a ‘switching’ of expectations about risk premia shocks in financial markets can easily generate the severe economic contraction in global trade and production, and that the future of the global economy depends critically on whether the shocks to risk are expected to be permanent or temporary.

Reference [6] used the GDyn model and GTAP database version 7 to explore the trade and sectoral impacts of the GFC. To reproduce the effect of the GFC, it is assumed that the financial crisis was caused by investors re-adjusting their expectations of US and EU returns on investment relative to other countries and that the financial crisis caused an immediate decrease in efficiency and return to capital in all countries. This decrease in efficiency and return to capital was assumed temporary in the moderate financial crisis scenario but permanent in the severe financial crisis scenario. The simulation results suggested that, under the moderate crisis scenario, trade fell by approximately 14 percent from the 2020 baseline. The composition of trade changes, reflecting changes in demand for construction of investment goods and the increase in long term demand from China and India. A more severe crisis or increased protection accentuated global losses. While the more severe crisis adversely impacted all sectors, the increase in tariffs mainly impacted sectors and regions which increased protection significantly.

Reference [7] used a single country Computable General Equilibrium (CGE) model to gauge the negative effects of the 2008 World Financial Crisis on Singapore and to simulate the effects of selected policy responses. The CGE simulation results demonstrated that at the macro level, although almost all variables were negatively affected, exports benefit greatly. At the industry level, there were severe impacts on the tourism-related sectors. In the commodity market, prices and outputs decreased for most products, but real household consumption and exports increased. In the labour market, low skilled workers were harshly affected, but some occupational groups benefited at the expense of others. The simulation results also suggested that, in response to an event like the 2008 World Financial Crisis, a decrease in the GST rate was more effective than reducing the production tax rate.

Reference [8] used a dynamic CGE model to evaluate the potential impacts of the GFC on child poverty in Cameroon. Scenarios of the GFC and four policy responses were simulated: a reduction in the VAT levied on the sale of food products, elimination of customs tariffs, free access to school canteens for children under age of 15 in districts where

monetary poverty was higher than the national average; and granting cash transfers to poor children. The simulation results show that cash transfers were the most effective in term of poverty reduction, but most ineffective in improving the real GDP. The subsidy for school canteen had a relatively low cost and alleviated caloric poverty considerably.

Reference [9] used a CGE model of the Thailand economy to evaluate the impact of the economic crisis on the employment of registered and unregistered immigrants with informal and formal sectors. The simulation results suggested a temporary decrease in employment in the formal sectors as a result of the GFC, but the informal sector had absorbed unemployed workers. The low skilled workers in manufacturing in Thailand suffered more, but only in the short run. The economic crisis discourages new registered migrant workers, but did not affect the number of returning migrants.

III. MODEL, DATA AND SIMULATION DESIGN

This study used the well-known GTAP model. GTAP is a multi-country model of the Johansen type comprising a system of linear equations of percentage changes of variables. The model includes product differentiation by country of origin, explicit recognition of savings by regional economies, a capital goods producing sector in each region to service investment, international mobility of capital, multiple trading regions, multiple goods and primary factors, empirically based differences in production technology and consumer preferences across regions, and explicit recognition of a global transport sector. It also has many policy variables, including taxes and subsidies on commodities as well as on primary factors, making the model more attractive to policy analysts.

However, we modified the GTAP model to suit the purpose of this study. The Walrus’ equilibrium condition in the GTAP stipulates that total household expenditure equals total income, which in turn is determined by total value-added in production. As such, the final demand in the economy totally depends on supply side and the growth of the economy is determined by factor inputs in production. This is true in normal economic times when the household balance sheet factors (e.g. household assets and liabilities) are not important in affecting household consumption behaviour. In an economic time like the GFC, households can sell their assets or borrow to finance their consumption, so household demand has independent influence on economic growth. To reflect this unusual situation, we stop the direct link between income and consumption.

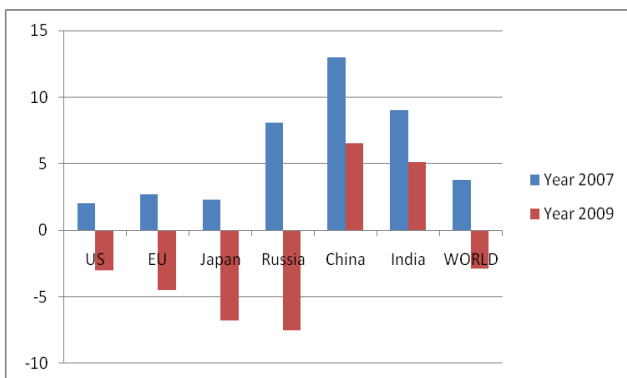
The second modification is on the expenditure system. The GTAP uses a constant difference of substitution function to depict the relationships between final demands (household demand, government demand, and investment demand). The substitution effect in this function reflects the crowding-out effect and is plausible in a supply-driven model. But we need to impose a demand-side shock (e.g. an increase in government spending), the change in one type of demand will cause opposite change in other types of demand. This is not true in the case of GFC (e.g. an increase in government consumption subsidy will increase household consumption,

rather than reduce it). To reflect the reality, we set all final demands independently.

The data used is from GTAP database version 7. The base year is 2004. There are 113 global regions and 57 sectors. For the purposes of this study, they need to be aggregated. The aggregation of the GTAP database has a significant bearing on the final results. The regrouping of regions and sectors into well-defined categories depending on the purpose of the analysis has been the common practice of almost every user of the GTAP model. It allows researchers to focus on important sectors and regions in the light of the research problem that is being examined. The sector and regional groupings are generally chosen so as to maximise between group differences and minimise within-group differences. In this study we aggregate the GTAP database into 33 regions and 28 sectors, which keeps great detail of emerging markets. The 22 emerging markets in the total 33 regions are defined according to the classification by reference [10].

The simulation plan is designed to reflect the different phases of the GFC and identify the influences of contributing factors on the GFC. We think the following factors have played significant roles during the GFC: the decrease in productivity in the financial sector reflecting the bursting of the housing debt bubble; the decrease in investment demand and thus the decrease in the rate of capital utilization, perceived as the shaking of investors' confidence or decreased expected rate of return; the decrease in household consumption (and income); the decrease in tax on industries; and the increase in government spending and public debt.

Although it is not the purpose of the paper to mimic the GFC, the sizes of shocks in the simulation are chosen to reflect the GFC. As shown in Fig. 1, the world average real GDP reduced by 2.9% in 2009. However, taking into account the 3.8% growth rate in 2007, it is appropriate to say that the GFC had a net effect of reducing world real GDP by 6.7%. In terms of this magnitude, we assume in the second stage of the GFC a 50% reduction of productivity in financial and insurance sectors in USA, EU and Canada. In the second stage, a 20% decrease in capital utilization rate and 40% decrease in household consumption in all regions are imposed on the top of the baseline shock.

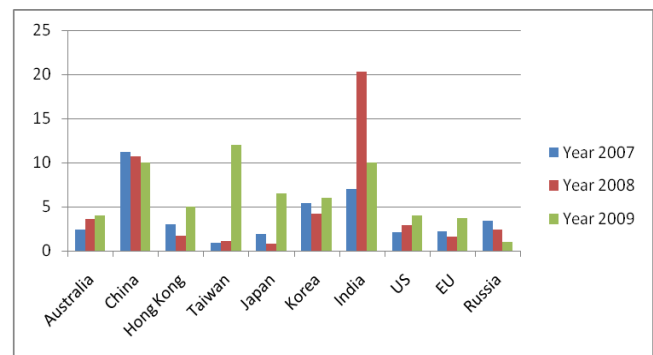


Source: Based on data from the world bank, reference [11].
Fig. 1. Annual change in real GDP (%).

Two scenarios are considered for government responses to the GFC, namely, an increase in government spending, and an increase in import tariff rates (hypothetical). Although the increases in government spending during the GFC are around

10%, as shown in Fig. 2, we imposed a larger shock – a 60% increase in government expenditure. The reason for this is that many other government responses are not included in Fig. 2. Taking China as an example: although its spending from 2007 to 2009 appears to be decreasing, it has pumped a large amount of money to state-owned enterprises through the government-controlled bank system. These enterprises spent this extra money quickly and boosted domestic demand significantly. As the result of government response, the investment confidence is presumably partially restored, so the capital utilization rate recovers by half – increases by 10% (or 10% net decrease compared with pre-GFC). The household consumption is also assumed to be improved substantially. This assumption is especially plausible in the consideration of the cash handout or consumption subsidies made during the GFC by many governments around the world. As such, household consumption increases by 30% (or 10% net decrease compared with pre-GFC).

Besides increasing government spending, a hypothetical scenario of trade protectionism (or a trade war) is also considered in order to verify the warning by world leaders that protectionism during the GFC would bring the world economy to a standstill. A 40% increase in tariff rates is assumed in this hypothetical scenario.



Source: Based on data from the world bank, reference [11].
Fig. 2. Government spending growth rates (%)*.

The data for China only consist of spending by the central government and do not include the massive bank loans to state-owned companies under the instruction of the government.

In summary, the following four scenarios are simulated in this paper. The first three represent the different phases of the GFC and the hypothetical trade war scenario is reflected in scenario 4.

- Scenario 1: 50% decrease in productivity in financial and insurance sectors in USA, Canada and EU.
- Scenario 2: Scenario 1 plus 20% decrease in capital utilization rates globally, as well as 40% decrease in household consumption.
- Scenario 3: Scenario 2 plus 60% increase in government spending, 30% increase in household consumption, and 10% increase in capital utilization.
- Scenario 4: Scenario 3 plus a 40% increase in import tariff rates.

IV. SIMULATION ANALYSIS

The four scenarios set out in Section III were simulated

using GTAP. It is possible that the resultant empirical estimates may be sensitive to parameter specification, so sensitivity tests were performed for each simulation. The results (available upon request) were found to be reasonably insensitive to the specification of these parameters. The simulation results are shown in the following tables and in Fig. 1. With a few exceptions, values are shown as percentage changes compared with the baseline case.

A. The Effect of the GFC at Different Phases

The changes in real GDP under different scenarios are shown in Table I.

TABLE I: REAL GDP CHANGE UNDER DIFFERENT SCENARIOS

Real GDP	Phase 1 (Scenario 1)	Phase 2 (Scenario 3)	Phase 3 (Scenario 3)	Hypothetic Phase (Scenario 4)
Oceania	-0.02	-7.84	-3.93	-5.07
China*	-0.03	-8.83	-4.43	-6.91
Hong Kong	-0.01	-10.83	-5.41	-5.21
Japan	-0.05	-8.01	-4.03	-4.59
Korea*	-0.03	-9.42	-4.72	-7.42
Taiwan*	-0.04	-7.89	-3.93	-5.35
Indonesia*	-0.04	-10.08	-5.06	-6.43
Malaysia*	-0.02	-9.20	-4.61	-7.72
Philippines*	-0.02	-11.58	-5.80	-7.07
Singapore	-0.29	-10.25	-5.27	-3.54
Thailand*	-0.02	-12.77	-6.40	-11.73
India*	-0.06	-9.29	-4.68	-6.30
Rest of Asia	-0.17	-11.67	-5.92	-7.72
Canada	-5.08	-12.23	-8.66	-9.33
USA	-7.47	-12.91	-10.19	-10.81
Mexico*	-0.28	-10.3	-5.29	-10.15
Argentina*	-0.06	-8.23	-4.14	-4.40
Brazil*	-0.06	-8.57	-4.32	-4.96
Chile*	-0.11	-10.03	-5.07	-5.72
Colombia*	-0.07	-7.43	-3.75	-3.81
Peru*	-0.06	-7.04	-3.55	-5.35
Rest of America	-0.20	-10.14	-5.17	-7.05
Czech Republic*	-0.57	-12.75	-6.66	-12.42
Hungary*	-0.09	-9.82	-4.96	-4.71
Poland*	-0.11	-10.18	-5.14	-6.12
EU ¹	-4.83	-13.36	-9.10	-9.84
Russian*	-0.26	-10.17	-5.21	-9.94
Rest of Europe	-0.04	-8.19	-4.12	-8.57
Turkey*	-0.08	-10.92	-5.50	-6.18
Egypt*	-0.02	-10.37	-5.20	-6.28
Morocco*	-0.04	-7.51	-3.78	-9.02
South Africa*	-0.05	-9.91	-4.98	-5.74
Rest of Africa	-0.05	-10.37	-5.21	-8.02

* Emerging markets.

¹ EU-25 Excluding Czech Republic and Poland.

Column 1 shows that, with a 50% decrease in productivity

in the financial and insurance sector in USA, Canada and EU, the real GDP in these countries decreases by 7.47%, 5.08% and 4.83% respectively. The significantly more reduction in real GDP in the USA demonstrates the greater importance of these two sectors in USA. The real GDP in the other countries is affected negatively but very mildly, ranging from -0.01% to -0.57%. The relatively larger decrease in Singapore, Mexico, Czech and Russia can be explained by the strong financial and trade linkages between these countries and the countries with troubled financial systems. In short, the financial problems in the USA, Canada and the EU have significant negative impact on their economies, but the direct influence on the other countries is negative but insignificant.

When the problems in financial systems are known to the public, the confidence in investment and in consumption is subdued globally. This leads to substantial decreases in real GDP in all regions, shown in column 2 in Table I. The decreases in real GDP around the world range from 7.04% to 13.36%. The large reductions in real GDP in all regions show that it is the decrease in investment and consumer confidence, rather than the problems in the financial sector, that have devastating effect on global economies. It is not surprising to see that real GDP changes in USA, Canada and EU are at the high end because they are origins of the GFC. What is worth noting is that many emerging economies are also experiencing a more than 10% reduction, such as Czech, Poland, Russia, Philippines, Indonesia, Mexico, Chile, Turkey, and Egypt. This indicates the vulnerability of these countries to the change in investment confidence and consumer confidence.

Column 3 shows that government responses to the GFC are quite effective – real GDP has recovered significantly from scenario 2. However, the improvement in USA, Canada and EU is relatively small. Understandably, this is because the fundamental problems in these countries – the weakness in financial and insurance sectors have not been solved. However, the effectiveness of government responses is largely hinged on their influences on investment and consumer confidence. If the government policies fail to improve the confidence of both investors and consumers, the bounce of real GDP could be rather small.

A trade war scenario would have a severe effect on countries that depend heavily on exports, so it is no surprise to see that, in the last column, a number of emerging economies have the largest reduction in GDP, compared with scenario 3. For example, real GDP reduced by a further 5.76% for Czech, 5.33% for Thailand, 5.24% for Morocco, 4.86% for Mexico, 4.73% for Russia, 3.11% for Malaysia, 2.70% for Korea, and 2.48% for China. Other countries also have been affected negatively and significantly, such as Taiwan, Indonesia, India, Philippines, Peru, Egypt, Chile and South Africa. Surprisingly, Hong Kong and Singapore are found to benefit from trade protectionism. Real GDP in Hong Kong increases by 5.41-5.21=0.20%. Singapore benefits even more, with an increase of real GDP by 5.27-3.54=1.73%. This unusual result is explained by the unique trade policies of these two countries (regions). Both cities adopt the free port policy (apart from very few tariffs on liquor and vehicles in Singapore), which is vital to their

economic success. As tariff rates increase in other countries (there is still no tariff even if the shock of a 40% increase in tariff rate is applied to Singapore and Hong Kong because their original (base) tariff rates are zero), the world demands for imports decrease and thus the world prices for imports decrease. The lower prices can significantly reduce production costs in these two regions (due to the resource constraints, they use large amount of imports as intermediate inputs). This brings them comparative advantages and increases their real GDP.

B. Macroeconomic Effects

The macroeconomic effects of scenario 2 are shown in Table II.

TABLE II: MACROECONOMIC EFFECTS UNDER SCENARIO 2

Country	real exports	real imports	Real dom, consum,	real investment	EV (US\$ million)
Oceania	-8.20	-13.81	-20.05	-31.12	-47040.40
China*	-7.80	-17.42	-28.89	-29.56	-122819.00
Hong Kong	-10.76	-13.83	-23.07	-45.38	-11753.70
Japan	-9.73	-13.91	-19.54	-29.79	-242868.00
Korea*	-9.08	-14.23	-24.65	-37.32	-48016.40
Taiwan*	-13.94	-16.61	-21.89	-35.97	-18835.00
Indonesia*	-17.84	-16.32	-27.26	-33.68	-22367.00
Malaysia*	-12.17	-15.94	-19.33	-48.81	-9418.67
Philippines*	-22.55	-20.08	-32.25	-51.20	-7329.67
Singapore	-15.17	-17.88	-18.26	-40.46	-8087.68
Thailand*	-14.79	-23.27	-24.90	-62.18	-12157.10
India*	-20.26	-16.37	-20.76	-32.58	-46969.20
Rest of Asia	-15.39	-14.14	-18.02	-37.73	-132334.00
Canada	-15.52	-15.11	-26.04	-36.48	-102718.00
USA	-16.80	-12.23	-21.00	-36.90	-1277959.0
Mexico*	-15.01	-14.71	-19.24	-40.97	-60066.80
Argentina*	-8.52	-17.27	-18.09	-39.86	-10452.00
Brazil*	-6.45	-17.87	-20.10	-47.35	-41760.70
Chile*	-14.13	-14.77	-21.88	-36.84	-8041.99
Colombia*	-13.87	-14.20	-24.56	-31.76	-6755.90
Peru*	-11.48	-10.39	-21.05	-31.51	-3591.12
Rest of America	-9.61	-14.03	-14.61	-43.58	-38307.50
Czech Republic*	-19.59	-19.07	-26.82	-42.50	-10971.90
Hungary*	-17.12	-19.23	-15.91	-46.21	-7271.02
Poland*	-18.22	-15.99	-17.80	-46.56	-17839.50
EU1	-15.71	-13.76	-25.22	-50.11	-1397025.0
Russia*	-14.72	-12.19	-29.16	-31.36	-62781.30
Rest of Europe	-11.64	-13.22	-12.94	-37.02	-12695.60
Turkey*	-21.89	-17.02	-16.57	-44.12	-23702.00
Egypt*	-15.03	-11.90	-17.57	-43.44	-6452.59
Morocco*	-8.71	-10.43	-17.98	-32.40	-2562.16
South Africa*	-15.74	-17.88	-23.12	-54.07	-16228.10
Rest of Africa	-14.10	-14.18	-19.79	-37.81	-41913.10

* Emerging markets.

¹ EU-25 Excluding Czech Republic and Poland.

First, we consider the effects on international trade. Both exports and imports decrease substantially for all countries. This result is consistent with what happened during the GFC. The reason for subdued international trade is twofold. On the demand side, the reduced consumer confidence will lead to the damped foreign demand in each region, so exports are expected to fall. On the supply side, the reduced investment and thus the utilization of capital lead to less production in each region. The scaling down of production means less income for each region and thus less demand for commodities, including imports. It is worth noting that some emerging markets experience very large reductions in real exports, e.g., -22.55% for Philippines, -20.26% for India, -19.59% for Czech, and -21.89% for Turkey. This is an indicator that these countries are vulnerable to the sentiment of foreign demand. On the other hand, the large decrease in importation in China, Philippines, Thailand, Czech and Hungary may indicate large income reduction in these regions.

Second, we look into domestic final demands. It is apparent that the change in investment is significantly larger than that in consumption. This suggests that the investment demand is more volatile than consumption, which is a conclusion widely supported by other empirical studies. The volatility of investment will lead to the large fluctuation of the economy and thus a response of government is necessary to smooth economic growth. This is especially true when we consider the around 50% decrease in investment demand in many emerging markets such as Malaysia, Philippines, Hungary, Poland, and South Africa. The changes in domestic consumption are smaller than the 40% reduction in household consumption, which we imposed as a shock in this simulation. This is explained by the fact that domestic consumption includes both household demand and government demand. As government demand is unlikely to decrease in the face of the GFC, the percentage change in total domestic demand should be smaller than that in household demand.

Finally, the equivalent variation (EV) is shown in the last column of Table II. EV is a popular way of measuring the change of welfare in terms of monetary value, excluding the influence of changes in the price level. The EV in Table II shows how people are affected collectively in each country or region. The numbers show that welfare changes varied considerably. The EU will be worse off by US\$1.397 trillion while people in Morocco only lose by US\$2.562 billion. People in the advanced economies seem to lose more. Besides the EU, the US is worse off by US\$1.278 trillion and Japan by US\$242.67 billion. Due to the collective measurement, the size of the economy (or of the population) matters in the value of EVs in Table II. For example, two neighbouring countries, Indonesia and Malaysia, have a large difference in EV.

C. Sectoral Effects

The changes in sectoral outputs under scenario 2 are shown in Fig. 3.

The world average sectoral output shows that all industries are experiencing contractions as a result of the GFC. It is not

surprising that the financial and insurance sectors experienced substantial decline, considering that it is the source of the crisis. Interestingly enough, the contraction in the insurance sector is much deeper than in the financial sector. This may be explained by the fact that insurance sector bears most of risk arising in the financial sector. The construction sector experiences the largest contraction – a 32.50% decrease in output. This indicates the importance of investment in this sector – as the investment confidence shrinks, this sector suffers most. The large contraction in mineral, metal, vehicle, electronics and the other manufacture sectors may be due to the price-elastic nature of these goods. The shaking of consumer confidence reduces demand for these goods remarkably. Similarly, the mild contraction in crops, meat, fishing, and food manufactures can be attributed to the inelastic nature of these goods. Most sectors experience 5-15% decline, but the decline in public service is only marginal. This indicates the rather stable government demand. Apparently, no government wishes to reduce government spending in the face of the GFC.

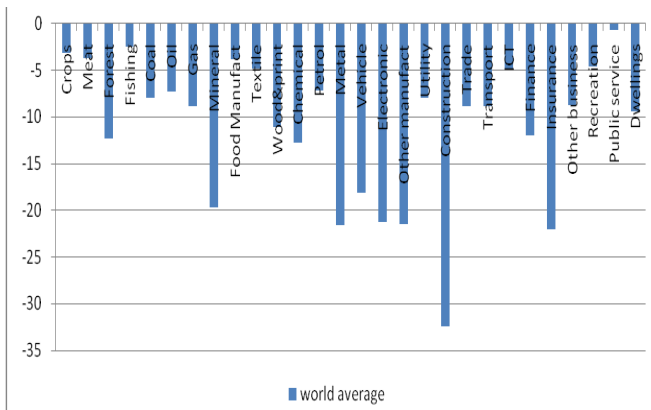


Fig. 3. Output changes (%) under scenario 2.

V. CONCLUSIONS

By employing a multi-country CGE model, this paper identified the contributing factors to the GFC and their influences, assessed the macroeconomic and sectoral effects of the GFC on the emerging economies, as well as the effectiveness of selected policy responses. Based on the simulation results, we can draw the following conclusions.

First, an event like the GFC has a devastating effect on regions worldwide. It hits harder on the countries with high-exposure through trade, investment or financial linkages. The core factors in the GFC – low productivity in financial sector affects the economies of originating countries remarkably, but the decreases in investment demand and the reduced consumer confidence played a major role in the tremendous negative effects on the emerging markets around the world.

Second, the sectoral effects show that all industries will experience contractions. While the GFC only slightly affected some industries, it brings large negative shocks to industries closely related to investment (e.g. construction) and to industries producing price elastic goods such as minerals, metals, vehicle, and electronics.

Lastly, increases in government spending can mitigate the negative effects of the GFC, but the effectiveness of this policy largely depends on its ability to recover the confidence of investors and consumers. The hypothetical simulation of increasing tariff rates on imports shows that a protectionism policy would aggravate the effect of the GFC worldwide, especially for emerging markets with high exposure to international trade.

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