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The economic crisis in East Asia surprised the world. For the better part of two decades, the so-called “tiger” economies in East Asia grew at a steady pace unmatched in any other part of the global economy. While the world continues to debate the reasons for the sudden change in East Asia’s fortune, the crisis has affected many economies outside the Pacific-Rim region. In this article, we analyze some of the direct consequences of a deeper, longer crisis in Korea, Indonesia, Thailand, Malaysia, and the Philippines (East Asia 5), for the farm and food processing sectors in the United States and Canada (North America). While we show that a deepening of the crisis hurts North American farmers, our analysis reveals several little-appreciated mechanisms by which others – including food processors – in the North American economy may benefit from a longer, deeper crisis in the five Asian economies.

Since 1997, when the East Asian crisis erupted, currencies in the region have depreciated sharply. Turmoil in the currency markets has spurred large turnarounds in the direction of capital flows. This has resulted in substantial swings in the current account balances in East Asia 5 (IMF, 1998). Losses in capital and the accompanying loss in productivity when businesses could not finance equipment upgrades, and purchases of imported intermediate products, have caused an unexpected drop in the region’s output. At the same time, losses in income and wealth have significantly reduced consumption in East Asia 5. Accordingly, investors now expect continued slow growth in the region. In short, the East Asia 5 economies have become embroiled in a deeper, and possibly longer, crisis than was foreseen last year.

Using a dynamic computable general equilibrium model (see Box), we analyze the consequences of such a deeper, longer crisis in the five Asian economies for North American farming and food processing industries, both in the short-run (1999) and in the long-run (2010). Our baseline portrays the recent Asian crisis and captures the rise in unemployment; the impairment of regional capital markets; and the sharp increase in trade balances in East Asia 5 and Japan accompanying the crisis. We then compare this baseline to an alternative simulation of a longer, deeper Asian crisis resulting in a percentage point lower annual GDP growth rates in East Asia 5 than the baseline (See Box). The crisis is deeper due to further impairment of regional capital markets, a larger decline in employment, and a continued decline in investment in the East Asia 5 relative to the baseline over the near term (1999). The crisis is longer due to slower employment recovery and subsequent lower factor productivity in the five East Asian economies relative to the baseline over the longer term (2010).

Impacts on capital markets

Marginally lower growth of the five Asian economies due to a deeper, longer crisis, results in additional capital outflows (a cumulative increase of US\$ 189 billion relative to the base case by 2010) from the region. The increased abundance of investment funds in the rest of the world lowers world cost of capital. However, foreign outflows of investment funds disrupt capital markets and the process of capital formation in East Asia 5. The result is a contraction of the productive capacity in the five Asian economies relative to the baseline. Thus, the largest adverse welfare impacts of this deeper and longer financial crisis are on the East Asia 5 economies themselves. Provided the financial crisis remains confined to the current set of five economies, the effect of the

marginally deeper, longer crisis on North America is modestly beneficial (US\$ 217 million in 2010).

How can a deeper and longer East Asian crisis possibly benefit the United States and Canada? We trace these positive welfare effects back to the financial effect of lower interest rates relative to the base case. Investors, realizing that the crisis in Asia is more serious than previously anticipated, redirect their funds away from East Asia 5 and towards North America. Additional inflows of investment into North America put further downward pressure on interest rates. This is good news for net debtors in the United States and Canada, be they families refinancing their mortgages; businesses borrowing to finance expansion; or the government financing its debt. All of these borrowers will welcome the increased availability of capital in North America.

Short-run impacts on North American farm and food sectors

In the near term (1999), a deeper, longer crisis in the East Asia 5 reduces farm imports in the five Asian regions (Figure 1). Overall world trade in farm products also falls. Most of us are already aware of these well-documented, demand-driven factors. However, our analysis is not complete without considering also the often neglected supply-side changes in the five East Asian economies.

The crisis is a setback for the East Asia 5 regions, not only in their income growth, but also in their transition from farm and natural resource-based production to manufacturing (Figure 2). The lower rate of capital accumulation in the case of a longer, deeper crisis hurts the capital-intensive heavy manufacturing and equipment sectors more than the labor-intensive farm and natural resource sectors in East Asia 5. This slowdown

in the rate of industrial development is consistent with the workers' migration back to the rural areas in Indonesia and Thailand, observed for the first time in many years.

As a consequence of the slowdown in industrial transformation, farm production does not tend to fall as much as industrial output in East Asia 5, relative to the baseline. This further limits the scope for increased exports of farm products from North America. Indeed, we predict a small increase in farm exports from the five East Asian economies and a decline in farm exports from all other regions due to the deeper, longer crisis. The negative impact on farm exports from North America is especially strong given the large proportion of farm commodities exported to East Asia 5. The North American farm trade balance deteriorates by US\$ 289 million in 1999, while farm output declines by about US\$ 236 million in the same year relative to the base case (Figure 3).

The effect of a deeper, longer crisis in East Asia 5 on this region's food exports will be negative in the near term (Figure 4). The deepening of the crisis implies that investors will further reduce the pool of available capital in East Asia 5. This harms the more capital-intensive East Asian 5 food processing sectors. North America, in contrast, undergoes an economic expansion, fueled by foreign capital inflows and cheaper capital, which raises incomes and stimulates private consumption. These increases in consumption offset the decline in North American food exports. Thus, while the North American farm sector suffers losses, the region's food sector expands in the face of a deeper, longer crisis in East Asia 5 (Figure 3).

Long-run impacts on North American farm and food sectors

In the longer term (2010), the farm sector in North America contracts further relative to the base case. The long-run negative change in North American farm trade balance in the deeper crisis scenario is about four times larger in 2010 than in 1999. However, the five Asian economies show a much stronger positive change in their farm trade balances in 2010. The decline in capital availability and employment slows manufacturing output, serving in turn to slow the transition of production away from the farm sector. Thus, North American farmers producing largely for export will be worse off in the long-run with a deeper, longer crisis in East Asia, providing that it continues to impair the industrial development of the five East Asian economies.

However, the situation in the case of processed foods is very different. Remember that the regional food industries in East Asia 5 rely more heavily on capital than the farm sector. Therefore, the decline in capital stock and productivity in the five Asian economies diminishes their comparative advantage in food manufacturing. As a consequence, the deeper, longer crisis results in a significant deterioration in the trade balance for processed foods, particularly in Malaysia and the Philippines. This opens the opportunity for more exports from other regions. For example, while in 1999 the longer, deeper crisis leads to a small negative change in the North American trade balance for processed foods, by 2010 this change turns around, and amounts to a positive US\$ 1,867 million. The change in North American food output in 2010 is US\$ 2,632 million compared to the base case. It dwarfs the decline in farm output in North America in 2010 (Figure 3). Thus, the food and farm sectors, viewed as a combined entity, actually experience higher long-run output as a result of the deeper, longer crisis. However, the

beneficiaries are those North American food manufacturers presently competing with food processors in Asia, not farmers.

Summary

Over the last two decades, high rates of savings and investment, as well as a highly educated labor force, have fueled rapid growth in manufacturing in East Asia 5. This has, in turn, pulled labor out of farming in the East Asia 5 economies leaving an ever-larger gap in output to be filled by farm imports, a large portion of which has come from North America. A deeper, longer crisis will slow the down-sizing of the farm sector and the underlying growth in farm imports in the East Asia 5. Consequently, North American farm exports to this regions will also decline in the longer term.

However, North American food manufactures benefit from a deeper, longer crisis in Asia. In the near term (1999), increases in domestic consumption of food products offset the negative impact on food manufacturing in the United States and Canada. In the longer term (2010), lower investment in the East Asia 5 diminishes the competitiveness of the food processing industry in this region and opens the opportunity for North American food manufacturers to expand and increase their exports.

In summary, the East Asian crisis is not all bad news for North America. Net debtors in North America – be they individual families refinancing their mortgages, businesses financing their expansion, or the U.S. government financing its debt – should benefit from the crisis, as it continues to put downward pressure on interest rates. The crisis in East Asia also presents some potential opportunities for an expansion in North American exports of processed foods.

For more information

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Box 1. Dynamic GTAP Model, GTAP Data Base and Simulation Design***Dynamic GTAP***

The dynamic GTAP model (Ianchovichina and McDougall, 1999) is a multi-period extension of the standard GTAP model (Hertel, 1997). The latter is widely used for trade policy analysis. The dynamic GTAP model enhances the ability of standard GTAP to conduct projections by adding new investment theory emphasizing errors in investors' expectations about potential returns to capital and international capital movements. The model preserves other features of GTAP including the sophisticated representation of consumer demands and a supply side that emphasizes the role of inter-sectoral factor mobility in the determination of sectoral output. The model reflects exchange rate movements indirectly, either as shocks to regional trade balances, or equivalently as changes in net capital outflows.

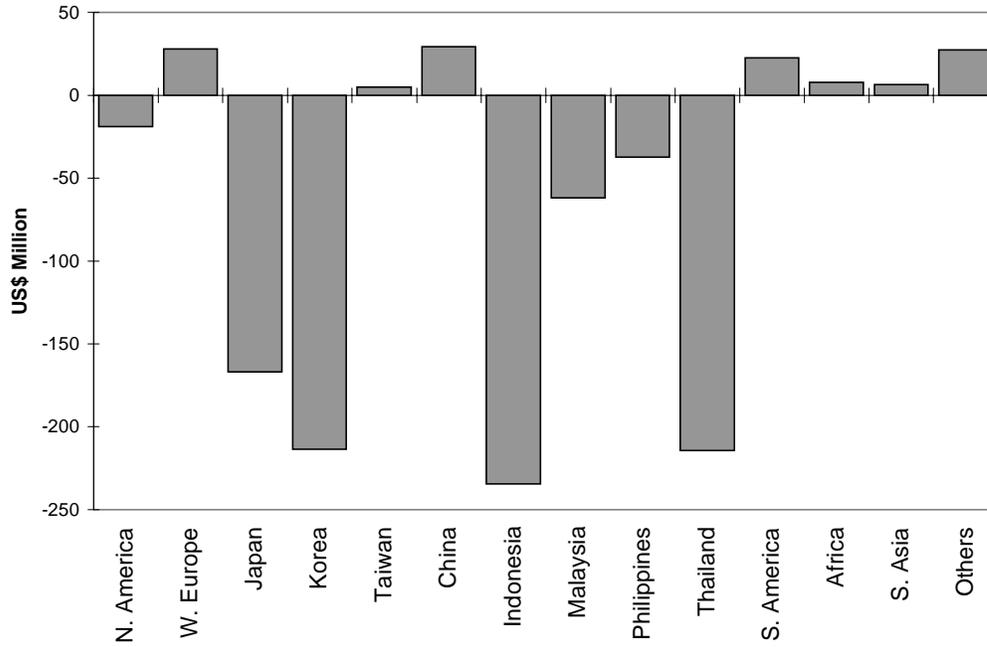
GTAP Data Base

We apply the model to an aggregated version of the GTAP data base (McDougall, 1997). It combines detailed bilateral trade, transportation and protection data accounting for inter-regional linkages among economies and input-output data bases accounting for inter-sectoral linkages within countries.

Simulation Design

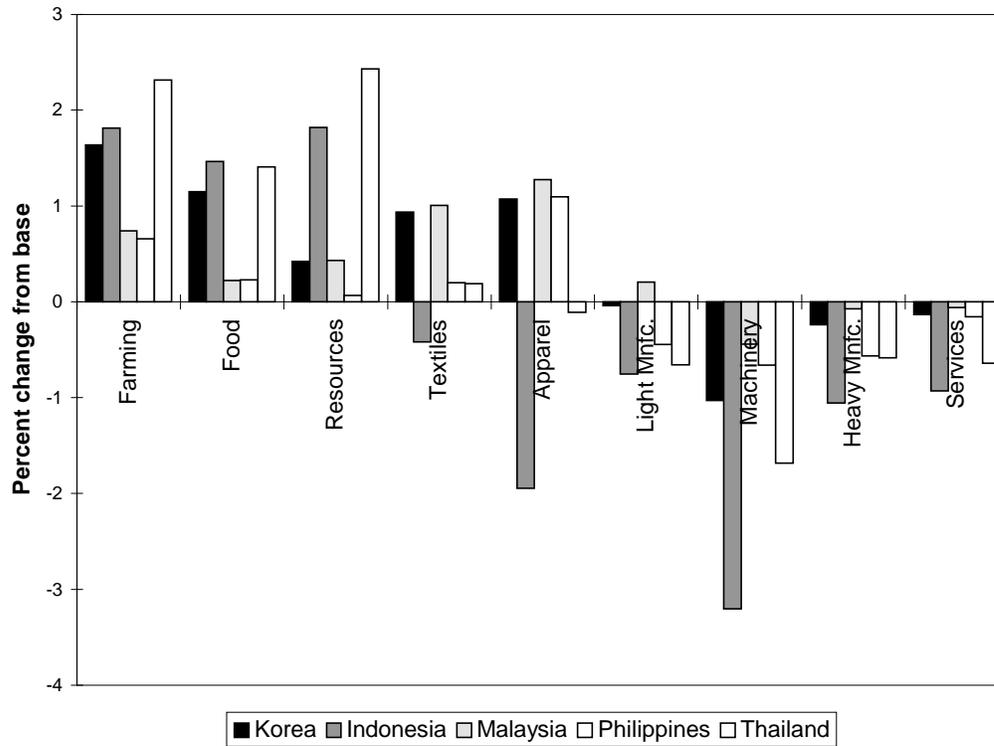
We employ the dynamic GTAP model and GTAP data base to develop a baseline forecast of the global economy for the period 1998-2010 based on a macroeconomic scenario developed by the World Bank in the first half of 1998. The baseline portrays the Asian crisis. The alternative simulation is designed to generate a marginal (one percentage point) decline, compared to the baseline, in the annual GDP growth rates in all five East Asian economies. The numerical results from this comparison represent percentage changes from the baseline and allow us to estimate qualitatively the effects of a deeper, longer crisis in East Asia 5. As such, they are not current economic forecasts, which would be rapidly out of date in any case.

Figure 1. Farm Products: 1999 Import Volume Changes, Relative to Baseline, Due to a Marginally Deeper, Longer Asian Crisis



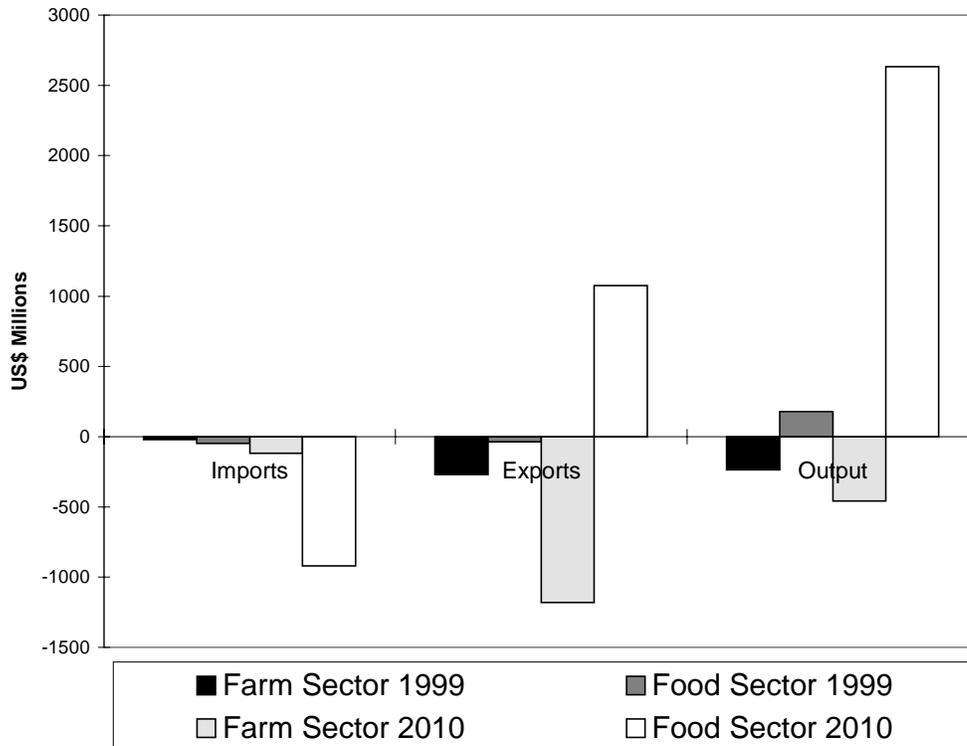
Source: Simulations with Dynamic GTAP

**Figure 2. Change, Relative to Baseline, in the Composition of Value Added in 1999
Due to a Marginally Deeper, Longer Asian Crisis, East Asia 5 Countries**



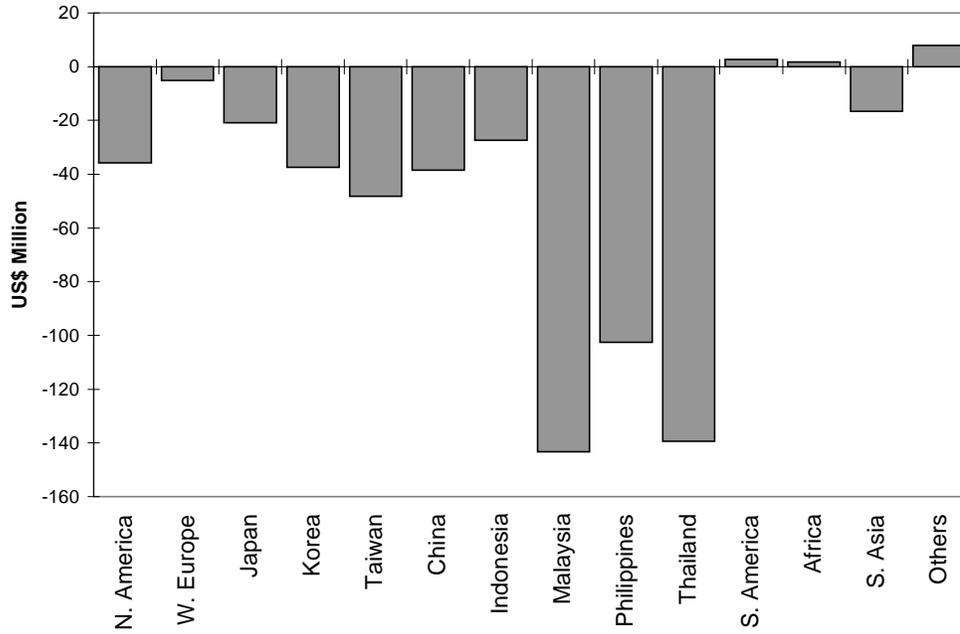
Source: Simulations with Dynamic GTAP

Figure 3. North American Farm and Food Sectors: Volume Changes, Relative to Baseline, Due to a Marginally Deeper, Longer Asian Crisis



Source: Simulations with Dynamic GTAP

Figure 4. Food Products: 1999 Export Volume Changes, Relative to Baseline, Due to a Marginally Deeper, Longer Asian Crisis



Source: Simulations with Dynamic GTAP