

### The increase in American customs duties on Chinese imports should have moderate inflationary effects

#### Successive waves of increases

The American government has announced several waves of increases to the customs duties charged on imports from China. On 6 July 2018 a first wave of increases came into force, affecting Chinese goods for a total annual value of 34 billion dollars; customs duties on these products were increased by 25 percent. On 7 August a second wave of customs duty increases (+25 points) came into force, affecting a further 16 billion dollars' worth of Chinese goods. 18 September saw a third wave of increases, affecting \$200bn of imports from China, taxed at a rate of 10% of their total value as of 24 September. These duties could be increased to 25% as of 1st March 2019 if the two countries have not reached an agreement by that date, at the expiry of a 90-day moratorium agreed in early December. The United States has also threatened to raise customs duties on a further 267 billion dollars' worth of Chinese imports. China has retaliated with equivalent tariffs on American imports. The targeting of these measures is partly informed by political considerations, focusing in particular on those American states which voted for President Donald Trump, for example states that are major producers of soybean.

#### Products affected

After several weeks of hearings and consultations with interest groups, on 18 September the Office of the United States Trade Representative published a list of Chinese goods affected by the tariffs. These new customs duties came into force on 24 September 2018. They concern an extremely broad array of products, ranging from food to manufactured goods, chemicals, agrifood products, energy, some transport equipment (locomotives) and electronic goods. All furnishings (a segment worth around 28 billion dollars) are affected. Nevertheless, certain products are exempted from these tariffs, including Apple products (smart watches, Bluetooth equipment) and certain chemical products used in agriculture and the manufacturing industry.

#### What impact will these measures have on prices of goods consumed in the USA?

All other things being equal, and assuming that commercial exchanges between the countries will change little in the short term, these American

measures should increase the consumption deflator (the PCE index, monitored by the Fed) by 0.1 percentage points (see Method below). If the customs duties announced in the third wave of tariffs are increased to 25%, the American consumption deflator would then increase by a further 0.1 percentage points.

According to the forecasts, this deflator should increase by 0.4% in both Q4 and Q3 2018 as a quarter-on-quarter variation, before slowing to +0.1% in early 2019 as a result of the fall in energy prices. The consumption deflator should then grow by 0.4% again in the spring. In year-on-year terms, this should mean a 1.9% increase in Q4, 1.4% in the first quarter of 2019 and 1.3% in the spring.

In a more general sense, taking into account the possibility that economic forces will adapt their behaviour accordingly, the effects of these tariff increases are theoretically ambiguous. Customs duties should make products imported to America from China more expensive, thus increasing the prices of goods consumed in the USA. Furthermore, an increase is expected in the prices of USA-produced goods and services relying on intermediate consumption of products imported from China, and thus impacted by the increased customs duties.

Nevertheless, these customs duties could also have the effect of driving down demand for Chinese products, reducing the influx of currency and purchases of the yuan, leading to a depreciation of the yuan. Economic uncertainty regarding the Chinese situation could serve to accentuate this depreciation, as could any speculation against the Chinese currency on the financial markets. This factor, combined with the decline in the yuan observed since the spring, could offset price increases for Americans.

Businesses might also seek to diversify their supply sources and utilise the diversity of their value chains to keep production costs down. They might also choose to pass on only part of these customs duties to consumers in the form of price increases. Some businesses might in fact be incapable of passing on price increases due to contractual obligations, competition, commercial policies etc. Competition and price rigidity could thus serve to attenuate the impact on inflation. ■

#### Method

In order to determine the Chinese-import content in American household consumption, we use the world input-output table (WIOT) published by Eurostat (in the World Input-Output Database, WIOD) for 2014, the most recent year available.

This table is a matrix with 2464 lines, corresponding to 44 countries and 56 products. The lines describe the possible applications of a given product manufactured in a given country: for example a car manufactured in France, a telephone manufactured

in China etc. The columns correspond to uses: so cell  $(i, j)$ , where  $i$  is the line number and  $j$  the column number, indicates the value of a country-product combination  $i$  used as intermediate consumption in the production of the product-country combination  $j$ .

In order to estimate the potential impact of an increase in customs duties on American inflation, we begin by inverting this table to determine the Chinese-import content of American household consumption: households consume products imported from China, but businesses also use imported intermediate consumption goods in their production processes, before selling on the end product or service to the consumer. This inversion therefore allows us to account for “second round” effects.

To achieve this, we begin by constructing a matrix of technical coefficients  $A$ , dividing each cell  $(i, j)$  by the value of the output from the country-production combination  $j$ :

$$A_{i,j} = \frac{WIOS_{i,j}}{Prod_j},$$

where  $WIOS_{i,j}$  refers to cell  $(i, j)$  in the WIOT.  $A_{i,j}$  thus designates the proportion of intermediate consumption coming from the pairing (product-country)  $i$  in the output of the pairing (product-country)  $j$ . But this product-country pairing, used as intermediate consumption, itself relies on intermediate consumption, and so on and so on. In order to produce, a given product-country pairing may make use of any number of other product-country pairings, which in turn may make use of any number of other product-country pairings. This leaves us with a geometric progression:

$$Y_x = Y_0 \sum_{i=0}^{+\infty} A^k$$

where  $Y_x$  represents total production used to produce the output of the pairing (country-product)  $x$  and  $Y_0$  represents the output of this pairing, hence  $Y_x = Y_0 (I-A)^{-1}$ ,  $(I-A)$  using the Leontief matrix.

Calculating the Chinese-import content of American household consumption requires us to multiply the value-added vector, for which each

term corresponds to the value added of a product-country pairing (i.e. 1 minus the sum of the corresponding column), by the Leontief matrix and by the final demand vector.

The figure stood at 1.7% in 2014: to satisfy 100 dollars of American consumption, the value added of China was 1.7 dollars. American imports from China totalled 333 billion dollars in 2014, growing to 505 billion dollars in 2017.

The average rate of customs duties levied on all Chinese imports leads to a 0.1-point increase in inflation, calculated as follows:

$$\begin{aligned} \text{Surtaxes} &= (50/505 * 0.25 + 200/505 * 0.10) = 0.064 \\ \text{Customs inflation} &= 0.017 * \text{Surtaxes} \end{aligned}$$

It should be noted that we have used the WIOT for 2014 here. But the table may have evolved in the meantime. Moreover, the rise in customs duties may lead some companies to transfer their production activities from China back to the USA, or elsewhere in Asia (Vietnam, Thailand, Malaysia). In fact these tariff barriers have been introduced with the explicit intention of modifying the value chain, encouraging companies to produce more in the United States and protect American intellectual property.

Our analysis is limited to the pure accounting effects of these changes, assuming that the structure of consumption and consumer behaviour remain unchanged, i.e. that consumers do not switch to alternative products, and that companies pass on the increase in their production costs to the final price, thus preserving their margins.

Moreover, these effects are calculated at a constant exchange rate; and yet the yuan has fallen sharply since these sanctions came into effect. The length of the time lag before these effects are felt is uncertain, and may vary from several weeks to several months.

Finally, the proportion of consumption taken up by Chinese imports is higher when it comes to business investment: investment by business could therefore be hit harder by these new customs duties, with potential consequences for productivity and potential growth in the USA. ■