IS TRADE THE VICTIM OF GLOBALISATION?

The brutal drop in global trade during the last quarter of 2008 and the first months of 2009 has been the subject of much discussion. Some have seen this fall-off, which was considerably steeper than the accompanying decline in production, as a reversal of previous trends. The international fragmentation of supply chains is believed to have sped up the growth of trade during recent years and subsequently led to the current downturn. The globalisation process is thus being held responsible for the collapse of trade. We will show, based on a simulation carried out using the MIRAGE model, that the intensity of trade of intermediate goods on a global scale is not a factor behind the overreaction of trade to the shock suffered by business. This overreaction can instead be explained by short-term factors unique to the crisis that began in the financial sector.

1

■ Which drop are we talking about?

The crisis that began on the US subprime credit market in 2007 rapidly spread across the globe and its effects included a brutal drop in global trade. According to the WTO, the value of global exports fell by 11% year-on-year for the last quarter of 2008 and by over 30% in the first quarter of 2009. The crisis triggered an upheaval in global relative prices. The fall in prices of traded goods contributed to this collapse in global trade. The 50% drop in the price of oil between the end of August 2008 and the end of March 2009 itself is sufficient to explain a five-point drop in the value of global trade.[1]

It is therefore important to consider the drop in trade in terms of volume rather than of value. This requires knowing the prices of the goods traded, which is easy for oil or other primary products for which there are clearly identified global prices, but much harder for manufactured goods and even harder for services. This is why movements in trade levels are often given in terms of value, or are adjusted based on estimations that differ depending on their statistical sources. Where it is impossible to find out prices, a model of the global economy can simulate volumes and relative prices sector by sector. For 2008, for example, the simulation carried out based on the CEPII's MIRAGE model shows that global trade grew by 7.2% at a constant global GDP price, but by only 5.3% at constant trade prices;[2] this difference of almost two percentage points can be explained by the sharp increase in the relative prices of energy and raw materials during the year.

Measuring global growth also raises valuation problems. Global changes are obtained by combining growth rates of all countries, weighted by the percentage of global GDP that each country represents. Weights are often calculated based on GDPs in purchasing power parity (PPP), in order to prevent

---

1. Oil trade represents around 10% of global trade.
2. Simulation carried out in June 2009 based on incomplete data on the value of trade. For 2008, the World Bank gives the value of 3.7% for volume and the OECD gives 2.5% (in their publications of June 2009).

measurements from being affected by market exchange rate volatility and to better reflect the 'real' size of productions. Countries which currencies are undervalued with regard to PPP are thus given more weight in the calculation than they are when weights are computed at current exchange rates. Such countries, including China, are typically rapidly-growing emerging economies, with the result that the growth of global GDP as weighted by PPP GDPs is higher than in the latter case. The two figures for 2008 are 3.2% and 2.1% respectively, according to the IMF. If growth of global trade and growth of global GDP are to be compared, both sets of growth rates must be weighted in the same manner.

■ How trade overreacted

When GDP – and thus revenue – falls in almost every country in the world, the obvious expectation is that international trade will drop as well. Lower production implies a reduction in imports of raw materials, energy, intermediate goods and capital goods. A shrink in revenue immediately results in a drop in consumption, particularly marked in the case of durable goods, especially motor vehicles, which are largely traded.[3] Nonetheless, the drop in global trade recorded during the last quarter of 2008 and the first quarter of 2009 very considerably exceeded the drop in output. According to the OECD, the volume of global trade fell by 26% in the last quarter of 2008 and by 32% in the first quarter of 2009, whereas the GDP of OECD countries alone fell by "only" 7.8% and 8.3% respectively.[4] How can this overreaction of trade be explained?

International trade depends heavily on credit, which fell off during the crisis. Already during the Asian crisis of 1997, certain countries such as Thailand had seen their exports drop in spite of a considerable depreciation in their currency. In 2008 and 2009, it would appear that exporters, particularly in developing countries, suffered from a reduction in credit lines for trade.[5] In addition, the increasing uncertainty about trade partners' signatures and exchange rates (the volatility in key currencies doubled with the crisis) may have led companies to shift their focus to their internal markets. Beyond their direct impact, credit restrictions also had an indirect effect on trade, since they contributed to a shrink in the purchase of durable goods and capital goods, which are among the most traded goods. Conversely, stimulus packages primarily affected the non-tradable goods and services sector, chiefly the construction industry.

Furthermore, a resurgence of 'murky' protectionism has been witnessed,[6] whether in the form of higher customs duties applied by some emerging countries[7] or support to national industries (direct aid linked to recovery plans, Buy American Act, Chinese directives on public procurement, *etc.*). Trade in goods was not necessarily the biggest beneficiary of such policies, however, since in most countries the bulk of public support has gone to the banking sector. Most of all, the scope of these policies was not large enough to make them a convincing explanation for the sudden fall in trade. The "*Global Trade Alert*" initiative from Simon Evenett, which has been listing the measures that are liable to affect external trade since the beginning of the crisis, reported (on the 5th of September 2009) "only" 125 measures of various types, 86 of which belonging to the "red category" of most highly distortive measures. Given that global trade concerns 200 countries and 10,000 tariff lines and that around 1,000 lines are currently affected by a measure taken by at least one country, this means that 90% of goods traded were still not covered by any new protection at that time.[8]

Finally, another explanation often put forward for the fall in global trade relates to the forms taken by the new international division of labour. We will now examine this argument more closely.

■ The role of the international division of labour

Global supply chains imply that a given component crosses borders several times at different stages, localised in different countries, of the manufacture of a given final product. Thus, trade is measured in "gross" terms (the value that counts is that of the intermediate product each time it goes through customs), whereas the production of final goods is measured in net terms (as the sum of value-added at all stages of production). The total amount of trade involved in the

---

3. The motor vehicle sector was particularly hard-hit by the crisis owing to its existing fragilities (overcapacities). *Cf.* J. Francois & J. Woerz (2009), "The Big Drop: Trade and the Great Recession", Vox, May 2.
4. As against the previous quarter, annualised rates, *OECD Economic Outlook*, June 2009.
5. M. Auboin (2009), "Trade finance: G20 and follow up", Vox, June 5.
6. The expression is from R. Baldwin and S. Evenett (2009), "The collapse of global trade, murky protectionism and the crisis: recommendations for the G20", CEPR, London.
7. The customs duties applied by emerging countries are lower than the WTO's consolidated duties, giving these countries the leeway to increase the duties they apply without breaching their prior commitments. *Cf.* E. Gamberoni & R. Newfarmer (2009), "Trade protection: incipient but worrisome trends", *Trade Note 37*, World Bank, March 2.
8. Some of the measures reported may also affect decisions taken prior to the crisis but that did not come into effect until after it began, such as the Indonesian law of April 2008 on coasting trade that came into effect in January 2009.

production of a given item of goods can thus exceed the value of that production. The increased fragmentation of global supply chains over recent years has thus contributed to an increase in global trade, and to widening the gap between the growth of trade and the growth of GDP. Hence the frequently raised argument that, in turn, the drop in global production could have an inflated effect on trade.[9] This would however come true only if the crisis had defragmented global supply chains so that a given component subsequently would pass through a smaller number of different countries. There is no reason to think that this could have happened in such a short time frame, particularly when output and investment are both undergoing a downturn. At a constant level of fragmentation, a drop in the production of a given item of goods will lead to a *proportionally* equivalent drop in the trade involved in its production.[10] Composition effects may nonetheless apply, if the crisis particularly affects very vertically fragmented sectors, such as the computer equipment industry.

To determine the scale of such composition effects, we will rely on the CEPII's MIRAGE model.[11] The question asked is the following: to what extent does global trade decrease following a shock to global business, such as the shock witnessed in 2009, in a model where global inter- and intra-industry trade of intermediate goods are involved? To answer this question we will incorporate IMF Spring 2009 forecasts for GDP growth and the oil price.[12] We will calibrate the fall

in investment using an accelerator effect (see Box). Finally, we will buck the trend (which is exogenous to the model) of an ever-increasing fragmentation of supply chains, *i.e.* we will reason based on a given fragmentation in each sector, knowing that the crisis can have a greater effect on more heavily fragmented sectors. The results (Table 1) are given with the values for trade adjusted to account for either global inflation (constant relative prices) or the inflation for each individual trade flow.

■ Short-term factors

Table 1 shows the simulated course of trade for several key regions. When trade flows are deflated by trade prices (which are simulated here by our model), the drop in exports is much less pronounced in oil-exporting regions (Russia, the Middle East and North Africa) than if we had calculated it on a value basis (assuming a constant GDP price). In advanced economies exporting primarily manufactured goods and services, there is little difference between results obtained using the two deflators. It comes out that the USA, Japan and (to a lesser extent) the European Union are strongly affected by the crisis, whereas China resists better. These differences are determined by trade structures, specialisations and by the way trade volumes react to price and demand variations.

Box – Simulation using MIRAGE

The simulation is based on the combination of the following three elements: (1) IMF forecasts (April 2009) for variations in GDP and the price of oil; (2) a distortion of global demand at the expense of investment; and (3) a break in the trend of falling trade costs.

Investment is computed using an accelerator mechanism estimated region by region for the 1980-2007 period: the growth in investment between t-1 and t is proportional to the acceleration of GDP. This mechanism, which is explained by the fact that GDP is proportional to capital (which is a stock) rather than to investment (which is a flow), produces a course of investment that is much jerkier than the course of GDP. The fall in investment observed during the

current crisis was actually even more pronounced than our accelerator predicted.

The MIRAGE model, calibrated for 2004 (GTAP 7), has been extended to 2008 using data from the IMF and the ITC (Geneva). In particular, we have used all trade data available up to December 2008. From 2009 onwards, the model simulates the changes in trade flows compatible with recession forecasts, the drop in investment and the halt in the fall of trade costs. Two deflating factors are used successively to express the changes in trade flows. The first one, which is used in the standard version of MIRAGE, is the deflator of global GDP. The second one uses trade prices specific to each sector as calculated by the model.

* The forecasts from the *World Economic Outlook* (April 2009) are compared with Freedman et al. (2009) to extend the path of GDP beyond 2010, taking stimulus packages into account. C. Freedman, M. Kumhof, D. Laxton & J. Lee (2009), "The Case for Global Fiscal Stimulus", *IMF Staff Position Note 09/03*, 6th of March.
** The volume/price distribution depends on trade price elasticities, which are certainly overestimated here as we have used the long-term elasticities of the model. It nevertheless illustrates the roles played by relative prices in the apparent over-adjustment of trade.

---

9. K. Tanaka (2009), "Trade collapse and vertical foreign direct investment", Vox, May 7. K. Yi (2009), "The collapse of global trade: the role of vertical specialization", in R. Baldwin & S. Evenett (eds), *The collapse of global trade, murky protectionism, and the crisis: Recommendations for the G20*, London: Vox, CEPR.
10 K. O'Rourke (2009), "Collapsing trade in Barbie world", www.irisheconomy.ie/index.php/2009/06/18/
11. Regarding the MIRAGE model, see Y. Decreux & H. Valin (2007), "MIRAGE, Updated Version of the Model for Trade Policy Analysis Focus on Agriculture and Dynamics", *CEPII Working Paper* no. 2007-15; regarding the simulation shown here, cf. A. Bénassy-Quéré, Y. Decreux, L. Fontagné & D. Khoudour-Castéras (2009), "Economic Crisis and Global Supply Chains", *CEPII Working Paper*, no. 2009-15, July.
12. IMF, *World Economic Outlook*, April 2009.

Table 1 – Growth rates of exports by region, 2007-2012

	2007	2008	2009	2010	2011	2012
USA	4.2	5.2	-8.6	0	2.1	3.0
	-4.2	-5	(-9.5)	-0.6	-2.6	-3.4
Japan	2.7	3.9	-10.1	2.0	3.7	4.4
	-2.7	-2.7	(-9.2)	-1.6	-4	-4.6
EU27	7.0	7.3	-7.2	1.1	3.1	3.3
	-7	-6.7	(-8.6)	-1.6	-3.6	-3.8
China	11.9	12	0.6	6.5	9.5	9.2
	-11.9	-9.2	(-1.7)	-4.9	-7.9	-7.8
India	7.6	8.2	-5.8	8.2	9.7	9.3
	-7.6	-7.3	(-8.2)	-7.2	-8.4	-8.3
Brazil	8.4	15.0	-2.7	1.4	4.0	3.4
	-8.4	-15.7	(-9.7)	-2.8	-4.1	-4.1

Note: annual percentage variations at constant trade prices (in brackets: at a constant global GDP prices).
Source: MIRAGE simulations.

We can now combine results obtained for all regions of the world to form global results, in order to answer our initial question. Global trade, deflated by the price of global GDP, falls by 8.9% in 2009; at constant trade prices, the drop in volumes traded is less pronounced: -2.4% for 2009, *i.e.* a drop identical to that for global GDP aggregated at current exchange rates (Table 2).

Table 2 – Reasl growth rates of GDP and global trade 2007-2012

	2007	2008	2009	2010	2011	2012
Global GDP weighted at						
PPP exchange rates	5.2	3.2	-1.3	1.9	4.4	4.8
market exchange rates	3.8	2.1	-2.5	1.0	3.3	3.5
Global trade deflated by						
the price of GDP	6.0	7.2	-8.9	2.1	4.1	4.4
trade prices	6.6	5.3	-2.4	0.7	3.7	3.7

Note: annual percentage variations.
Sources: IMF, ITC and authors' calculations.

The conclusion from our simulation exercise is that the new international division of labour does not explain the drop observed in trade during the crisis, since the fragmentation of supply chains are not sufficient in themselves to make global trade overreact to a fall in GDP. This means that the financial crisis did indeed have a specific effect on trade, beginning with short-term phenomena absent from a our general equilibrium model: credit restrictions, a sudden reversal of expectations and inventory clearance. This additionally yields an optimistic interpretation of the results observed: the major drop in global trade recorded at the beginning of the year is not liable to continue, since it is essentially due to short-term factors. Indeed, only structural changes – such as a generalised protectionism across trade blocks or a significant and ongoing increase in transport costs – could, in the medium term, lead to a reduction in globalisation, which would then probably result in a strengthening of trade regionalisation. In the short term, global trade should recover, as should production. This rebound, which was expected in light of the freight rates recorded from January 009 onwards,13 seems to be confirmed by more recent data: in June 2009, the volume of global trade rose 2.5% as against the previous month, the largest net monthly increase since July 2008.14

Agnès Bénassy-Quéré, Yvan Decreux, Lionel Fontagné
& David Khoudour-Castéras
beatrice.postec@cepii.fr

13. Between January and the beginning of September 2009, the Baltic Dry Index rose by about 150%.
14. CPB, World Trade Database.