

Box A. The effects of the trade war on inflation¹

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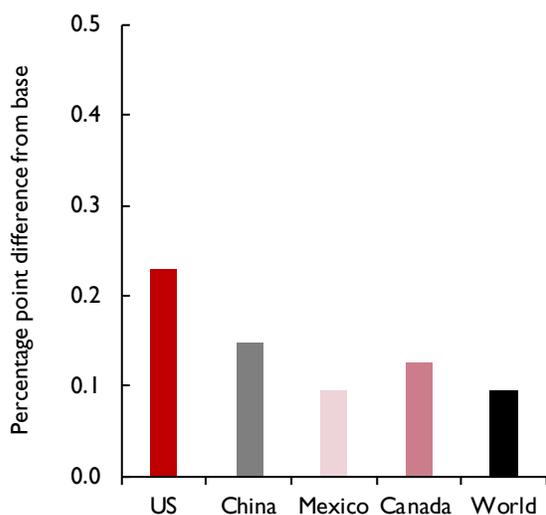
In the past two months some of the uncertainties around the trade war between the US and China have settled. The negotiations between the US and China have culminated in the Phase One agreement, which was signed on 15 January. After this agreement, tariffs on goods traded between the two countries are substantially higher than before the trade war started. Estimates from the Peterson Institute are that the average trade-weighted US tariff rate has risen from 3.1 per cent two years ago to 19.3 per cent and the average tariff by China on US goods has mirrored this, by increasing from 8 per cent to 20.9 per cent (Bown and Kolb, 2019). In previous *Reviews*, the issue about the possible effects of the trade war on output growth has been examined using simulations on our model, NiGEM (Liadze and Haache, 2017; Hantzsche and Liadze, 2018; Liadze, 2018a, b). Following recent research by Amiti *et al.* (2020), this note examines the possible effects of the increase in tariffs on consumer prices. A tariff increase acts as a negative supply shock, raising prices of inputs to production and increasing output prices, leading to lower output.

Since early 2018 the US has imposed tariffs on goods imported from China in a series of stages, with a series of announcements made on prospective tariff rates on certain types of goods from China and on total import values. From solar panels, via steel and aluminium, the list of goods affected extended to machinery and electrical equipment and then to consumer goods. It has been estimated that after the Phase One agreement almost two-thirds of imports from China will be affected by tariffs (Bown, 2019). Although the tariffs have been wide-ranging and have marked a break from the post-WWII trend of reducing barriers to trade, the Phase One agreement did roll back some of the previously proposed tariff increases,² but not all of them.³ It also sets an ambition for US exports to China⁴ and China has promised to provide more protection for American companies' intellectual property and to stop requiring US companies to share their technology as a cost of doing business in China.

To examine the effects of these increases in tariffs on prices we report the results of a simulation on our NiGEM model in which the average US tariff rate on imports from China permanently increases by 15 percentage points, simplifying from the estimated 16.2 percentage point increase, and Chinese tariffs on US exports also increase permanently by 15 percentage points (rounding up from 12.9 percentage points). The simulations of tariff effects work through higher import prices. This channel is supported by Amiti *et al.* (2020) who note that: "we find that US tariffs continue to be almost entirely borne by US firms and consumers".

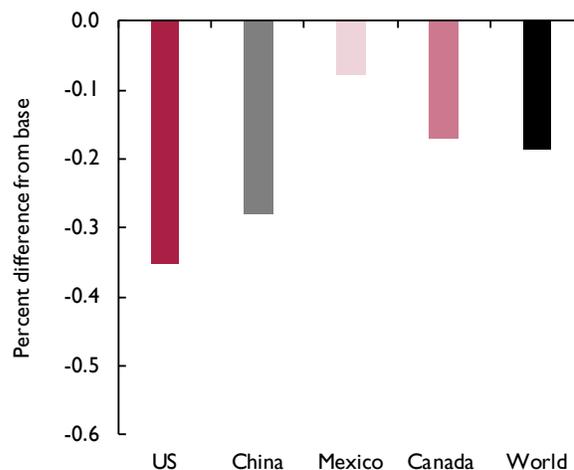
Figure A1 shows that the consumer price inflation rate both in the US and China would increase by about 0.2 percentage points relative to the baseline projection over three years following a 15 per cent increase in tariffs, a result consistent with previous work (Liadze, 2018a). In the simulation we assume that exchange rates and financial markets are forward looking and respond

Figure A1. Average annual impact on inflation over 3 years (annual, per cent)



Source: NiGEM database and simulation

Figure A2. Average annual impact on GDP over 3 years (annual, per cent)



Source: NiGEM database and simulation

Box A. (continued)

to expected changes in interest rates. As a consequence, if expectations of interest rates are raised as a result of a policy change then bond and equity prices will fall and the exchange value of the domestic currency will increase instantaneously, bringing some effects forward.

The extent to which global prices are affected by the tariff shock is also shown. With higher US tariffs leading to higher US inflation, there is a bias towards higher US policy interest rates which contributes towards an appreciation of the US dollar, in real effective terms. Other economies, except China, might experience increases in import prices via relative depreciations of their currencies. Relative to the baseline, inflation globally is increased by 0.1 percentage points, on average, over a three-year horizon. For the US, China and the global economy, the increases in inflation dampen over a three-year horizon. Mexico and Canada (economies closely linked to the US in trade) see similar increases. Higher import prices raise inflation and depress output in all the countries discussed. However, the magnitude and persistence of this effect depends on the sensitivity of domestic prices to import prices as well as the differences in the reactions of the monetary policy authorities. For reference, figure A2 illustrates the average effect over three years on GDP. The results, which show a fall in world GDP of 0.2 per cent relative to baseline, with a larger fall in the US, are similar in size to those previously reported (Liadze, 2018b).

The increases in inflation that arise from the tariff shocks are against a background of a sustained period of low inflation, especially in the advanced economies. In this context, the monetary authorities do not actively respond to mitigate the increase in inflation in the model simulation. Perhaps more important than the precise results of the simulations, however, is that the trade war might possibly contribute towards a more widespread change in the direction of trade liberalisation that has been evident for several decades. The uncertainty caused by the tariffs themselves, the manner of the announcement of tariff increases and the speculation about 'what is next' may well cause larger effects than those captured by the simulations reported here. Given the fall in world trade growth last year, these uncertainties appear to have played an important role in the global economy.

NOTES

- 1 The authors would like to thank Jagjit Chadha, Cyrille Lenoel, Iana Liadze, Xuxin Mao, and Garry Young for helpful comments and suggestions.
- 2 US tariffs on \$162 billion of US imports from China scheduled for imposition at 15 per cent on 15 December did not come into effect. These duties would have hit US imports of toys, consumer electronics, and other goods. President Trump reduced to 7.5 per cent the tariffs of 15 per cent he had imposed on over \$100 billion of imports on 1 September, 2019.
- 3 The 25 per cent tariffs imposed on \$250 billion of imports prior to 1 September and those imposed in July, August, and September of 2018 – primarily on imported parts and components – remain unchanged.
- 4 China is committing that over the next two years it will import no less than \$200 billion of US goods and services on top of the amounts that it imported in 2017 in four broad categories of goods. The Agreement noted that "The United States and China expect China's increased imports of U. goods and services to continue on this same trajectory for several years after 2021" (Office of the US Trade Representative, 2020).

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