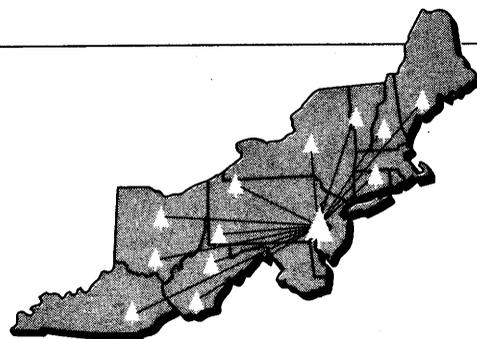


Northeastern Forest Experiment Station



FOREST SERVICE, U.S. DEPT. OF AGRICULTURE, 6816 MARKET STREET, UPPER DARBY, PA. 19082

THE EFFECT OF THE TARIFF ON THE MAPLE INDUSTRY

Abstract.—The U. S. maple tariff is a tax on maple syrup and sugar imports from Canada into the United States. An analysis of the maple tariff indicates that it was never very effective in protecting the domestic maple industry from foreign competition. The tariff has been especially ineffective since World War II. Its removal will not hurt the U. S. maple syrup industry.

A tariff is a tax on imported goods, levied by a national government and payable when the goods cross the nation's boundary. The U. S. maple tariff, levied in 1909, is paid on pure maple products imported from Canada into the United States. As a result of the Kennedy Rounds of tariff negotiations under the General Agreement on Tariffs and Trade (GATT) in 1964, the maple tariff (table 1) was abolished on 1 January 1972.

At the turn of the century, the tariff was an important means to achieve national and international policy goals. However, since the years of the Great Depression, and more

noticeably since World War II, reliance on the tariff has steadily decreased. The demise of the tariff can be attributed to two major factors.

First, imposition of a tariff yields a mixed bag of effects. If, for example, a tariff is imposed for the purpose of protecting a home industry from foreign competition, other results are automatically triggered. The ultimate result of the tariff may generally be more detrimental than the specific advantage gained in protecting the home industry.

More direct policy tools have evolved, which can be used to reach policy goals more fairly and without the inevitable side-effects of the tariff. Some of these tools are direct subsidies, taxes, transfers, and monetary and fiscal policies.

The second major factor concerns the rise in importance of capital to the American economy. Industries relying heavily on capital goods have gained prominence over industries still heavily dependent on labor and land. Capital has become an abundant resource relative to labor and land. Capital-intensive industries benefit from low tariffs on a world-wide basis because they can import raw materials at lower costs and can export finished

Table 1.—The tariff on maple syrup and sugar imports from Canada

Maple syrup		Maple sugar	
Year	Cents/pound	Year	Cents/pound
1925-1943	4.0	1925-1930	4.0
1944-1947	2.0	1931-1935	6.0
1948-1967	1.5	1936-1944	4.0
1968	1.2	1945-1947	3.0
1969	.9	1948-1967	2.0
1970	.6	1968	1.6
1971	.3	1969	1.2
—	—	1970	.8
—	—	1971	.4

goods to larger foreign markets. The United States has taken the lead in tariff reduction, and has generally encouraged world-wide tariff reduction.

maple products since 1925, when Canadian maple imports into the United States were 13 percent of the total U. S. supply. Today, Canadian maple imports account for over 56 percent of the total U. S. supply (fig. 1).

Trends in Maple Production and Imports

Maple production in the United States has declined steadily since the peak production of 6.6 million gallons in 1860. Maple production since 1960 has averaged almost 1.3 million gallons per year compared to almost 2 million gallons per year since 1925 (fig. 1).

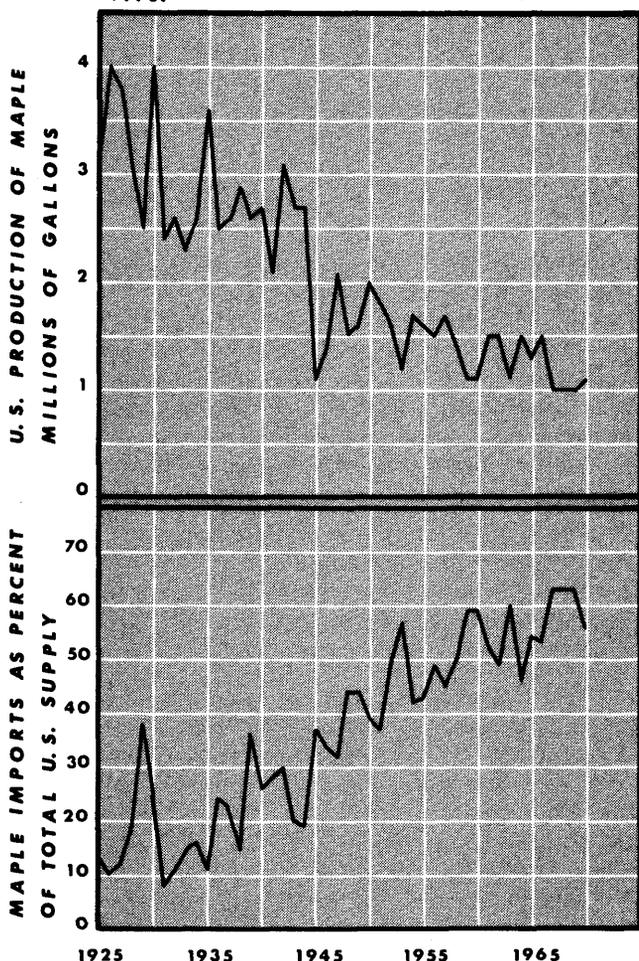
Maple imports from Canada have been recorded since 1916. Canadian maple has been a significant part of the total U. S. supply of

Imports Compete in the Bulk Market

Pure maple syrup is marketed in three ways: retail in consumer packages, wholesale in consumer packages, and wholesale in bulk to manufacturers (*Pasto and Taylor 1968*). Most of the low-grade or commercial-grade syrup and surplus high- or table-grade syrup is sold in the bulk syrup market. Most of the table-grade syrup is sold in smaller packages to consumers.

It is believed that imported maple syrup competes mainly with drum or bulk syrup, most of which is blended with cane syrup to make the common maple-flavored table syrups. However, what happens to the imported bulk syrup is unknown, because information about grade and distribution of Canadian syrup in the United States has never been compiled. Although most imported Canadian maple is used in commercial processes, it is likely that some of it is packaged in consumer containers for competition with domestic syrup in the United States.

Figure 1.—Trends in maple production and imports in the United States from 1925 to 1970.



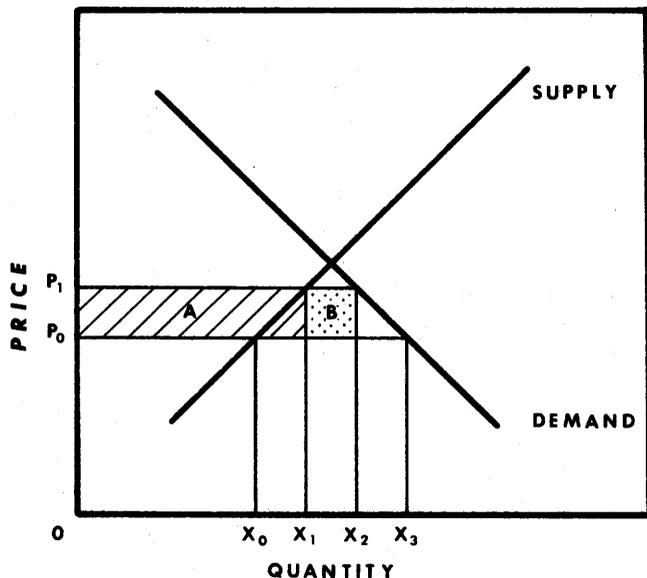
How the Tariff Worked

A tariff is probably best known for its protective effect. It is the most desired effect from a single industry perspective. But the protective effect is not independent of the other tariff effects, nor does it protect anything but the home industry manufacturing the product.

The total quantity of a product offered for sale in a home market is divided between the quantity supplied by domestic producers and the quantity supplied by foreign imports. If a tariff is levied on imports, and it is assumed that all other factors remain unchanged, the effects of the tariff can best be illustrated by partial equilibrium analysis. Figure 2 is an abstraction of this market (*Kindleberger 1968*).

In the absence of a tariff, the market price is P_0 , and the quantity on the market is the line segment $O - X_3$, made up of $O - X_0$, offered by domestic producers, and $X_0 - X_3$,

Figure 2.—The effects of a tariff. (A) redistribution effect; (B) revenue effect. $X_2 - X_3 =$ consumption effect; $X_0 - X_1 =$ protective effect.



offered by foreign producers. The line segment $P_1 - P_0$ represents the tariff on imports.

The protective effect of the tariff is the increase in domestic production represented by the line segment $X_0 - X_1$ at the new market price P_1 . However, because of the higher price, total consumption of the product will decrease by $X_2 - X_3$. This is the consumption effect.

Area A in figure 2 is the redistribution effect. This is the income directed away from consumers in favor of domestic producers, and it represents additional profits for domestic producers. Area B represents the revenue effect or the amount of money paid to the government on imports of the product.

The remaining effects have to do with the tariff as national policy. In brief, the tariff has an effect on the price the home country pays for its imports, the balance of trade, and total domestic employment. Any advantages gained in these three areas through tariff manipulation can be reduced or reversed if foreign countries are provoked into retaliatory tariff changes.

In summary, an industry supports a tariff for its protective effect. The home industry realizes a greater share of the market at a higher product price. However, the burden of protection is borne by the home consumer be-

cause of higher prices and reduced consumption.

Evaluating the Effect of the Tariff

Did the maple tariff ever work very well? A deductive approach can give some insight into the value of the maple tariff. Figure 3 represents supply curves for two different commodities: (A) an elastic supply curve and (B) an inelastic supply curve. Elasticity here refers to responsiveness of change in quantity supplied to changes in price. An elastic supply curve means that the change in quantity supplied is greater than the change in price. An inelastic supply curve means that the change in quantity supplied is smaller than the change in price.

Maple supply is tied to sap production. Sap production is roughly fixed each year by the number of trees tapped and the weather. Good weather sets supply at a high level; bad weather sets supply at a low level.

Once the short sap-gathering season is over, the maple supply is fixed for the year. The quantity of maple available cannot be increased no matter what the market price may be. If maple syrup is in short supply, thus increasing price, Canadian sellers might be encouraged to sell a little more in the domestic market.

$P_0 - P_1$ represents the amount of the tariff in both graphs in figure 3; and $X_1 - X_2$ is the protective effect or increase in home production. The more elastic the supply, the greater the protective effect or increase in home production. The more elastic the supply, the greater the protective effect with the same level of tariff.

Because the maple supply curve is inelastic (fig. 3, B), the potential protective effect of the maple tariff is small. It can be concluded that the maple tariff never had the potential to really work very well.

Apparent Effect of the Maple Tariff

The actual burden of the maple tariff is reflected in the tax expressed as a percentage of the value of the product (fig. 4). From 1925 to 1945 the tariff averaged 33 percent of the value of maple products. From 1946 to 1970 the tariff averaged less than $5\frac{1}{2}$ percent

Figure 3.—The relationship of elasticity of supply to the size of the protective effect of the tariff. Maple supply is inelastic (B).

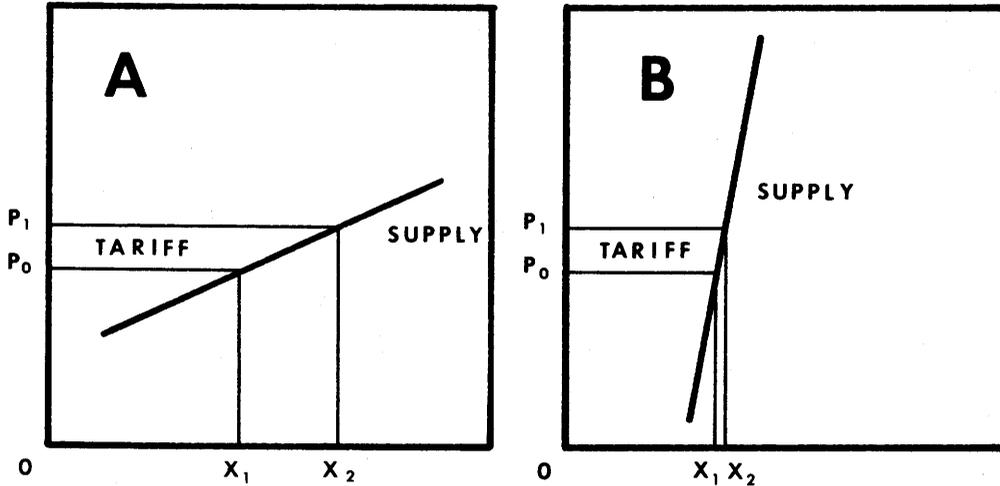
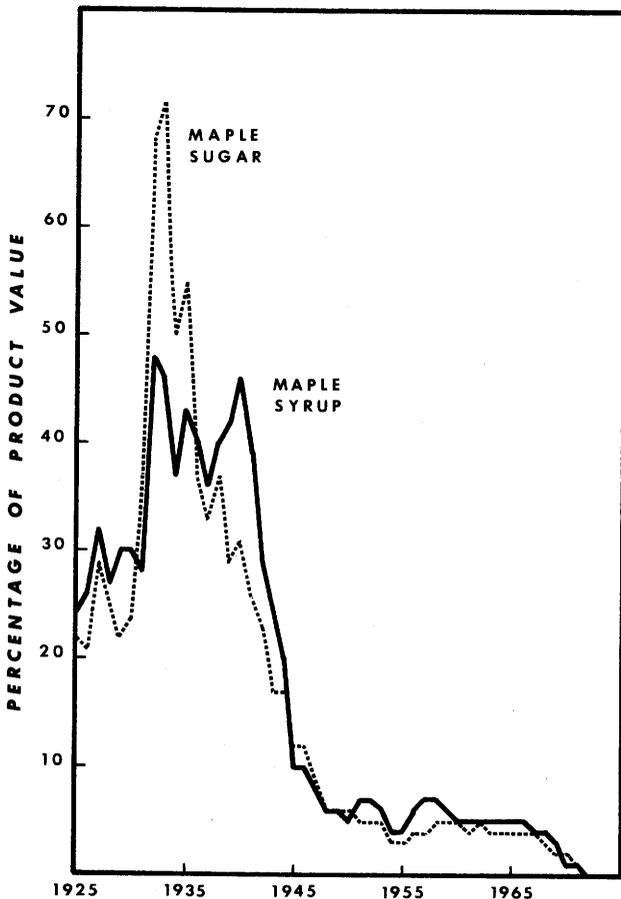


Figure 4.—Maple Syrup and Sugar Tariff expressed as a percentage of the value of the product.



of the value of syrup and less than 5 percent of the value of sugar. Value of imports from 1951 to 1970 was obtained from the U. S. Department of Commerce, Bureau of the Census; value of imports from 1925 to 1950 was assumed to be equal to the average annual Canadian value reported in Taylor et al. (1967).

The actual burden of the tariff reached its highest level in the period 1931 to 1935. Annually it averaged 56 percent of the value of sugar and 41 percent of the value of syrup. Imports were very low during this period, averaging less than 0.4 million gallons per year compared to almost 1 million gallons annually from 1926 to 1930 and almost 1 million gallons annually from 1936 to 1940.

It is difficult to measure the direct effect of the tariff on maple imports. Changes in the supply and demand for maple products, in prices, and in the general price level confuse the picture. These other factors were equally important in influencing maple imports into the U. S. Maple prices in the U. S. were high and increasing from 1926 to 1930. They fell by as much as a third between 1931 to 1935, influenced by the Great Depression. Maple prices rose again to former levels from 1936 to 1940. This also may explain the change in imports.

In the Canadian market, maple prices were also very low in the period 1931 to 1935. However, the difference between Canadian

price and U. S. price during that period was much smaller than in 1926-30 and 1936-40. After the depression, U. S. prices began to increase much faster than Canadian prices.

As an additional disturbance, maple buyers in the United States speculated that there would be a very large increase in the specific tariff in 1931. So they imported unusually large amounts of Canadian maple syrup in 1929 and 1930. However, the high tariff never fully materialized. The resulting large surplus of maple syrup undoubtedly contributed to the low level of imports from 1931 to 1935.

The aggregate effect of all these factors interacting resulted in the observed changes in imports. During this 15-year period, tariffs changed and imports changed. But more important, maple prices in the United States and Canada also changed, reflecting changes in demand and supply and causing changes in the actual burden of the tariff. Speculation in maple syrup based on expected tariff increases influenced imports, as did changes in the general price level during the Great Depression.

Considering the empirical evidence of the maple tariff, I concluded that the tariff has

not had an observable protective effect on the U. S. industry, especially since World War II.

The Maple Industry Without a Tariff

Ordinarily a protected industry will be injured when a tariff is removed. But the protective effect of the maple tariff was insignificant; so, as the burden of the tariff is removed, injury to the United States maple syrup industry will be slight. The maple industry has been returned to an unprotected state with the least possible disorder.

References

- Kindleberger, C. P.
1963. *INTERNATIONAL ECONOMICS*. (Ch. 12). Richard D. Irwin, Inc., Homewood, Ill. 686 p.
- Pasto, J. K., and R. D. Taylor.
1968. *PRODUCER MARKETS FOR MAPLE SYRUP IN THE UNITED STATES*. Pa. State Univ. Agr. Exp. Sta. Bull. 750. 44 p.
- Taylor, R. D., J. K. Pasto, and H. M. Southworth.
1967. *PRODUCTION TRENDS AND PATTERNS FOR THE MAPLE SYRUP INDUSTRY IN NORTH AMERICA*. Pa. State Univ. Agr. Exp. Sta. Bull. 742. 37 p.

—PAUL E. SENDAK

Research Forester
Northeastern Forest Experiment Station
Forest Service, U. S. Department of Agriculture
Burlington, Vt.

MANUSCRIPT SUBMITTED FOR PUBLICATION 1 NOVEMBER 1971.

U.S. GOVERNMENT PRINTING OFFICE: 1972-707-549:366