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The Real Economy vs The Stock Market

Greg Cater Sr. and Greg Cater Jr.
1/3/20

In January of 2018 President Trump announced his first of many tariffs. Washing machines and solar panels would now cost 30% to 50% more if not made in The US. The really big tariffs (aluminum and steel) were announced 2 months later. Trump's goal was to protect American jobs and grow the economy. He was doing what he promised he would do, "Make America Great Again".

For the last 2 years tariffs, or should I say The Trade War, has been the dominate headline. If you look at the stock market, we seem to be winning. But if you look at virtually every other measure of economic activity over the last 2 years a very different picture emerges.

We have attached the charts of over 20 measures of the real economy over the last 2 years (tariff years). These include widely followed ones like GDP and the monthly Jobs Report to lesser known ones like Rail Freight Carloads.

Do you see a pattern? 23 out of 23 are in decline. Over the last 2 years the only thing moving up is the Stock Market. The question is: can the rally continue?

Most pundits believe tariffs, and especially high tariffs are inflationary. In times of rising inflation stocks generally do well. Could it be that the prospects of tariffs leading to higher inflation is fueling this advance? The real question to ask is:

Are Tariffs Inflationary?

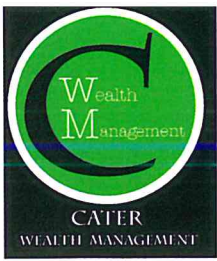
How could tariffs be anything other than inflationary? If a tariff is imposed on imported goods; prices have to go up, right? Seems reasonable and most economists and just about everyone else agrees. The problem is history doesn't agree. I have attached an economic study by Ravi Batra, Ph.D. Economics that was presented at the Economics Club at SMU on November 16th 2000 and published the next year in The Review of International Economics, 9(3), 373-382, 2001. In this study Batra writes:

"The purpose of this paper is to challenge the conventional view. I show that at least in the annals of the United States, high or rising tariffs were **never** associated with rising prices in peace times. In fact, high or rising tariffs **always** coexisted with declining consumer prices. Furthermore, low or falling tariffs were **always** followed by rising living costs." [emphasis added]

Did you notice he says "**never**" and "**always**"?

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We now have 2 years of threatened, promised and imposed Trump Tariffs under our belts:

- | | |
|--|------------------------|
| 1) Year over year import prices | -1.30% |
| 2) Year over year export prices | -1.30% |
| 3) Fed's official measure of inflation (PCE) | 1.50% (vs 2.0% target) |
| 4) ISM purchasing managers' index (Dec 2019) | 47.2* |

*Lowest reading since June '09 – US factories are in contraction – aren't the manufacturing jobs coming back?

Where's The Inflation?

There is no simple answer but you may want to consider:

- 1) Tariffs reduce trade which in turn hurts the economy.
- 2) Slow growth reduces employment.
- 3) Fewer jobs reduces consumer spending.
- 4) Slowing consumer spending increases inventories which leads to business laying off more workers which leads to even slower consumer spending.

We hear over and over again the “economy” and “jobs” are growing. Is this the whole story? You may notice all the attached charts reflect “seasonally adjusted percentage change from year ago” data.

How do we measure progress?

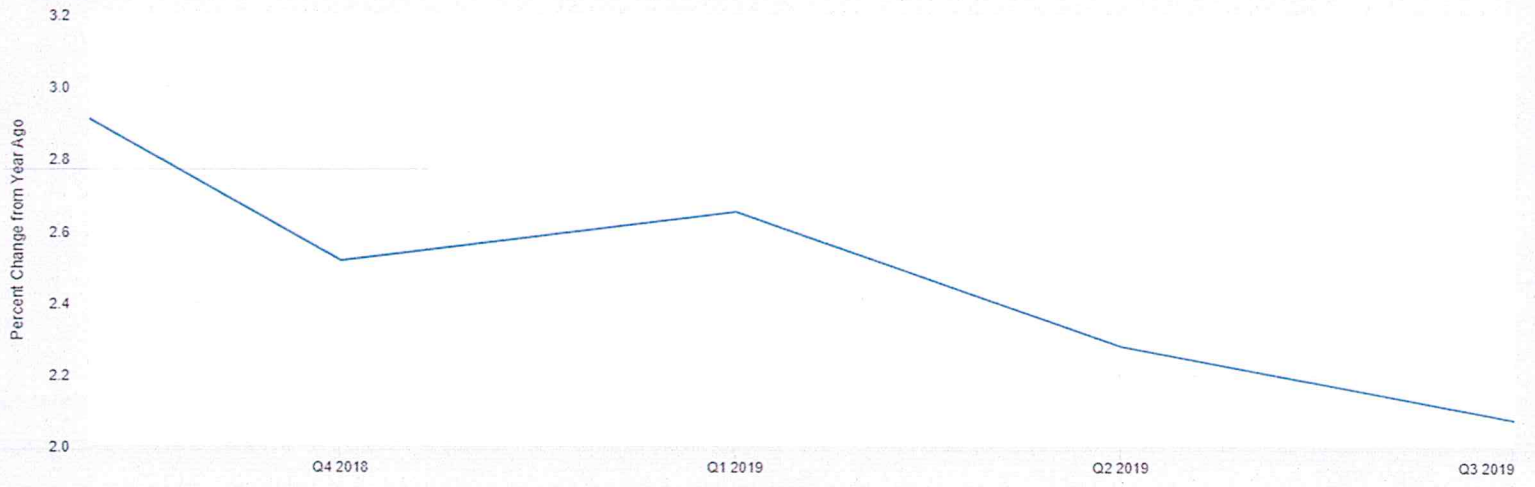
In normal, non-recessionary periods, the US is in a state of growth, so raw numbers don't give us as much context as a percentage change in the growth rate of these measures. This is why when people talk about GDP; they do it in terms of year over year growth, not raw dollars. We know GDP is growing; we want to find out how fast or slow that growth is. Additionally, because of holiday and other buying seasons, different quarters and months consistently differ in growth rates, which can throw off our measurement.

For these reasons, we typically choose to measure the percentage change of a given metric from the same date of the previous year.

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FRED — Real Gross Domestic Product

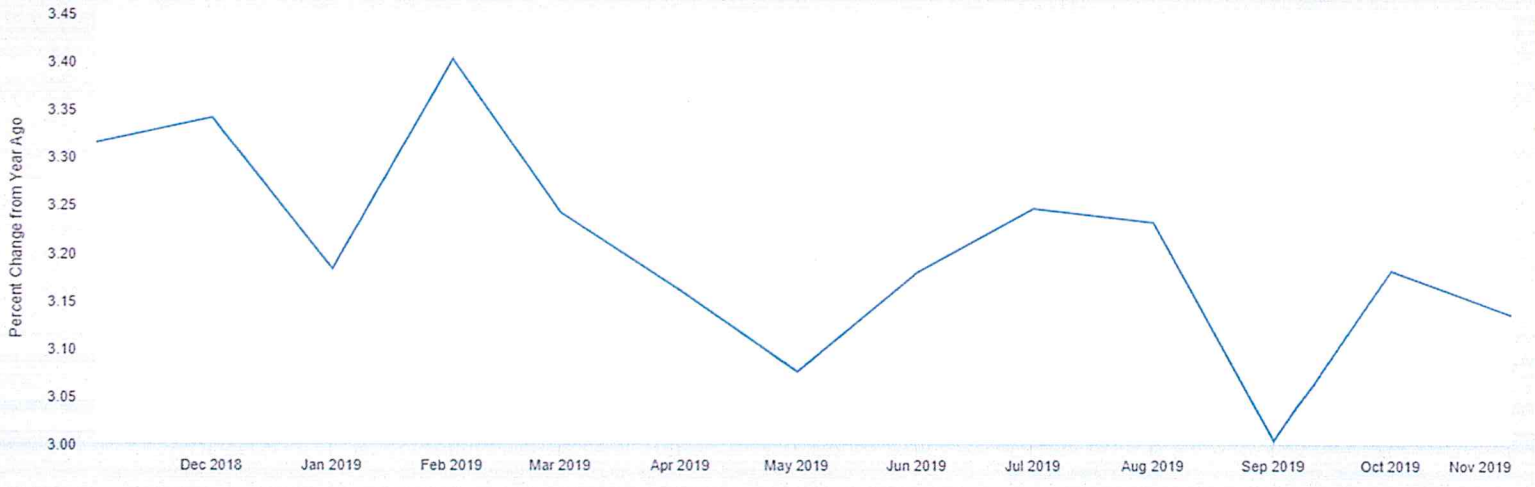


Shaded areas indicate U.S. recessions

Source: U.S. Bureau of Economic Analysis

fred.stlouisfed.org

FRED — Average Hourly Earnings of All Employees: Total Private

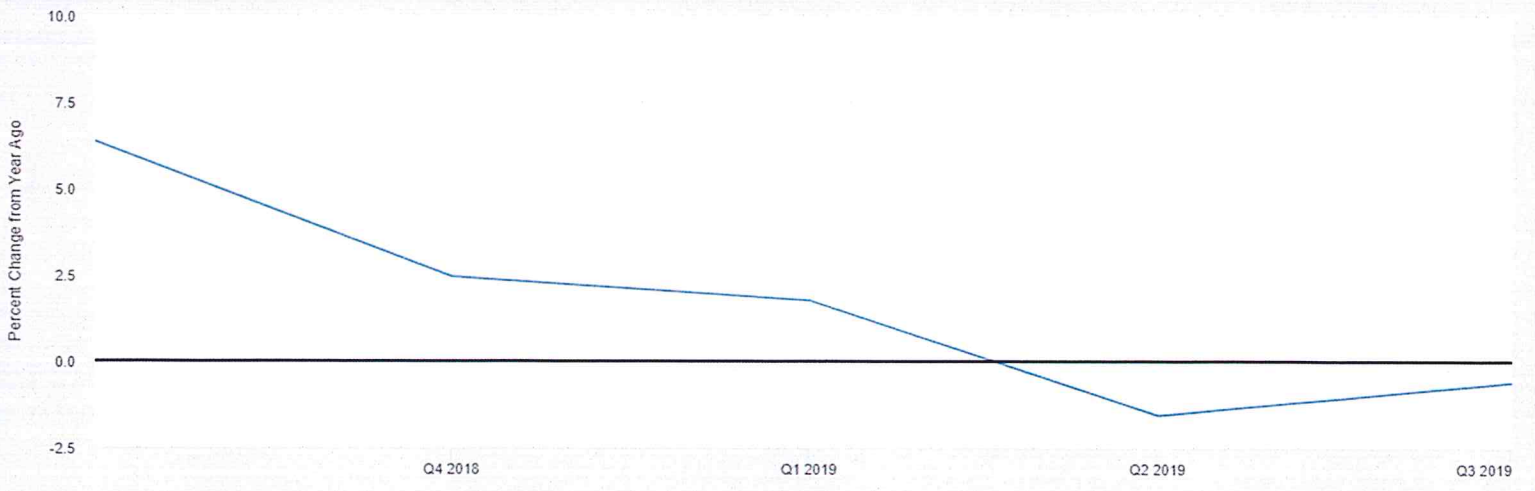


Shaded areas indicate U.S. recessions

Source: U.S. Bureau of Labor Statistics

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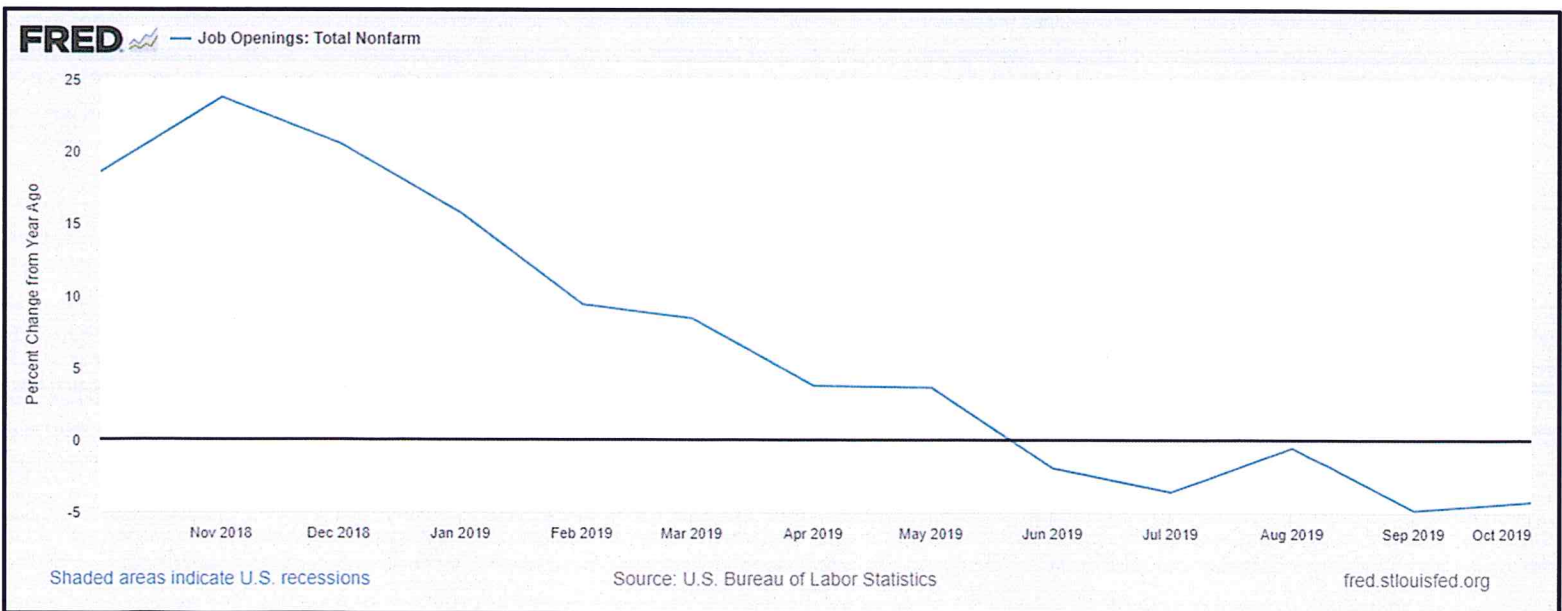
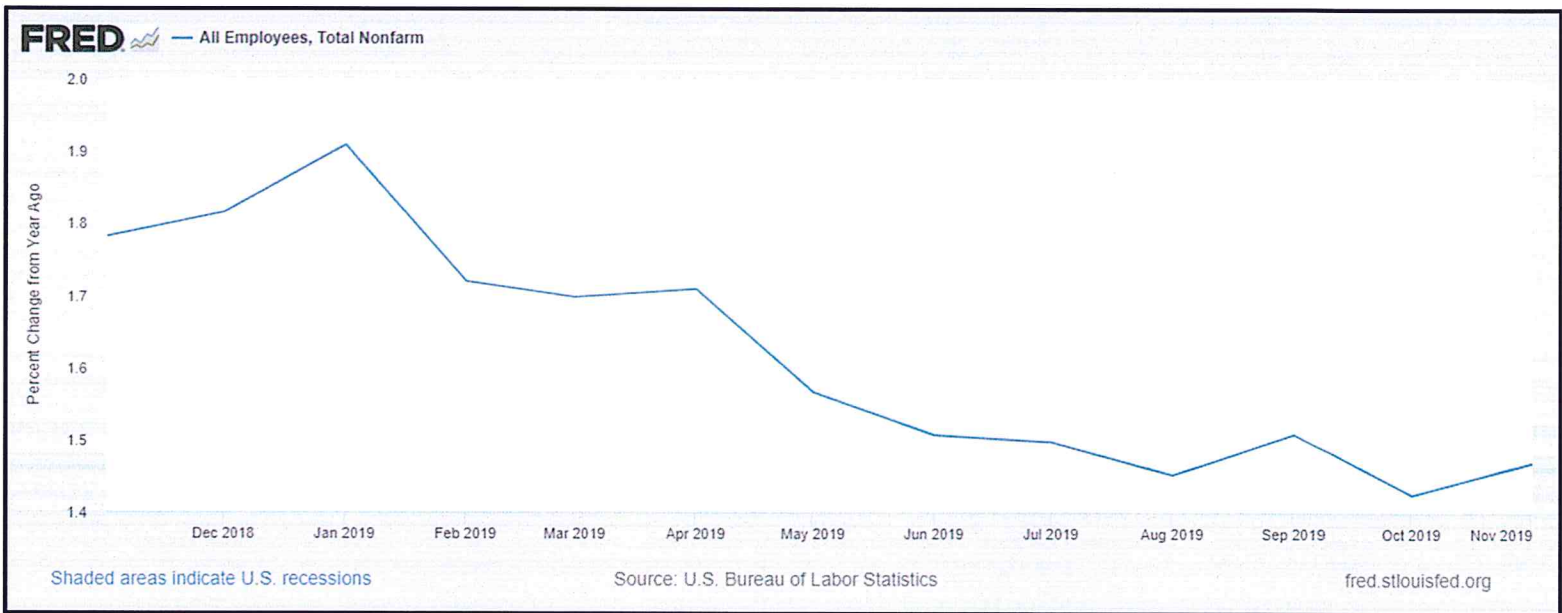
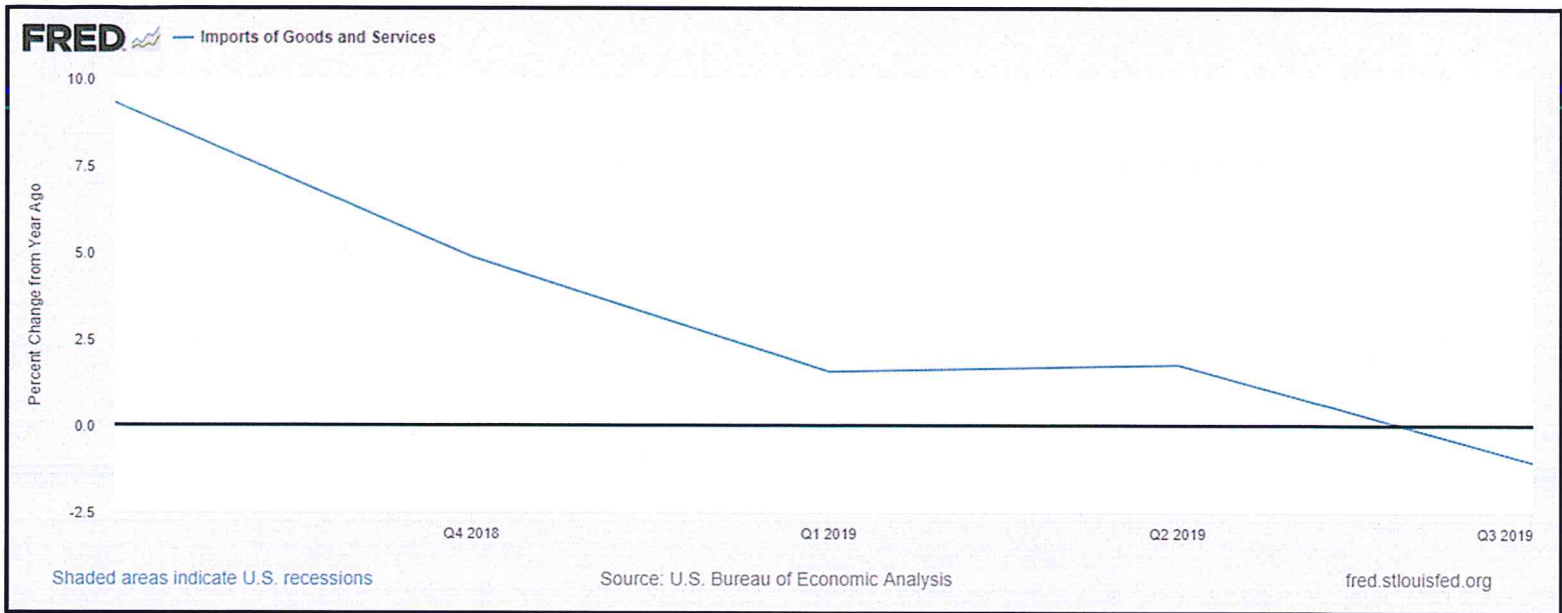
FRED — Exports of Goods and Services



Shaded areas indicate U.S. recessions

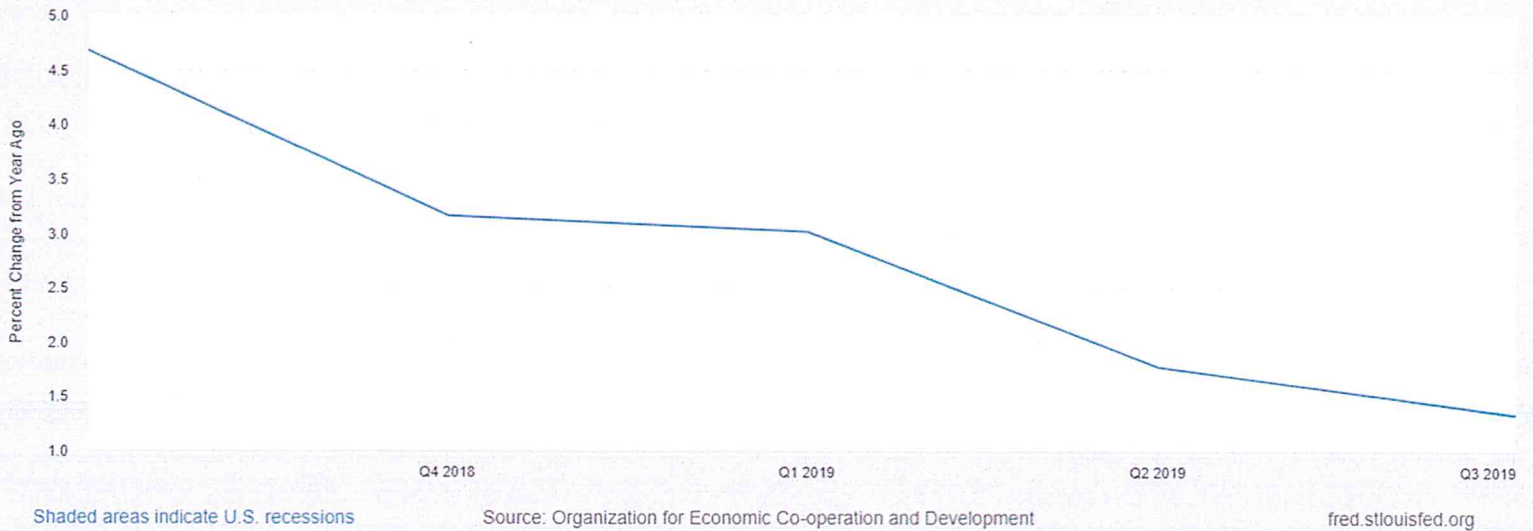
Source: U.S. Bureau of Economic Analysis

fred.stlouisfed.org



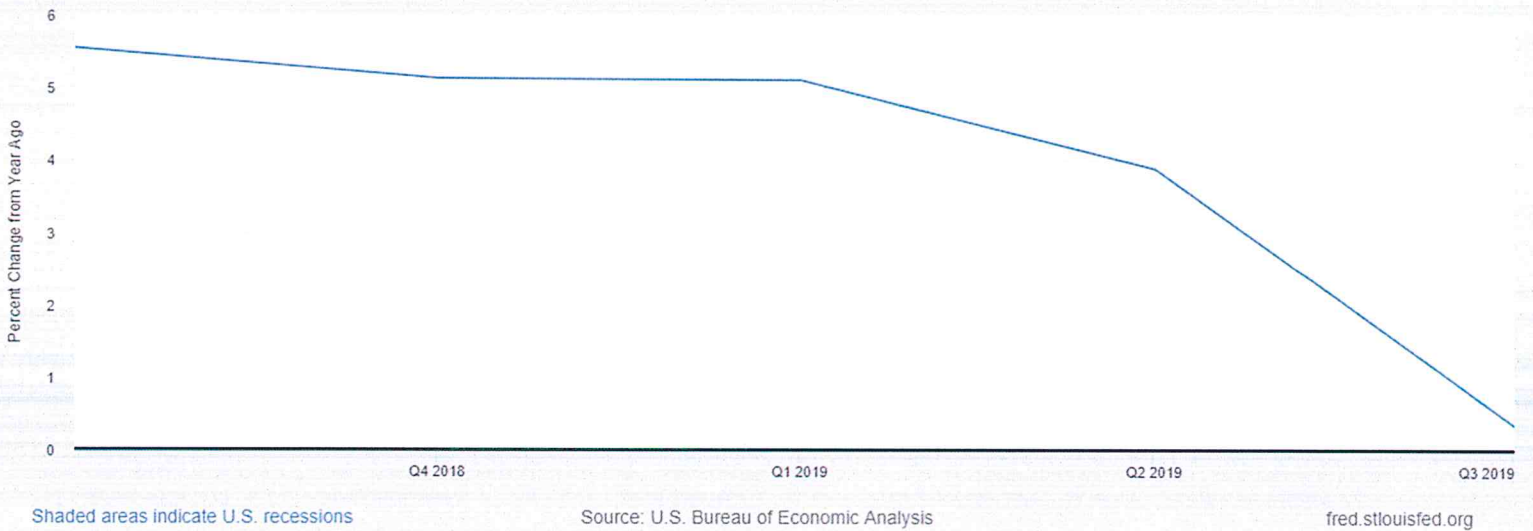
FRED

Gross Domestic Product by Expenditure in Constant Prices: Gross Fixed Capital Formation for the United States



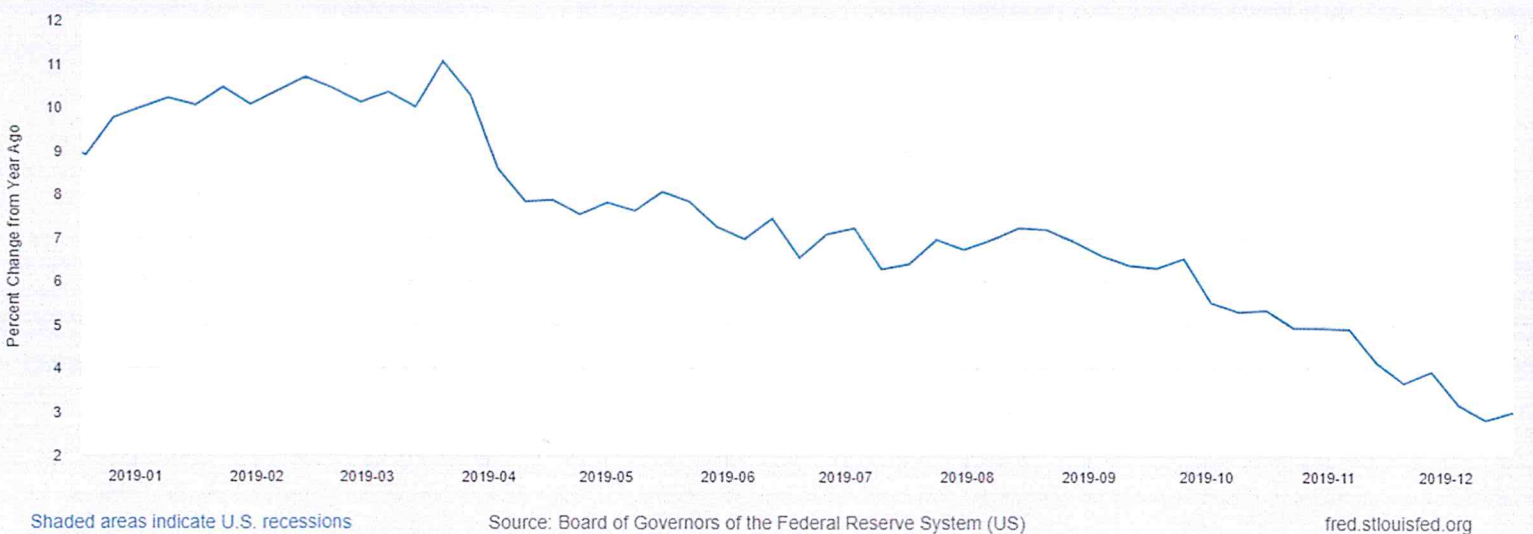
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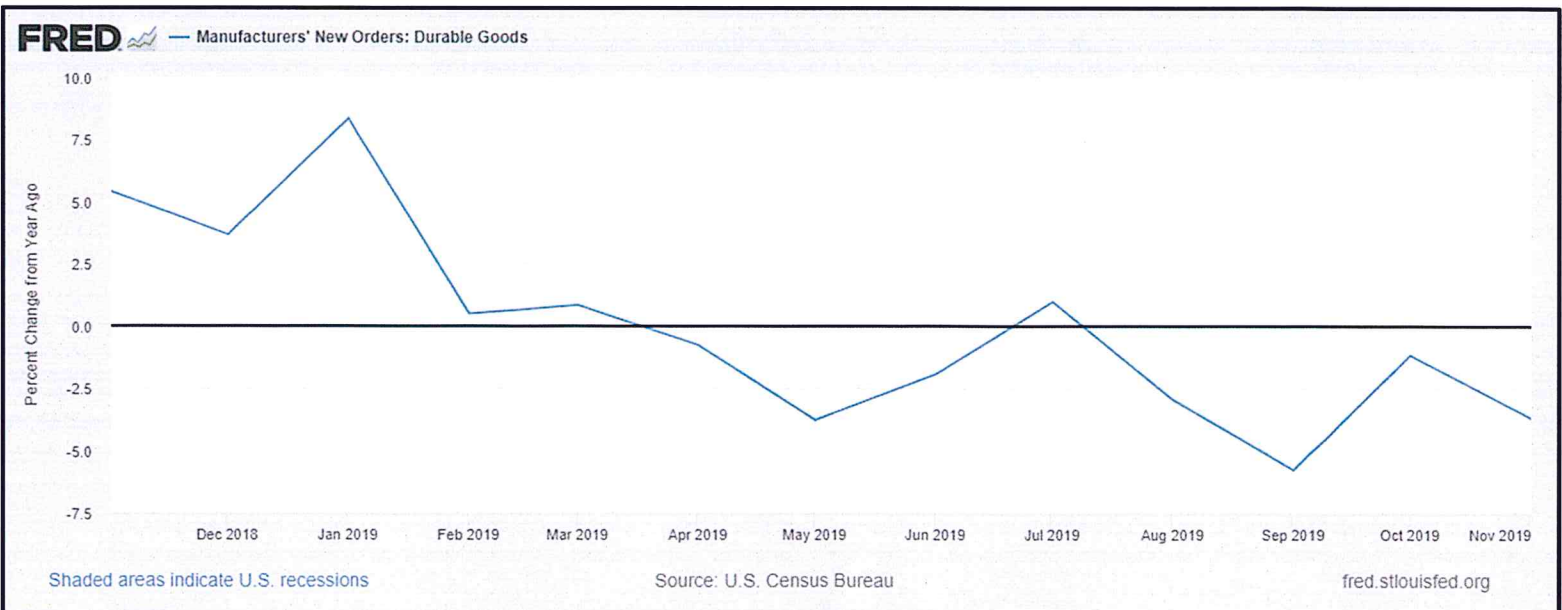
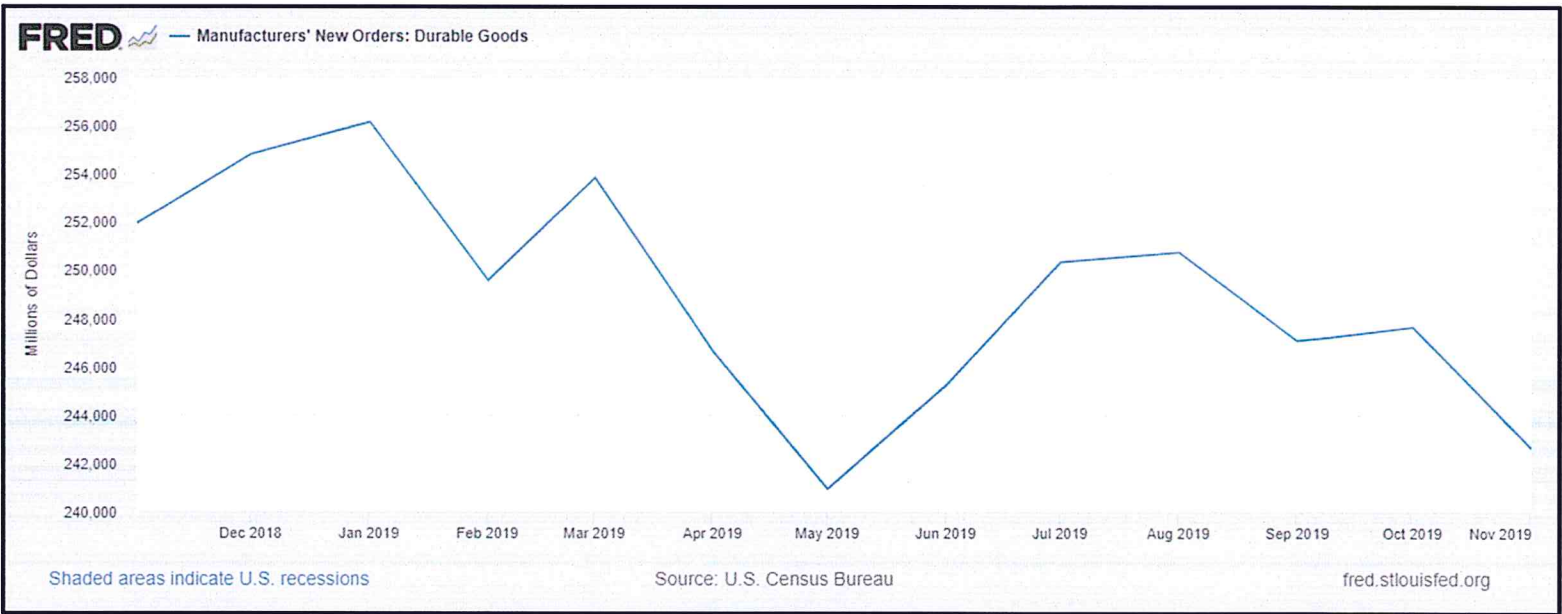
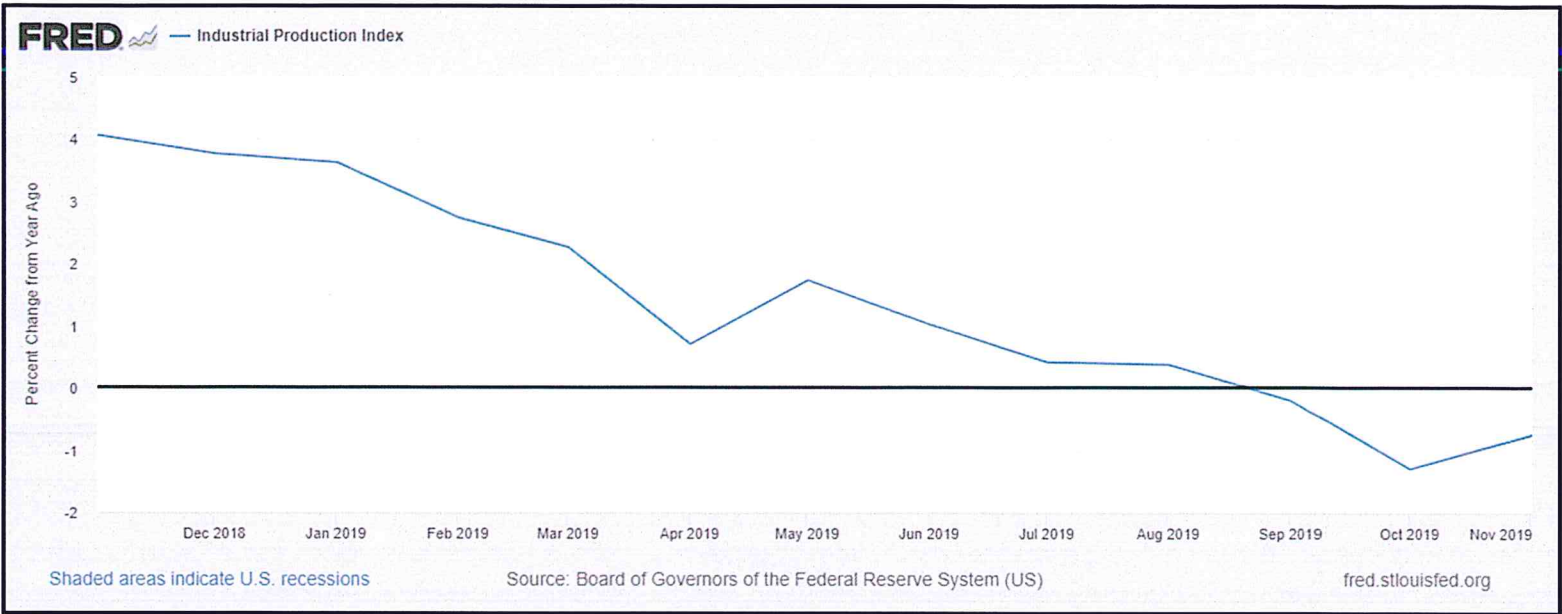
Real Gross Private Domestic Investment

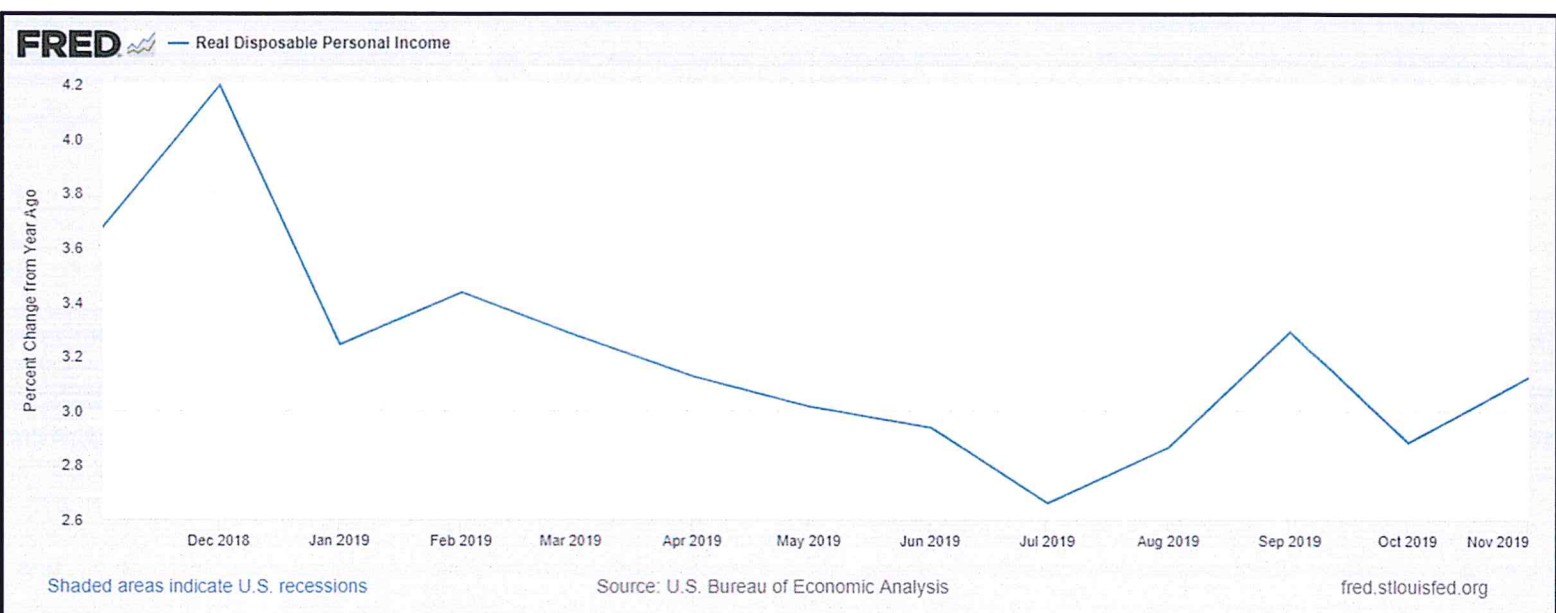
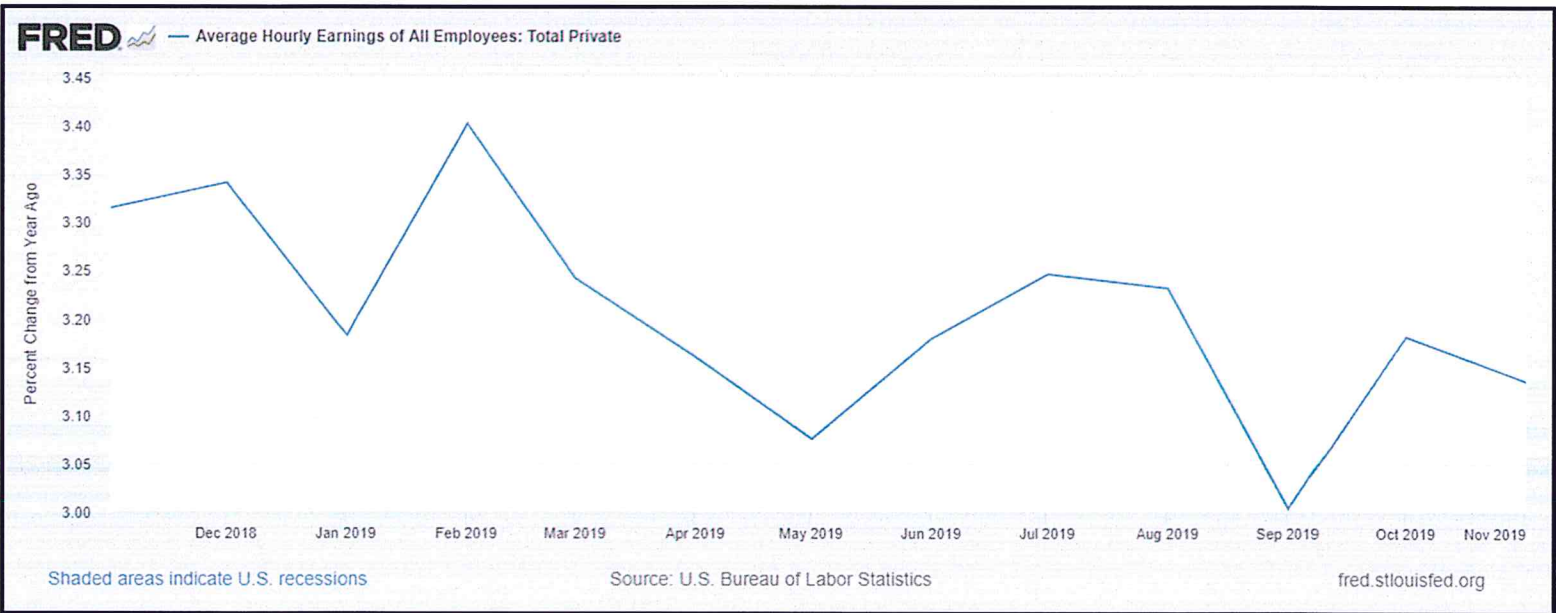
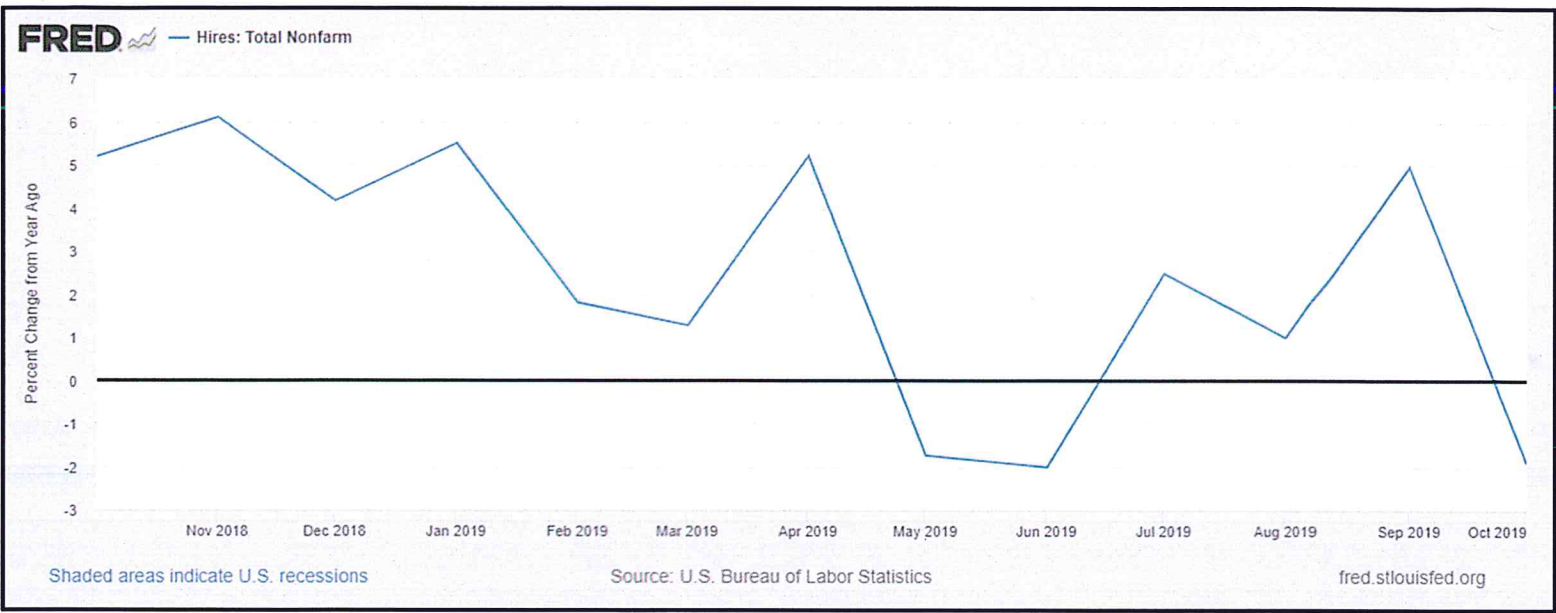


FRED

Commercial and Industrial Loans, All Commercial Banks

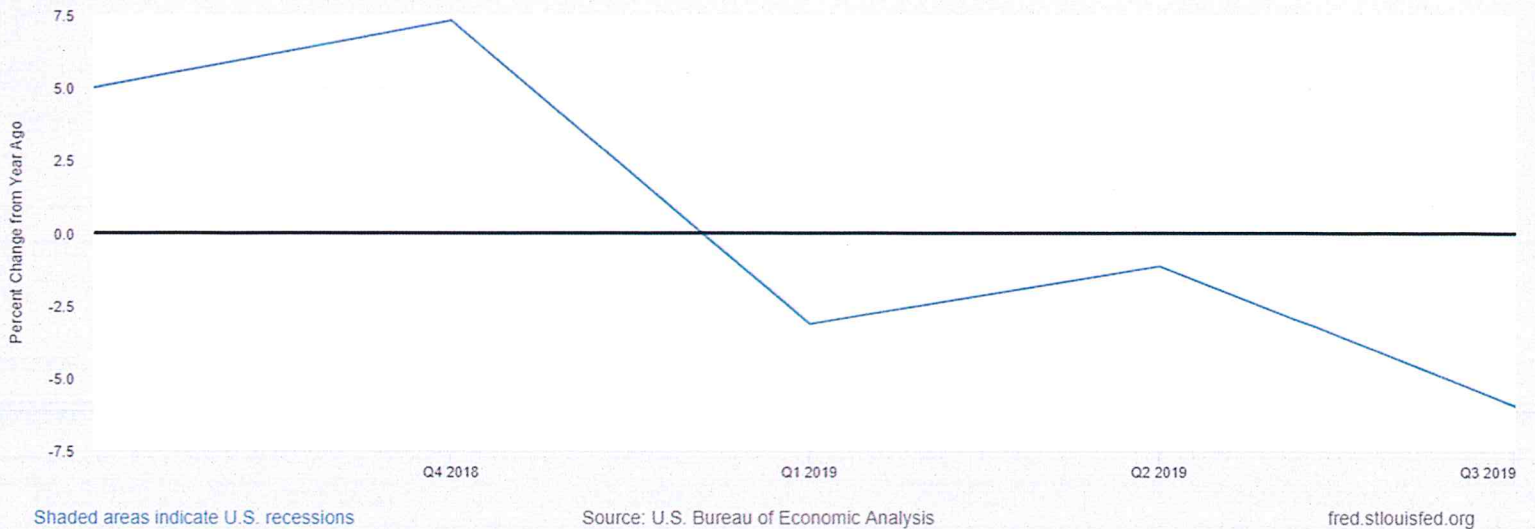




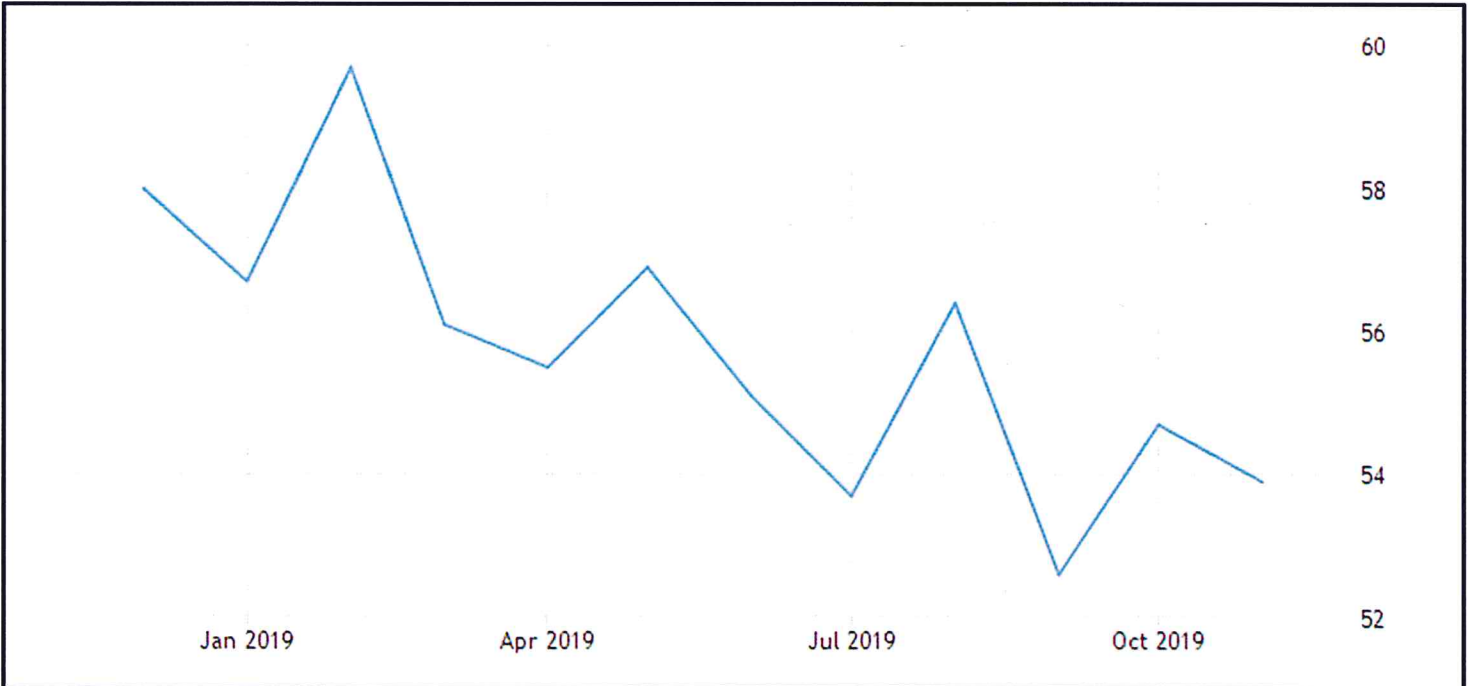


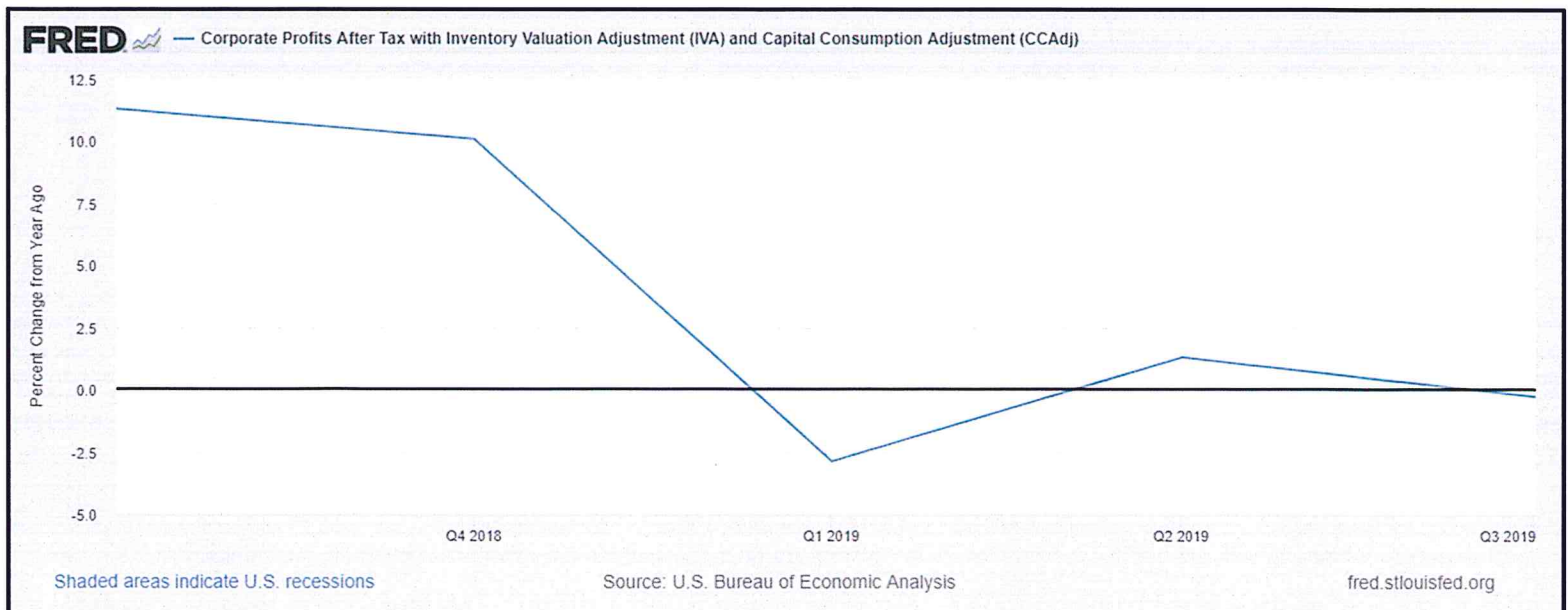
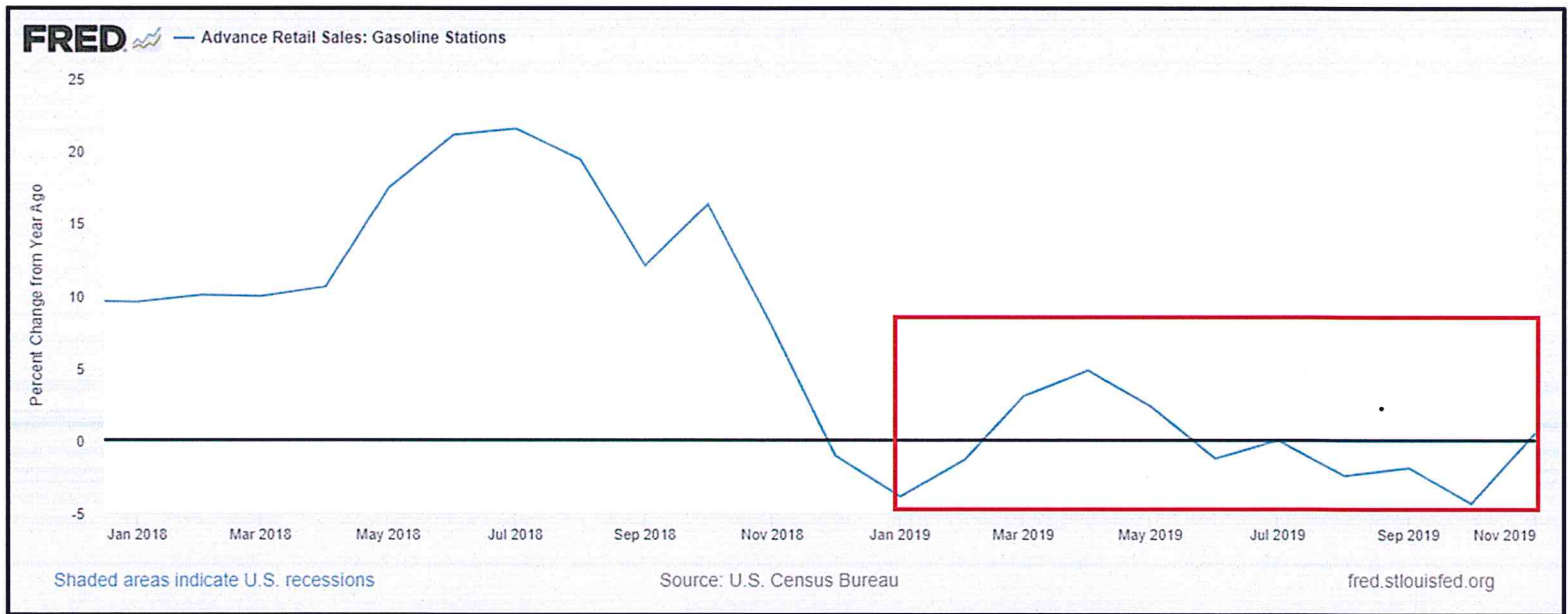
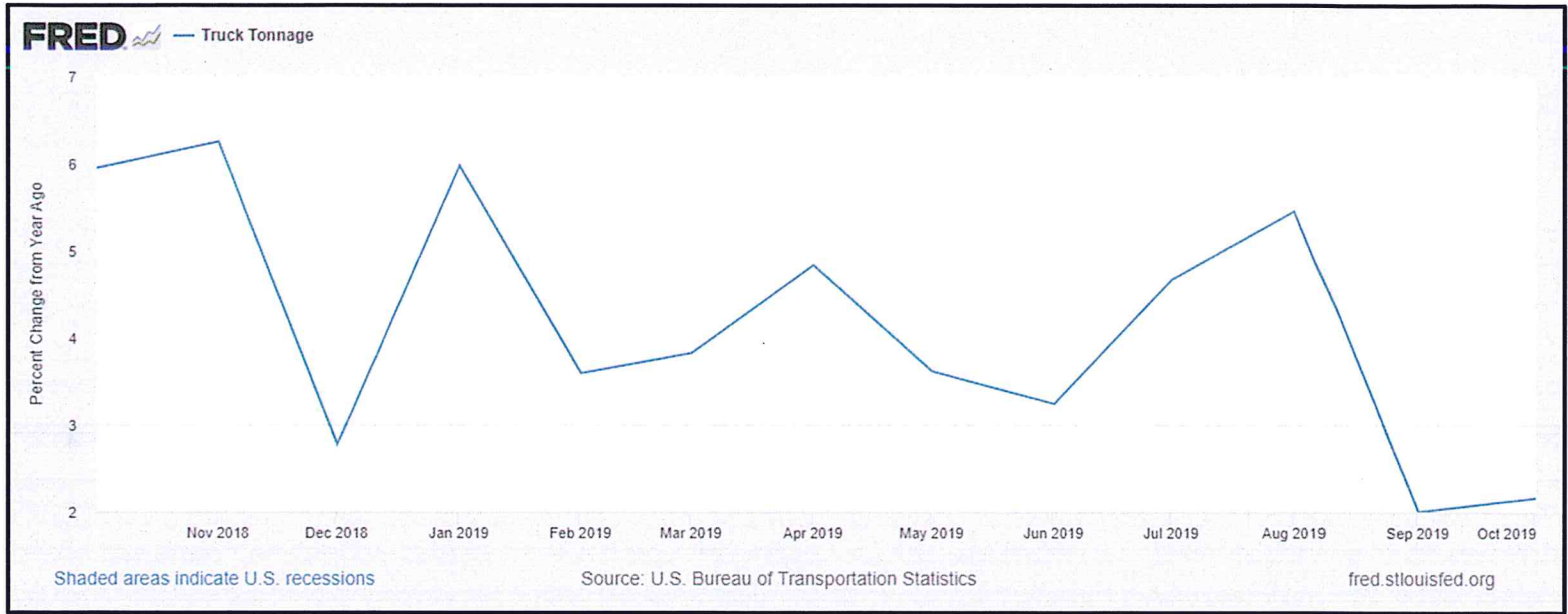
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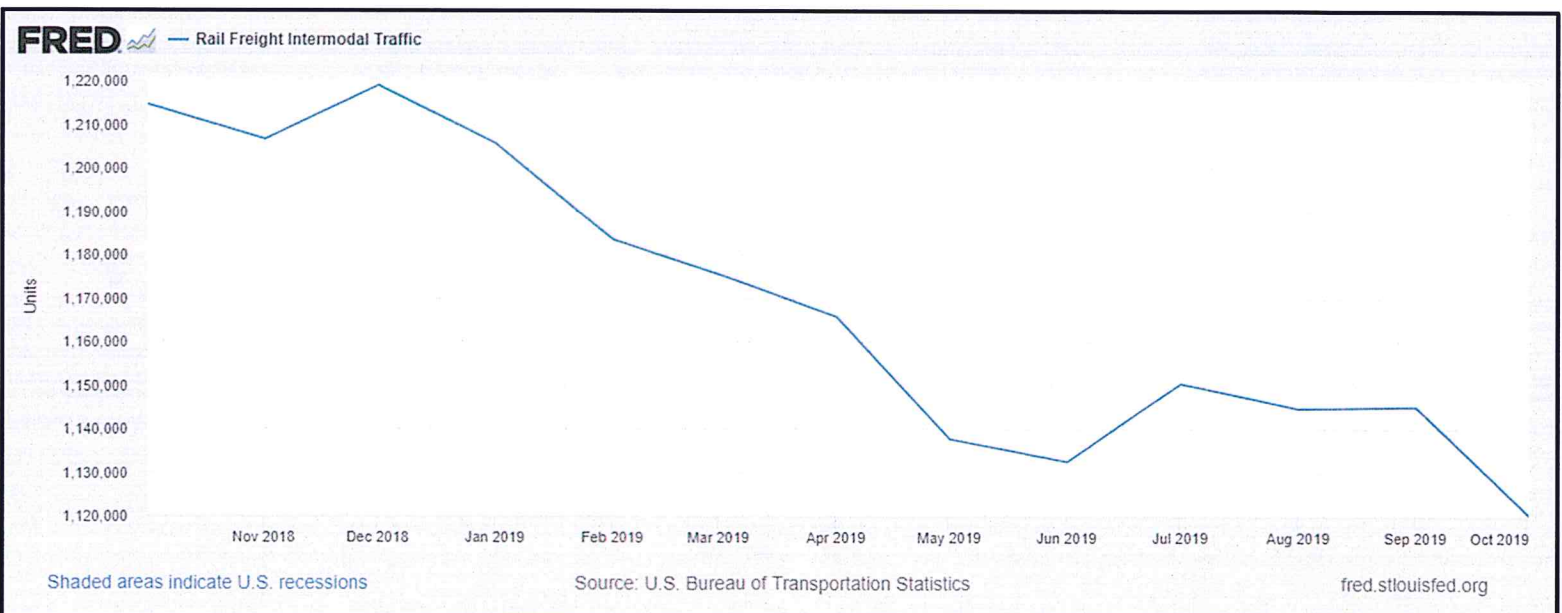
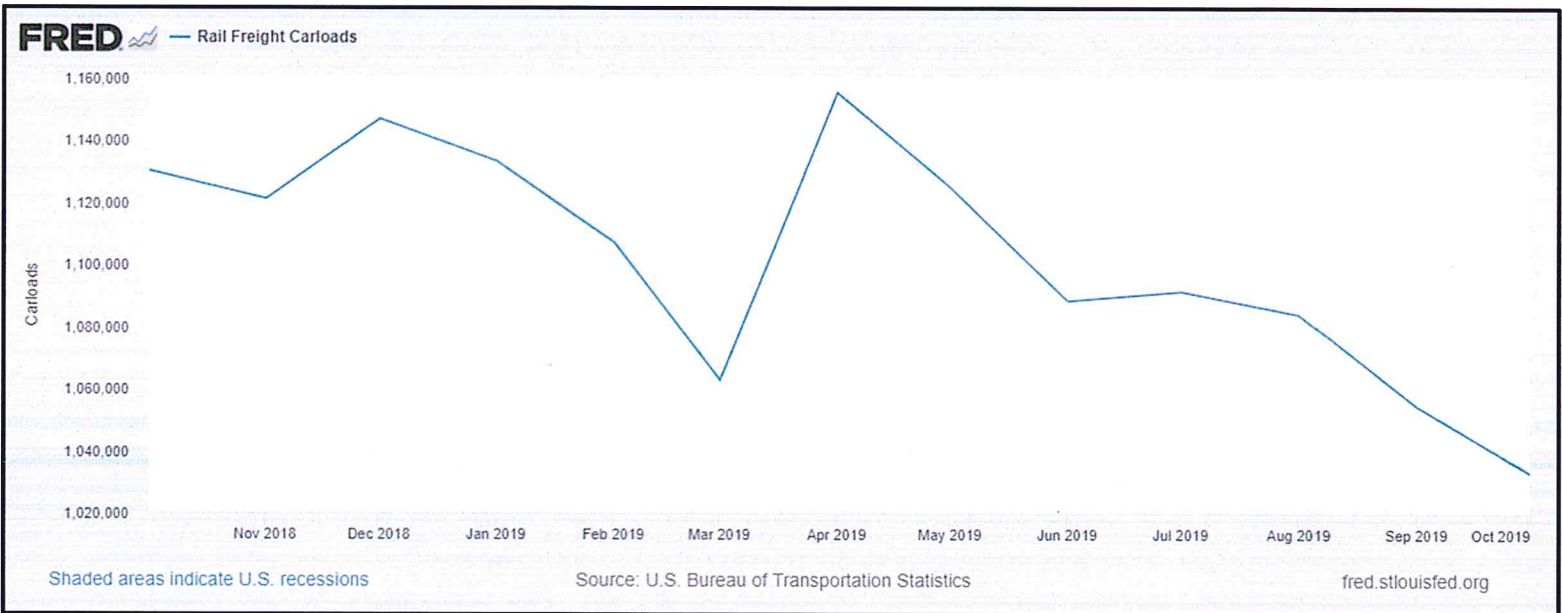
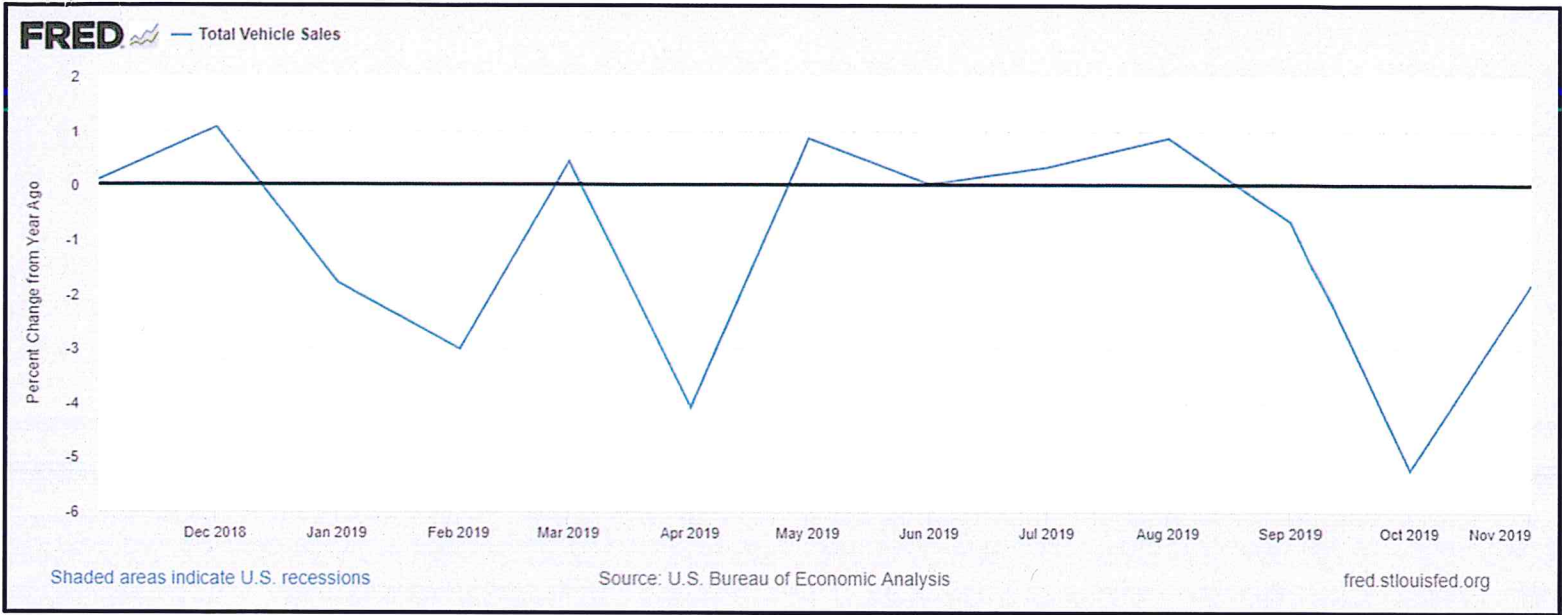
— Corporate profits with inventory valuation and capital consumption adjustments: Domestic industries: Nonfinancial



United States ISM Non-Manufacturing PMI







Are Tariffs Inflationary?

Ravi Batra*

Abstract

Economists universally regard tariffs to be inflationary and free trade to be deflationary, a view that this paper challenges. It is argued that while protectionism has generally created inflation in developing economies, the experience of the United States was totally different. Tariffs in the US were never associated with rising prices, and trade liberalization with declining prices. High tariffs were always followed by sharp drops in the cost of living. A theoretical model is developed to explain the deflationary effects of tariffs in the United States. Thus tariffs produce inflation only in nonmarket or dualistic developing economies, but not in advanced economies.

1. Introduction

If there is one idea on which all orthodox economists concur, it is that tariffs raise prices, that protectionism, without exception, is inflationary. Professor Samuelson, for instance, argues that tariffs reduce labor productivity and enhance “the cost of living” (1976, p. 694). In the words of Coughlin et al., “protectionist policies increase prices” (1991, p. 25). According to the 1992 *Economic Report of the President*, “Trade barriers not only raise the prices of imported goods to consumers but also the prices of domestically produced goods” (p. 196).

While protectionism is universally regarded as inflationary, free or freer trade is said to arrest inflation and promote price stability. A 1985 report from the OECD contends that trade liberalization fosters sustained noninflationary growth. A vast literature thus can be cited to support the proposition that tariffs are inflationary. Apparently the hyperinflations of tariff-ridden economies like Mexico, Brazil, and Argentina in the 1970s and the 1980s have convinced everyone that tariffs cannot but generate a price spiral that sometimes gets out of control.

The purpose of this paper is to challenge the conventional view. I show that at least in the annals of the United States, high or rising tariffs were never associated with rising prices in peace times. In fact, high or rising tariffs always coexisted with declining consumer prices. Furthermore, low or falling tariffs were always followed by rising living costs. Thus, it turns out that while tariffs have been generally associated with spiraling prices in nonmarket or dualistic economies of Latin America and some developing countries, US history sharply contradicts their experience. The second half of the paper develops a theoretical model that explains the linkage between tariffs and the consumer price index (CPI). The model derives conditions under which protectionism may raise or lower the general price level.

An age-old debate has recently revived among economists, starting in 1992 with the inaugural issue of the *Review of International Economics* that published Batra’s “Fallacy of Free Trade.” This occurred just when the triumph of free trade seemed to be complete and incontrovertible. Since then some others have joined the fray, with

* Batra: Southern Methodist University, Dallas, TX 75275-0496, USA. Tel: 214-750-9582; Fax: 214-750-7886; Email: rbatra@mail.smu.edu. Portions of this paper were presented before the Economics Club at Southern Methodist University on 16 November 2000, and I am grateful to all the participants. Special thanks are due to Thomas Osang for helping me with Figure 4.

Marjit (1994) stressing the need for further research, Rassekh (1994) and Arndt and Hertel (1997) taking the side of trade liberalization, and Michael (1997), and Choi and Beladi (1998) arguing that free trade may hurt developing countries. The present paper is an attempt to open another front in the ongoing debate about the beneficence of free trade and the malfeasance of protectionism. This *Review*, unlike some other journals, ought to be commended for publishing controversial views. For only when seemingly airtight and long-venerated gospels of society are open to discussion and challenge, does democracy flourish and the truth shine.

2. Some Facts from US History

For the purpose of studying the consequences of tariffs, US history can be conveniently divided into three periods. The first lasted from 1800 to 1860, when the Civil War devastated the economy. The second phase began in 1870 and lasted till 1929, when the Great Depression and then World War II traumatized global markets. The third period began in 1950 and has continued to this day. Throughout the paper I ignore the war years and the Great Depression.

The first two periods witnessed high or rising tariffs, in marked contrast to the third or modern period when customs duties have been low or falling. All three periods belie conventional wisdom. Figure 1 examines the association of the average tariff rate on dutiable imports with the CPI. The figure presents data generally every five years, except for 1816 and 1821, and is derived from *Historical Statistics of the United States* (1975).

Until 1816, American duties were set in accordance with the tariff act of 1789 which varied the levies from 5% to 15%. These levies were low and the average tariff rate was more or less constant, approximating the mean value of 8%. In 1816, a new tariff law was passed that almost doubled the duties, and set in motion an era of rising or high tariffs. By 1821, the first year of the tariff series offered by *Historical Statistics of the United States*, the average tariff had jumped to the rate of 45%.

The US economy at the time was overwhelmingly agrarian, with only 5% of economic activity generated in manufacturing. In other words, the country met its needs

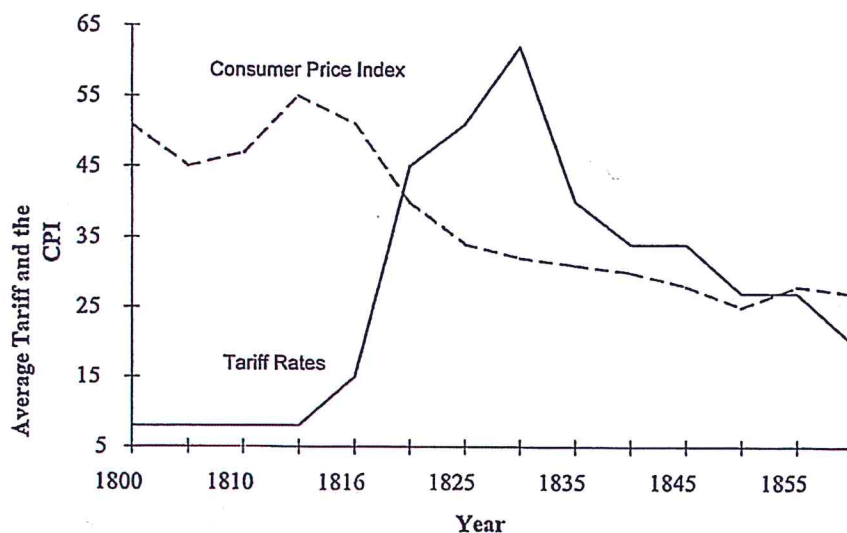


Figure 1. High Tariff Periods and the Consumer Price Index, 1800–1860 (percentages)

for manufactured products almost totally from imports coming mainly from Britain and France. Under these circumstances, conventional theory expects a giant increase in tariffs to cause a giant rise in consumer prices. However, the opposite happened. The CPI, which had been hovering around 50 between 1800 and 1815 when tariffs were extremely low, plummeted all the way to 40 by 1821. Thereafter, tariffs rose further in the 1820s and soared to an all-time high of 62%, but the CPI continued its tumble.

From 1831 on, the average tariff began to fall and reached 40% in 1835. In this case, the orthodoxy expects the CPI to decline further, but the index hardly budged from 32 to 31. As the tariff rate continued to fall, the index remained more or less constant till 1840. Between 1840 and 1860, the tariff fell sharply again, but the CPI did not move much. In fact, the CPI moved up a notch from 1850 to 1860 even as the tariff continued to fall.

The experience of the first period confirms that high or rising tariffs were generally deflationary, and low tariffs between 1800 to 1815 were associated with much higher consumer prices.

Excluding the Civil War decade of the 1860s, the second period of the high US tariff began with 1870, and the data are displayed in Figure 2, mostly over five-year intervals. This figure more than reinforces the message of its predecessor, in that high tariffs continuously coexisted with tumbling prices. Between 1870 and 1900, the average tariff was more or less constant at a high rate of around 45%, more than twice the rate of 20% in 1860, but the CPI fell for 30 straight years. Furthermore, the CPI continued its tumble from 1875 to 1900 even though high tariffs rose even higher. From 1900 to 1914, the year of the outbreak of World War I, the average tariff fell steadily, but the CPI exhibited a steady rise. After that the tariff continued to fall, but the CPI roared because of the worldwide conflict, which we should ignore from our analysis. By 1920, the tariff fell to the level last seen in 1816, but resumed its upward march in the 1920s. It reached 40% by 1929, but the CPI only fell. Much of the fall occurred in 1921, when the country suffered a serious recession and the CPI declined to 53.6. But even as tariffs continued to soar, the economy recovered nicely, and the CPI, instead of rising, fell further.

Thus, the second phase of US tariff experience suggests that (i) prices fell continuously between 1870 to 1900 when tariffs were exceptionally high or rising, (ii)

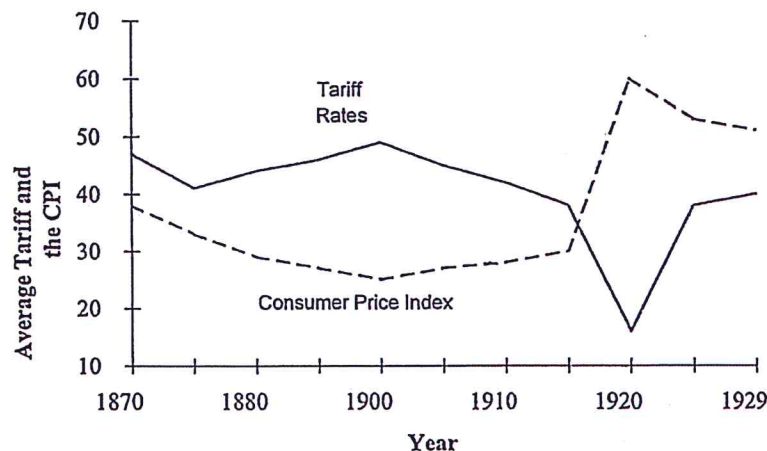


Figure 2. High Tariff Periods and the Consumer Price Index, 1870–1929 (percentages)

prices rose steadily between 1900 to 1914 as tariffs fell, and (iii) prices fell as tariffs soared during the 1920s.

Of course, there are many influences on consumer prices in addition to foreign trade. Money supply and raw material expense, among others, also affect the cost of living. But as stated earlier, nineteenth-century America displayed precisely the economic conditions under which tariffs, according to the traditional view, are the most inflationary. The economy was small, the country depended heavily on manufactured imports, and tariffs were extraordinarily high. Instead, the opposite happened, not just once, but several times, over many decades.

The third, and modern, phase of the American tariff began around 1950, after peace had returned and the country was no longer in the grip of the Great Depression. Figure 3 describes this case. In the modern phase, the tariffs have been low and steadily falling, but the CPI has been on a steady rise. Of course, in the modern era, the economy has changed substantially, with the government playing a much larger role than it did until 1929. Yet the comparison between Figure 3 and other figures is rather striking and interesting. *The fact remains that trade liberalization in America has been never associated with falling prices, whereas high or rising tariffs always coexisted with deflation.* This, to say the least, is surprising, and needs explanation to which I now turn.

3. Tariffs in an Agrarian Economy

How do we explain the negative association between tariffs and the cost of living over two centuries of US economic history? I start with a simple two-sector model of

Unless you are
really good at
Math you don't
need to read
the rest of this
Study
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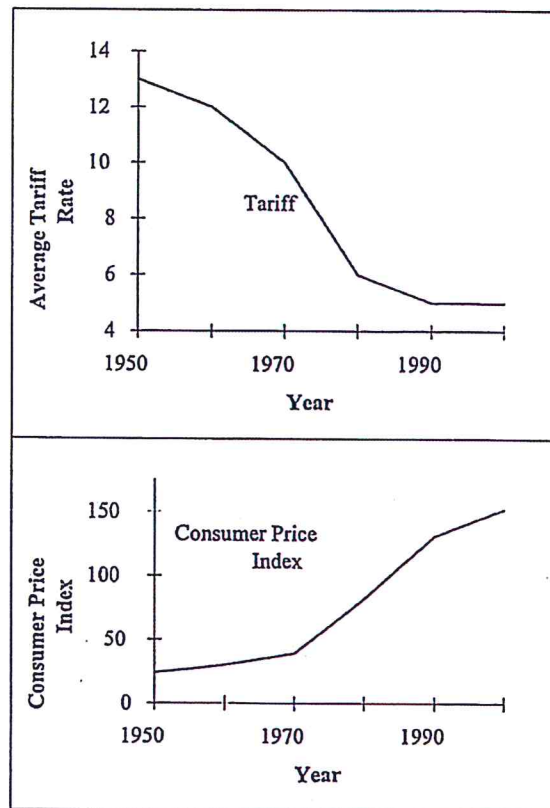


Figure 3. Low Tariff Decades and the CPI, 1950-1995 (percentages)

a predominantly agrarian economy, where one sector, agriculture (A), uses land (N) and labor (L_a) in the production process, and the other sector representing the rest of the economy, sector X , uses labor (L_x) and capital (K). Sector X includes a variety of industries such as manufacturing, transportation, urban services, banking and so on. Thus,

$$A = A(L_a, N), \tag{1}$$

$$X = X(L_x, K). \tag{2}$$

The two production functions are assumed to be linearly homogenous and concave, so that $A_{LL} < 0$ and $A_{NL} > 0$; similarly, $X_{LL} < 0$ and $X_{KL} > 0$. Assuming perfect competition in both commodity and factor markets, nominal factor prices are equated to marginal value productivities, so that

$$w_a = p_a A_L, \tag{3}$$

$$w_x = p_x X_L, \tag{4}$$

$$R = p_x X_K, \tag{5}$$

$$n = p_a A_N, \tag{6}$$

where the first partial derivative of each production function equals the marginal product of various factors. Here w_i is the nominal wage in the i th sector, p_i is the product price, R is the rental of capital, and n is the nominal rent for land. Labor is mobile, inelastically supplied, and fully employed between the two sectors, so that

$$L_a + L_x = \bar{L}. \tag{7}$$

Similarly:

$$K = \bar{K} \text{ and } N = \bar{N}, \tag{8}$$

where the bar atop a variable indicates its inelastic supply. The wage rate in X is no lower than the agricultural wage; i.e.

$$w_x = \theta w_a, \quad \theta \geq 1. \tag{9}$$

The economy in question is small, so that its terms of trade (p^*), defined as the world relative price of the imported manufacturing good, are exogenously determined. Let t be the tariff rate on manufacturing imports. Then

$$p = p^*(1 + t), \tag{10}$$

where $p = p_x/p_a$ is the domestic relative price of X . Nominal GDP in the economy is

$$Z = p_a A + p_x X, \tag{11}$$

whereas nominal spending on the two consumption goods is

$$V = p_a C_a + p_x C_x, \tag{12}$$

where C_i is the consumption of the i th good.

The model presented so far is the well-known specific factor model developed by Jones (1971), Jones and Ruffin (1977), Musa (1974), and Batra (1992) among others. Let us now introduce some new features to explore the linkage between the tariff and the CPI. Let the general price level (P) be a weighted average of the two prices:

$$P = \alpha p_a + \beta p_x, \quad (13)$$

where the weights $\alpha + \beta = 1$, and represent the consumption share of each good in the GDP. Thus $\alpha = p_a C_a / Z$ and $\beta = p_x C_x / Z$. Real GDP (Y) is given by

$$Y = Z/P = (A + pX)/(\alpha + \beta p). \quad (14)$$

The real money demand function may be written as

$$M_d/P = M(i, Y), \quad (15)$$

where M_d is the nominal demand for money. Equation (15) assumes that the real demand for money is a negative function of the interest rate (i) and a positive function of real GDP. In money market equilibrium

$$PM(i, Y) = \bar{M}, \quad (16)$$

where \bar{M} is the exogenously determined supply of money. To close the model, we write

$$i = R - \mu, \quad (17)$$

where μ is the constant rate of depreciation of capital. For simplicity, we assume that $\mu = 0$. If households lend funds to other households, they earn an interest rate i ; if they lease capital to firms, they earn a net rental equal to $R - \mu$, or R in equation (17). With this the description of our model is complete.

4. The Tariff and the Price Level

The model presented in the previous section is a close description of the US economy at the turn of the nineteenth century. The country was then a small economy and predominantly agrarian, with over 80% of the labor force employed in farming. Agriculture was primitive, utilizing little capital; wages were much higher elsewhere than in agriculture. In the Philadelphia area, for instance, in 1815, the year before the tariff rates were doubled, a farm worker earned 50 cents a day, whereas a skilled artisan earned \$1.90, almost four times.¹ In addition, labor and capital were scarce and product markets were characterized by keen competition among a large number of small firms.²

In this section, I explore the production and GDP effects of the tariff. The immediate impact of the tariff is to raise the domestic relative price of the imported good. From (3), (4), (7), (8), and (9), we get

$$pX_L(L_x, \bar{K}) = \theta A_L(\bar{L} - L_x, \bar{N}). \quad (18)$$

For simplicity, I will assume that initially $p_i = P = p = 1$. A tariff causes a rise in p , and from (18) it is clear that

$$L_x = L_x(p), \quad (19)$$

with L'_x equaling

$$\frac{dL_x}{dp} = -\frac{w_x}{X_{LL} + \theta A_{LL}} > 0, \quad (20)$$

as $X_{LL} < 0$ and $\theta A_{LL} < 0$. From (5) and (13):

$$r = R/P = p_x X_k / P = p X_k / (\alpha + \beta p), \quad (21)$$

which suggests that $r = r(p)$, where

$$r' = dr/dp = \alpha r + X_{KL} L'_x \quad (22)$$

so that r' is positive.

Similarly, from (14) total differentiation yields

$$Y' = \frac{dY}{dp} = (w_x - w_a)L'_x - H, \quad (23)$$

where $H > 0$ is the excess demand for X . Clearly the effect of p on real GDP is in general indeterminate.³ Since X is imported, H is positive. If wages are the same in the two sectors, then $Y' < 0$, and a rise in the relative price of the imported good X induced by its tariff causes a decline in real GDP or Y . But in general, the tariff has two effects on real GDP, and the final outcome depends on (i) the intersectoral wage differential, (ii) the extent of the labor transfer from A to X , and (iii) the import volume of X .

In the early nineteenth century, when transportation costs were high, imports tended to be small even with small tariffs. On the other hand, the wage differential was extremely high, with the skilled worker's wage in X as high as four times the average farm wage. All this tended to make Y' positive. In fact, the larger the tariff rate, the larger the transfer of labor from farming to agriculture, and the larger the positive impact on real GDP, given the wage differential.

By now I have shown that a tariff-induced rise in the relative price of imports raises the employment of labor in X as the marginal value product of labor rises in that sector. This also raises the real return to capital, as the rise in L_x raises the marginal product of capital. The impact on real GDP, though uncertain, is positive in the presence of a large intersectoral wage differential.

We can now use these results in analyzing the impact of the tariff on the general price level. The equations of immediate concern now are (16) and

$$i = rP, \quad (24)$$

from (5), (17), and (21), and

$$P = p_a(\alpha + \beta p). \quad (25)$$

This is a system of three equations in three unknowns, P , i , and p_a , and one parameter p , which in turn is linked to the tariff t in (10). Remembering that initially $p_i = p = P = 1$, differentiation of this system yields

$$\frac{dP}{dt} = \left[\frac{Me_d - bY'}{(1 - e_d)M} \right] \frac{dp}{dt}, \quad (26)$$

where $e_d = -iM_d/M$ is the elasticity of money demand with respect to the rate of interest, e is the elasticity of real rental with respect to p (that is, $e = pdr/rdp$), and b represents the transactions demand for money, or $b = \partial M_d/\partial Y$. Both e and b are positive, and e_d is an extremely small fraction; most empirical estimates, as in Goldfield (1974), put it at between 0.1 and 0.2. This makes the denominator of (26) positive.

The traditional argument is that tariffs reduce real GDP and, for a given supply of money, raise the price level. Equation (26) confirms this view, because if $Y' < 0$, so that the tariff lowers Y by raising p , then the numerator is positive and so is dP/dt . But from (23) we know that Y' may be positive in the presence of the wage differential, which, as I have stressed earlier, was very large in the nineteenth century. Thus Y' may be large enough to make the numerator of (26) negative, in which case P will fall in response to the tariff. In fact, the likelihood of Y' being positive increases with a higher tariff, because, as stated earlier, a higher tariff means a large transfer of labor from agriculture to manufacturing; see equation (23). This may partly explain why in the

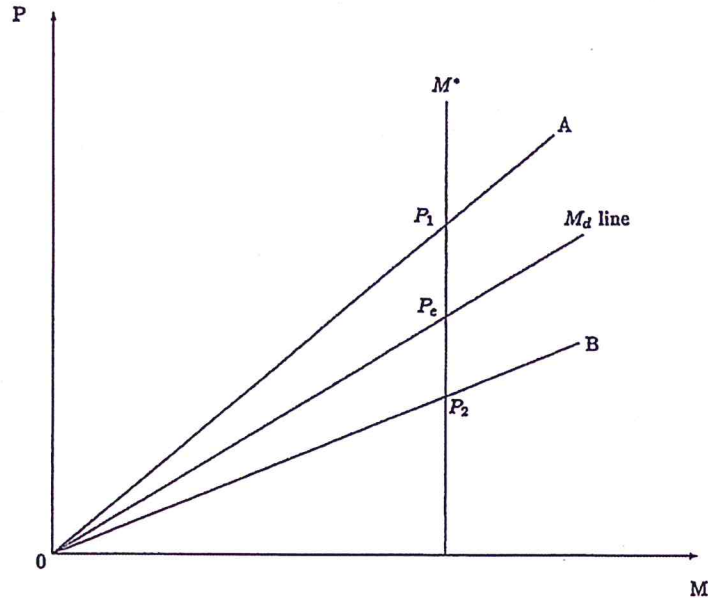


Figure 4. Tariffs and the Price Level

post-Civil War era there was a sizable and relentless drop in prices, while tariffs persisted and were among the highest in US history.

The argument can be illustrated in terms of a graph that appears in Barro (1993, p. 129). In Figure 4, the M_d line is the money demand line and \bar{M} is the exogenously determined money supply line. Since $M_d = PM(i, Y)$, then for given values of i and Y , nominal money demand is represented by a straight line from the origin. The equilibrium price level is at P_e . If the tariff lowers Y , then the nominal rate of interest rises (see (27) below), and money demand falls unambiguously, shifting the M_d line to OA. This causes an excess supply of money at the old equilibrium P , and hence a rise in P to P_1 to restore equilibrium in the money market. On the other hand, if Y rises sufficiently to increase money demand, the M_d line shifts to OB and the price level falls to P_2 to eliminate the excess demand for money at old P .

We can also see how the tariff affects the interest rate. We know that the import levy raises the real return to capital, but the nominal return or the interest rate may or may not rise, depending, as before, on the sign of Y' . From the present system, we can obtain

$$\frac{di}{dt} = \frac{i(Me - Y')}{(1 - e_d)M}. \quad (27)$$

Clearly $dildt > 0$ if $Y' \leq 0$. In this case, P rises, causing a fall in real money supply, so that the interest rate rises, because real money demand does not fall as much as the money supply. But if Y rises sufficiently, P may fall, causing a rise in real money supply and eventually a fall in the interest rate.

5. Other Factors

There were, of course, other factors affecting P in nineteenth-century America. For one thing, there was a big increase in the supply of land over time, as one state after another merged into the original 13 colonies that formed the United States of America at its birth. However, since farm wages were extremely low, land acquisition alone could not

have caused a significant rise in real incomes and GDP to cause a sustained fall in the price level. Furthermore, land acquisition does not explain the rapid industrialization and technological change observed in America, whereas the tariff does. Thus the tariff not only produced a major transfer of labor from farming to manufacturing, it also induced strong technical improvements in protected industries, thereby causing a massive jump in real GDP decade after decade. This factor can be easily incorporated in the production functions of the present model.

Another factor that affects the price level is money supply. From the present system of three equations, we can also obtain, for a constant tariff:

$$\frac{dP}{dM} = \frac{1}{M(1-e_d)} > 0, \quad (28)$$

which shows that a fall in money supply lowers the price level, and conversely. What this suggests is that the long and persistent decline in the CPI in the nineteenth century could have arisen from a persistent fall in money supply. But the evidence shows that the supply of money rose every decade, and sharply at times. Table 1 presents data about currency in circulation as well as M2, both of which rose every decade. In an economy that grows naturally because of population growth and capital accumulation, we should examine the behavior of money growth to explore the effect of money supply over the price level. The question is this: was money growth exceptionally low in decades when the CPI tumbled? If it was, then something other than the high average tariff could have caused the price index to fall.

Table 1 reveals that average annual money growth in the 1810s was 2.3%, and it almost doubled in the 1820s, when the CPI fell sharply, while the tariff rate soared. In the 1830s, money growth rose further to 6.3% annually, but the CPI, instead of rising, actually fell a little in the presence of continued high tariffs. In the 1840s, money growth fell and so did the CPI. The CPI rose slightly in the 1850s, and then soared during the 1860s because of the Civil War, whose impact we ignore.

During the 1870s, 1880s, and 1890s, money growth was more or less constant around 5.7%, but the CPI fell for three straight decades in the presence of high and rising

Table 1. Money Supply over Selected Years in the Nineteenth Century, 1810–1900 (millions of dollars)

Year	CPI	Currency	M2	Annual M2 growth (%)	Average tariffs
1810	47	55	67	2.3	Low
1820	40	67	84	4.1	High
1830	32	87	126	6.3	High
1840	30	186	232	4.0	Medium
1850	25	278	344	5.8	Low
1860	27	435	605	5.1	Low
Civil War					
1870	38	775	1,390	5.8	High
1880	29	1,186	2,280	5.7	High
1890	27	1,685	3,990	5.8	High
1900	25	2,849	6,940	5.7	High

Source: Historical Statistics of the United States (1975), series E 135, p. 211 and X 423, p. 993, and Batra (1989, p. 73).

tariffs. Since money growth in these decades did not have a falling trend, it is reasonable to conclude that the fall in the CPI did not result from changes in the supply of money.

Throughout the nineteenth century, there was only one decade—the 1840s—when the CPI fell along with money growth. In other decades, the negative inflation rate was associated with either rising or constant money growth. The conclusion is thus unmistakable: high output growth resulting from the massive tariff-induced transfer of labor from low-wage agriculture into high-wage manufacturing, as well as the infusion of new technology into protected industries, were mainly responsible for the American deflation in the nineteenth century. Tariffs, in other words, are not always inflationary. Indeed, in American annals, they never were, suggesting that the coveted goal of controlling inflation completely may require a return to the tariff-dominated tax structure from the income-tax dominated structure today (Batra, 1996, chapter 1).

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Notes

1. See, for instance, *Historical Statistics of the United States* (1975), series D 715–717, p. 163.
2. See Batra (1993, 1996).
3. In obtaining equation (23), I have made use of the fact that $\beta Y = C_x$.