

## **Tariffs and Elasticity: The Effect of Tariffs Depends Upon the Elasticity of Supply and Demand**

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In 2018 and 2019 the U.S. imposed or threatened to impose tariffs upon a wide variety of imported goods. Each time tariffs were imposed or threatened, biased politicians and commentators along with naive or sycophantic journalists asserted that the additional tariff times the full value of affected imports would represent an additional tariff (tax) that would be fully paid by U.S. Consumers. Thus, they would say that an additional tariff of 10% levied upon \$300 billion in traditional imports would represent an additional \$30 billion expense for U.S. Consumers. **THAT IS NOT TRUE.**

### **The actual impact of a tariff upon U.S. consumers depends upon the elasticity of demand and supply.**

Elasticity is an economic concept that measures the percentage change in the quantity demanded or supplied of a good in response to a percentage change in its price. At one extreme, the demand for a good would be completely inelastic if no change in the quantity demanded occurred after an increase in its price. i.e., its elasticity would be zero. It is hard to conceive of a case where that might occur. However, if people needed to consume oxygen from canisters or die, as might occur on the surface of the moon or Mars, an increase in the price of oxygen canisters would have little effect upon the quantity demanded. Nonetheless, even in that case, people would likely curtail their exercise and other oxygen consuming activities to some degree in order to reduce their need for oxygen. Thus, even in that case, the elasticity of demand would be slightly less than zero so the increase in oxygen canister price would be partially offset by a reduced need (purchase) of oxygen. **Consequently, because the elasticity of demand was greater than zero, total expenditures on the good would increase by less than the price increase multiplied by the amount of the good initially consumed.**

**In actual fact, in almost all cases the demand for a good is not totally inelastic. In addition to the fact that people would have an incentive to reduce their need for and consumption of a good when its price increased, they also would be likely to search for alternatives. Thus, if the price of imported toys increased, they might purchase domestically made toys instead, or even purchase some other products their children would enjoy in lieu of toys. If the price of steel increased, they might include more high strength plastic in their production plans and curtail their use of steel to some degree. Thus, in fact, the demand for most goods is price elastic to some degree, so the quantity consumed will fall when the price (including tax) increases.**

**At the extreme, the elasticity of demand for a good might be almost infinitely great.** For instance, if perfect substitutes for a good existed, a decrease in its price might increase the quantity demanded of it almost infinitely, while an increase in its price might reduce the quantity demanded of it to zero. For instance, for items traded on stock or commodities exchanges, anyone who tried to sell their good (or stock) at a price above the prevailing price would receive no takers. Conversely, anyone who offered to sell the stock (or good) at a price below the prevailing price would immediately find many people who wanted to purchase the stock (or good) from them. Because of low transactions and information costs, the demand for stocks or futures contracts traded on exchanges is almost infinite. For goods, costs of obtaining and transporting goods could reduce the elasticity of demand somewhat. However, for goods traded on international markets, the demand would still be highly elastic (sensitive) to price changes. That is often the case for oil products that can easily be sourced or shipped almost anywhere in the world. In the case of tariff effects, assume that equivalent exercise shoes are produced at equivalent prices in Vietnam and China. However, because it is closer, the cost of shipping the shoes from Vietnam to the U.S. is higher so there is a large initial demand for exercise shoes shipped from China. Nonetheless, if a tariff were imposed upon running shoes shipped from China, as soon as the tariff cost exceeded the transportation cost differential, the demand for running shoes would shift from China to Vietnam. If the transportation cost differential was small, there would be a highly elastic, possibly infinite, negative response in the quantity of running shoes demanded from China.

In actual fact, the elasticity of demand rarely approaches infinity, except on financial exchanges.

That is particularly the case in the short run. In our exercise shoe example, it may be impossible for Vietnam manufacturers to accommodate the increased demand for their shoes in the short-run. Thus, many purchasers would still have to purchase from China in the short run. However, in the longer run, Vietnam producers would likely increase their production capacity and purchasing managers would make appropriate adjustments in their policies so a rising portion of the demand for exercise shoes would be filled from Vietnam rather than China. As the quantity demanded of shoes from China continued to decline over time, the quantity response would increase as time increased so the elasticity of demand for Chinese shoe production would tend to increase (i.e. have a greater quantity response) over time. **In general, where goods are concerned, the elasticity of demand following a price change is greater in the long run than in the short run as elasticity tends to increase over time.** Where the elasticity of demand for a good is very high, the consumers of goods will pay very little more to buy the good after its price is raised for one supplier, as other suppliers will supply the good for a minimal increase in price. **Thus, when demand elasticity is high, very little of the initial price increase would be passed**

**on to consumers of the good in question.**

It should be noted that the potential change in the quantity demanded of goods from various suppliers depends upon the willingness of producers to supply the good at various prices. If producers are able and willing to supply the good at a reduced profit, their supply may not decrease. For instance, China is a communist centrally controlled economy. It may require that producers not lay off workers and it may set production plans for suppliers that require that they maintain their production levels according to prior plans. In that case, a business could continue to produce and sell its goods at the same rate as before as long as it reduced its prices by the same amount that the tariff had increased its goods' cost to consumers. Thus, there would be zero response to the tariff in the form of reduced production in China and there would not be an increased demand for Vietnamese products. However, in that case the full cost of the tariff would fall on the Chinese producers' profitability and none would fall on the ultimate U.S. Consumers.

Chinese businesses that were not fully state controlled, however, might resist lowering their prices sufficiently to offset the effect of the tariffs. However, the Chinese government has another policy it could use. Since Chinese producers price their products and pay their customers in the local currency (the yuan), the price to foreign purchasers of a good could be reduced to foreign buyers by lowering the value of the yuan. Thus, a Chinese firm might continue to price its good at 6.3 yuan, but if the yuan's value fell by 10% from 6.3 per dollar to 6.93 per dollar after the imposition of a 10% tariff, the price of the good priced at one U.S. Dollar could remain at \$1 for foreigners even after the tariff was paid. In that case the Chinese producer could continue to pay his workers as much as before and sell as many goods as before since the net price of the good would not increase for foreign purchasers. In fact, after the U.S. initially raised its tariffs on Chinese goods by 10%, the Chinese let their yuan fall in value from around 6.3 per dollar to 6.9 per dollar. As a result, in effect, the Chinese paid for the tariffs' cost. However, in this case, it was not necessarily the individual suppliers and their workers who suffered because of the increased tax posed by the tariffs. Since the yuan was devalued the cost of the tariffs was borne by all Chinese who imported goods from abroad since they would need more yuan in order to afford to buy the same amount of goods from abroad that they had purchased before. The increased cost of foreign goods would raise yuan prices for those goods in China and the Chinese cost of living. Thus, to the extent that U.S. tariffs contributed to the devaluation of the Chinese currency, the Chinese people paid much of the cost of the tariff (tax) imposed upon the price of goods they sold to the U.S.

If the price of the yuan were to fall by less than the percentage increase in tariffs, the amount of yuan received by Chinese producers would be less than before unless they lowered their prices in yuan. While businesses controlled by the Chinese government might have to maintain their production and employment levels, and suffer a loss in yuan revenues as a result, not all businesses in China are totally controlled by their government (although many large state owned businesses are subject to substantial government control). Profit motivated private businesses whose yuan revenues fell because of the tariffs might reduce their production and employment levels in order to try to maintain their profitability in the face of falling revenues. Thus, part of the effect of tariffs could be in the form of reduced Chinese business production and employment—which would be another way that the Chinese economy would suffer from the increase in tariffs.

Some Chinese businesses might find that they could increase their prices sufficiently so that they would compensate for the increase in the tariff (tax) and the devaluation of the yuan and still maintain their production and employment levels. However, to the extent that they raised their prices, they would provide further incentives for foreign purchasers of their goods to look elsewhere (perhaps to Vietnam) for supplies of needed goods. Over time, as the elasticity of demand increased as more goods became available from Vietnamese or other sources, the Chinese producers might find that they could not sustain their (after tax) price increases. Thus, over time, as the elasticity of demand for Chinese products increased due to increasing supply responses elsewhere, the effect of the tariffs upon the Chinese would also increase.

**In sum, then, biased politicians and stupid journalists are totally incorrect to say that the full burden of the U.S. Tariffs (tax upon imports) would be borne by U.S. Consumers. In fact, depending upon the elasticity of demand for various goods, after tariffs were imposed upon Chinese imports to the U.S., much of the impact might be borne by Chinese consumers (in the form of higher prices due to their currency devaluation) or by Chinese employees and businesses (in the form of layoffs and/or lower profits) as the quantity demanded of Chinese goods fell and supply chains started to shift toward other potential suppliers (such as Vietnam).**