What Is a Tariff Shock?
Insights from 150 years of Tariff Policy

Régis Barnichon
Federal Reserve Bank of San Francisco and CEPR

Aayush Singh
Federal Reserve Bank of San Francisco

WHAT IS A TARIFF SHOCK?[*]

INSIGHTS FROM 150 YEARS OF TARIFF POLICY

Régis Barnichon[(a)]   *and*   *Aayush Singh*[(b)]

[(a)] Federal Reserve Bank of San Francisco and CEPR

[(b)] Federal Reserve Bank of San Francisco

November 17, 2025

Abstract

In this paper we exploit 150 years of tariff policy in the US and abroad to estimate the short-run effects of tariff shocks on macro aggregates. A careful review of the major changes in US tariff policy since 1870 shows no systematic relation between the state of the cycle and the direction of the tariff changes, as partisan differences on the effects and desirability of tariffs led to opposite policy responses to similar economic conditions. Exploiting this quasi-random nature of tariff variations, we find that a tariff hike raises unemployment (lowers economic activity) and lowers inflation. Using only tariff changes driven by long-run considerations—a traditional narrative identification—gives similar results. We also obtain similar results if we restrict the sample to the modern post World War II period or if we use independent variation from other countries (France and the UK). These findings point towards tariff shocks acting through an aggregate demand channel.

---

1 Introduction

The 15 percent increase in the average U.S. tariff rate in 2025 is unprecedented in the modern era. But what are the effects of tariff shocks on macro aggregates? While a large and fast growing theoretical literature has studied the nature of tariff shocks and its implications for optimal monetary policy,[1] there is surprisingly little empirical evidence on the aggregate macroeconomic effects of tariff changes, i.e., on their general equilibrium effects, with most studies focused on partial equilibrium (relative) effects (e.g., Fajgelbaum et al., 2020). Lacking clear guidance from empirical evidence, there is precious little consensus on the actual optimal policy response, with the optimal response depending on the import elasticity, the intertemporal substitution elasticity, the share of intermediates in production, or the importance of terms-of-trade effects.

This paper aims to fill this empirical gap, drawing on 150 years of tariff changes to study the aggregate short-run effects of tariff shocks on inflation and economic activity. During the so-called first wave of globalization —the period of increased global economic integration in trade and finance between 1870 and 1913— as well as during the inter-war period, tariff rates displayed large and fast variations that are reminiscent of the 2025 change. We exploit these variations to learn about the macro effects of tariff changes.

Identifying the causal effects of tariff changes from time series variation requires isolating exogenous variations in tariffs, that is tariff changes which were *not systematically* taken in response to the state of the business cycle or the level of inflation.

We conduct a careful narrative study of major US tariff changes back to 1870 (after the Civil War), and we find no systematic relation between the state of the cycle and the direction of the tariff changes. The reason is simple: Throughout the 19th century and up until 1935, Republicans and Democrats had opposite views on the desirability of tariffs: Republicans saw tariffs as a means to protect their constituents in the industrialized North and were in favor of high tariffs. By contrast, Democrats' constituents were generally in the South, which had little industry but imported many goods and favored lower tariffs as a result. Since recessions did not favor one party over another (but rather the likelihood of a political flip), there was no general relation between the direction of tariff changes and the state of the economy. In other words, from the perspective of the business cycle, tariff changes appear as good as random, suggesting that OLS can be used to directly estimate the causal effects of tariffs on macroeconomic activity.

To address any possible remaining endogeneity concerns, we also use an IV approach

---

[1]See for instance Barattieri, Cacciatore and Ghironi (2021); Jeanne (2021); Bergin and Corsetti (2023); Auray, Devereux and Eyquem (2025); Auclert, Rognlie and Straub (2025); Kalemli-Özcan, Soylu and Yildirim (2025); Cuba-Borda et al. (2025); Werning, Lorenzoni and Guerrieri (2025); Monacelli (2025); Bianchi and Coulibaly (2025).

where we build on our narrative study to isolate dates with large tariff changes that were explicitly motivated by long-run considerations (and not in reaction to the state of the cycle).

Regardless of our identification approach, we obtain the same result: a tariff hike lowers CPI inflation and raises unemployment. Interestingly, our results also hold for the modern post World War II sample period. While the results are more uncertain (which is expected given the much smaller variance of tariff changes since 1945), the point estimates remain statistically significant and continue to point in the same direction: higher tariffs lead to lower economic activity *and* lower inflation in the short-run.

The inflation response goes against the predictions of standard models, whereby CPI inflation should go up in response to higher tariffs. Instead, tariff shocks appear to act as aggregate demand shocks—moving inflation and unemployment in the same directions. A possible explanation relies on the effects of uncertainty: a tariff shock creates (or coincides with) an uncertain economic environment, which by itself depresses economic activity by lowering consumers' and investors' confidence and puts downward pressures on inflation (Leduc and Liu, 2016). Another possible channel is a wealth channel, whereby an adverse tariff shock leads to a drop in asset prices, which then depresses aggregate demand and leads to higher unemployment and lower inflation. We find evidence in support of both channels: in response to higher tariffs, stock prices decline and stock market volatility increases.

To expand the sources of variation, we also consider two economies with large historical variations in average tariffs: France and the UK. Between 1850 and 1913, France and the UK and France saw increasing trade with European nations and their colonial empires—the first wave of globalization—, but also saw large variations in average tariffs, particularly France for which we construct a narratively-identified series of tariff shocks. Using France or the UK gives similar results as with the US: an adverse tariff shock raises unemployment and lowers inflation.

A large theoretical literature has studied the impacts and desirability of tariffs. In the trade literature, the study of the long-run effects of tariffs and the optimal levels of tariffs has long been a very active area e.g., Eaton and Kortum (2002); Ossa (2014) and more recently Caliendo, Kortum and Parro (2025); Itskhoki and Mukhin (2025). In the macro literature, a number of recent papers has explored the short-run dynamic consequences of tariff shocks (Rodríguez-Clare, Ulate and Vasquez, 2025; Auclert, Rognlie and Straub, 2025; Caliendo, Kortum and Parro, 2025; Werning, Lorenzoni and Guerrieri, 2025; Ignatenko et al., 2025).

In contrast to this large body of theoretical work, there has been surprisingly little empirical work on the aggregate macroeconomic effects of tariff changes, i.e., on their general equilibrium effects.[2] Direct evidence for aggregate macro effects of tariff shocks remains

---

[2]Most empirical studies have focused on local (partial equilibrium) effects, comparing the effects of higher tariffs in one sector vs lower tariffs in another one (e.g., Fajgelbaum et al., 2020) or studying the price pass-
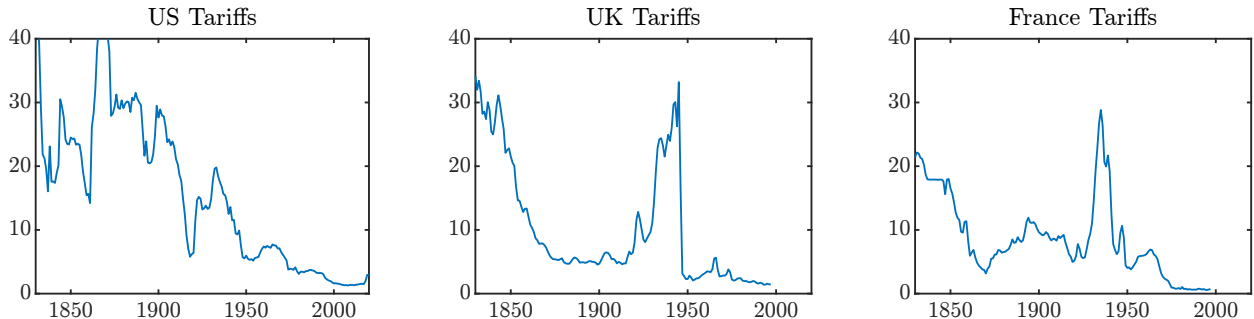
sparse, with recent work limited to post-1960 variation (Schmitt-Grohé and Uribe, 2025) or even post-1990 variation (Barattieri, Cacciatore and Ghironi, 2021; Bandyopadhyay, Ferraro and Bower, 2025). Compared to this work, we considerably extend the sources of variation across times, and we pay close attention to identification challenge through a narrative approach.

2 A historical perspective

Between the end of World War II and 2025, tariffs across developed economies were on a downward trend, declining from about 10 percent in 1947 to less three percent in 2022, and yearly tariff changes were very modest, orders of magnitude smaller than the 15 percent increase in average U.S. tariffs in 2025.

From a historical perspective however, the 2025 increase is far from unusual. During the so-called first wave of globalization—the period of increased global economic integration in trade and finance between 1870 and 1913—as well as during the inter-war period, tariff rates displayed large and fast variations that are reminiscent of the 2025 change.

Figure 1: Historical tariff rates across countries

Notes: Average tariff rates for all imports for US, UK and France, 1830-2020. See Appendix for data sources.

Figure 1 shows the average tariffs for US, UK and France since 1850. While the general trend has been downward over the past 175 years, there are many ebbs-and-flows with tariffs occasionally rising or falling by 10 to 20 percentage points in the course of a year in peace time economies. Throughout the 19th century in the United States for instance, tariff levels fluctuated as Republicans and Democrats clashed over the issue of tariffs. In the mean time, the UK shows a rapid decrease in tariff rates over the second half of the

---

through of higher tariffs (Amiti, Redding and Weinstein, 2019; Hobijn and Nechio, 2025, e.g.,). On their own, such studies are not informative about the overall macroeconomic effects of across the board changes in tariffs (e.g., what happens to overall inflation when tariffs rise across all sectors), and so must be paired with a structural model to trace out general equilibrium effects.

19th century, coinciding with the expansion of the British empire and the first wave of globalization. France shows a similar pattern as the UK but with a rebound in the tariff rate after 1870, driven by the need to pay the war reparations demanded by Prussia and a political shift towards protectionist measures.Then, in the interwar period, the panic of 1929 and the ensuing scramble for gold (through the Gold standard) led to a tariff war with drastic increases in tariff rates across all three countries.

3 A narrative account of US tariffs since 1870

How can we exploit these large and abrupt tariff changes to learn the causal effects of tariffs on macro aggregates like inflation and economic activity? A naive correlation between tariff changes and economic activity could be misleading. For instance, if tariff rates change in response to particular economic conditions, subsequent economic activity may simply reflect the normal evolution of the economy after such conditions rather than the causal effects of tariffs.[3]

To learn about the causal effects of tariff changes, one must (i) understand the reasons behind tariff changes, and (ii) isolate changes in tariffs that are independent of the state of the economy. To that effect, we conducted a careful narrative review of the major historical tariff changes in the U.S since 1870.

The dashed lines in Figure 2 depict the major tariff changes enacted by Congress (or by the executive branch after 1934) over 1870-2025. We will now briefly describe each of them, paying attention to the reasons for the enacted tariff adjustment and the state of the cycle at the time of the legislation change.[4]
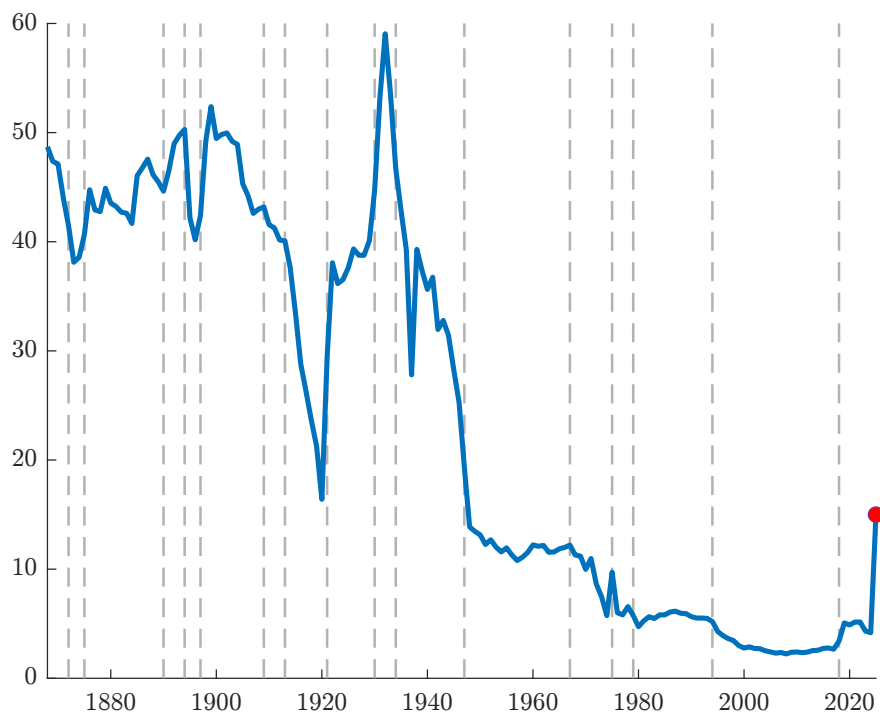
This narrative account will yield two insights. First, many tariff changes are not taken in response to the state of the economy but are motivated by long-run considerations about the "optimal" level of tariffs and the trade-off between protecting domestic industries and maintaining cheap import prices.[5] From these exogenous tariff changes, we can construct a time series proxy for tariff shocks that can the be used as IV to estimate the causal effects

---

[3]Say (for the sake of the argument) that higher tariffs help raise employment in the short-run (by making foreign imports more expensive and thereby boosting domestic consumption). Furthermore, imagine that policy makers exploit this idea and raise tariffs to protect home workers whenever the unemployment rate starts increasing. In that case, a correlation between tariffs and unemployment would show that higher tariffs raise unemployment–the opposite of the true effect.

[4]Up until World War I, inflation was akin to a white noise process, and there was no clear discussion in the political debates about the effects of tariffs on the inflation rate (as opposed to price level). For that reason, in the discussion that follows we will mostly focus on the level of unemployment at the time of tariff changes.

[5]Republicans saw tariffs as a means to protect their constituents in the industrialized North and were in favor of high tariffs. By contrast, Democrats' constituents were generally in the South, which had little industry but imported many goods and so favored lower tariffs.

Figure 2: Average tariff rate, United States

of tariffs on macroeconomic activity. Second, even when tariff changes are taken in response to the state of the economy, the direction of the tariff change is quasi-random. The reason is simple. Republicans and Democrats held opposite views on the desirability of tariffs, so that the tariff response to high unemployment varies with the party in power (going up under Republicans, and going down under Democrats). In addition, since the state of the economy did not favor one party or another (it affected only the likelihood of a change in power), the alternation of power between the Democratic and Republican parties provides us with quasi-random variation in tariff changes. In other words, standard OLS can be used to estimate the causal effects of tariffs on macroeconomic activity.

3.1   Narrative accounts

The stop-and-go tariff changes of 1872 and 1875   The Tariff Act of 1872 pushed by the Grant (Republican) administration moderately reduced the high tariff rates (used to finance Civil War related spending). The change was motivated by long-run considerations, as part of an effort to transition the economy from the Civil War toward peacetime conditions; the economy was also at about potential with unemployment around 4 percent. The panic of

1873, however, led to a rapid rise in unemployment that pushed Republicans to call for higher tariffs. The Tariff Act of 1875 thus reversed the tariff reductions of the Tariff of 1872. Note how the Republicans reaction to high unemployment led to a rise in tariffs.

The stop-and-go tariff changes of 1890, 1894 and 1897   In the 1888 presidential election, Harrison (Republican) defeated Cleveland (Democrat) by a narrow margin, and the economy seemed at about potential with unemployment around 5 percent. The Republicans platform favored high tariffs to protect infant industries against European competition, and the Harrison victory ultimately led to a Tariff Act—the McKinley tariff of 1890—, which raised average tariffs to almost 50 percent. That tariff change was driven by political beliefs and can be considered exogenous to the business cycle. Four years later, Cleveland defeated Harrison in 1892, partly following a backlash led by farmers and southerners against high tariffs and their claimed effect on unemployment and prices. The panic of 1893 led a severe depression and high unemployment (about 10 percent in 1894) that led Cleveland to revert the McKinley tariff with the Wilson–Gorman Tariff Act of 1894, lowering overall tariffs from 50 percent to 42 percent. From the Democrats' perspective, lower tariffs was a response to the high unemployment of 1893-94. Two years later however, unemployment was still high (still about 10 percent by 1896), leading to yet another power reversal with Republicans (with McKinley) winning the 1896 presidential election. And because Republicans viewed higher tariffs as the response to the high unemployment of 1893-94, this time high unemployment led to the opposite tariff response: the Republicans' Dingley Tariff Act of 1897 raised tariffs back to roughly 50 percent. In other words, in the span of just three years, the US saw two opposite tariff changes in response to a similarly high unemployment rate. So while the elections' results were likely affected by the level of unemployment, in this episode, there is no systematic correlation between the direction of tariff changes and the state of the cycle. We will come back to this point.

The 1909 Payne–Aldrich Tariff Act and 1913 Underwood Tariff Act   By the early 1900s, the US had become a global industrial powerhouse, and consumers, farmers, and small business owners increasingly argued that high tariffs benefited monopolies and trusts. Within the Republican Party, two factions began to crystallize; one side favoring lower tariffs and the other favoring the status quo of high tariffs. This ideological split inside the Republican Party would soon culminate in the 1909 Payne–Aldrich Tariff fight, which lowered tariffs by about 2ppt—from 43 to 41 percent. This change was not in reaction to the state of the economy, but instead reflected the ideological shift inside the Republican party about the long-run "optimal" level of tariffs. The split also led to two Republican candidates (Roosevelt and Taft) in the 1912 presidential election, and the victory of Wilson (Democrat).

The Democrats' Revenue Act of 1913 established a federal income tax and substantially lowered tariff rates, in line with Democrats' platform of lowering tariffs. Though this tariff change was not in response of the state of the economy, the timing of the change coincides with the beginning of World War I, which likely affected the effects of the tariff cut.

The Emergency tariff of 1921 and the Fordney-McCumber tariff of 1922   Republicans (Harding) won the 1920 presidential election against Democrats, mostly because of public discontent with Wilson and his internationalism. Since Republicans favor high tariffs, this lead to large tariff changes: first a temporary tariff increase to protect the agricultural sector from the recovering European agriculture sector, and to provide temporary protection to farmers from falling prices—the Emergency tariff of 1921—and, second, a comprehensive, permanent tariff increase that raised average tariff on dutiable imports to about 38%, up from 26% under the 1913 act. While the 1921 emergency tariff was explicitly targeted at falling prices, the 1922 act was a shift towards permanent long-term protectionism.

The Smoot–Hawley Tariff increase of 1930   The Smoot–Hawley Tariff Act of 1930 marks a major change in tariff policy with the return to protectionist policies. The average tariff on dutiable imports rose to about 59 percent, the highest in US peacetime history up to that point. Although the House passed a version of the act in May 1929 —*before* the October 1929 crash—, the magnitude of the tariff increase was clearly influenced by the recession.[6] Due to its magnitude, the Smoot-Hawley act led to massive foreign retaliation, with over 25 countries (e.g., France, UK) responding with higher tariffs.

The Reciprocal Tariff Trade Agreement (RTTA) Act of 1934   Roosevelt had spoken against the Smoot–Hawley act during his successful campaign for president in 1932, and under his lead Congress passed in 1934 the Reciprocal Tariff Act, which authorized the executive branch to negotiate bilateral tariff reduction agreements with other countries. This led to successive rounds of cuts in bilateral tariffs from 1934 onwards. The RTAA is often seen as the anti–Smoot–Hawley act. While the Smoot-Hawley act led to large and reciprocal tariff increases, the RTAA saw large and reciprocal tariff reductions. Interestingly, both the Smoot–Hawley act and the RTAA were taken in response to the same poor state of the economy (similarly high unemployment), but the responses were in opposite directions. And the reason is again that policy makers had opposite views on the best tariff policy response to the depression. Thus, while the tariff changes were clearly endogenous to the

---

[6]During the 1928 United States presidential election, one of Herbert Hoover's campaign promises was to help beleaguered farmers by increasing tariffs on agricultural products, and the House bill in May 1929 proposed an average increase of about 5-7 ppt to about 42–45 percent, substantially lower than the actual 1930 increase.

state of the cycle, history provides us with two opposite policy responses to a similarly high unemployment state.

GATT negotiation rounds   Following the Reciprocal Tariff Act of 1934, low tariffs became the goalpost across the political spectrum for the next 70 years, leading to a continuous decline in tariff rates through successive GATT negotiation rounds. The General Agreement on Tariffs and Trade (GATT) was a series of negotiations aimed at reducing tariffs and other trade barriers. The most important years with substantial change in US tariffs are 1947 (Geneva round), 1967 (Kennedy round), 1979 (Tokyo round) and Uruguay round (1994).

The temporary tariff surcharges of Nixon (1971) and Ford (1975)   Throughout the general downward trend in US tariffs over 1947-2018, we can notice two small spikes in 1971 and 1975: these are the temporary tariffs surcharge of Nixon (1971) and Ford (1975). They were taken in response to (i) the balance of payment crisis following the collapse of Bretton Woods in 1971, and (ii) the 1973-194 oil crisis and heavy dependence on imported oil. Unlike traditional tariff changes, these policy actions are likely endogenous to the state of the cycle. The 1971 change was small at about 1ppt while the 1975 was more substantial with a 4ppt increase. In both cases however, the tariff surcharge only lasted a year.

Trump tariff increase of 2018   In 2018, the Trump administration implemented several tariff increases as part of its trade policy, aiming to protect U.S. industries and reduce trade deficits.

Table 1: Narratively identified tariff shocks, United States (1890–2018)

Year	Policy Change	Tariff	Main Reason for Change
1872	Tariff Act of 1872	Cut	Move toward freer trade, reversing high Civil War tariffs
1890	McKinley Tariff Act	Hike	Protecting infant industries
1909	Payne-Aldrich Tariff Act	Cut	Ideological split within Republican party
1922	Fordney–McCumber Tariff Act	Hike	Ideological return to protectionism
1947	Geneva Round	Cut	Free trade preference and promoting post-war stability
1967	Kennedy Round	Cut	Strengthen transatlantic economic integration
1979	Tokyo Round	Cut	Free trade preference
1994	Uruguay Round	Cut	Free trade preference
2018	Trump Tariffs	Hike	National-security and strategic

3.2 A narrative proxy for tariff shocks

Taken together, our narrative account points to 9 dates with tariff changes that were not taken in response to the (current or anticipated) state of the economy but instead explicitly motivated by political preferences and long-run considerations: 1872, 1890, 1909, 1921-22, 1947, 1967, 1979, 1994 and 2018, with 3 hikes and 6 cuts. Table 1 summarizes these 9 tariff changes with the main reason for the change.

3.3 On the quasi-randomness of US tariff changes

Aside from the tariff changes motivated by long-run political considerations, our narrative study of US tariff policy highlights an interesting phenomenon: even when tariff changes are taken in response to the state of the economy, the direction of the tariff change appears unrelated to the level of unemployment. Too see that, Figure 3 shows the 16 major permanent tariff changes discussed above against the unemployment rate at the *quarter* of the tariff change. We can see that there is a roughly equal number of tariff hikes vs tariff declines in times of high unemployment, confirming our narrative impression that the directions of tariff changes are unrelated to the state of the cycle. For instance, there are roughly as many tariff hikes as tariff cuts in time of high unemployment (6 cuts vs 5 hikes in times with unemployment above 5 percent). Similarly, we can observe both tariff hikes and cuts in times low unemployment.

To quantify this visual impression, Table 2 reports the p-value of an F-test for a regression of tariff changes on the state of the economy at the time of the policy change. While historical data on average tariffs are only available at a yearly frequency, the precise date of the tariff change is known explicitly, so that we can exploit the availability of quarterly data on unemployment and inflation —see the Appendix for data source— to estimate a regression of the form
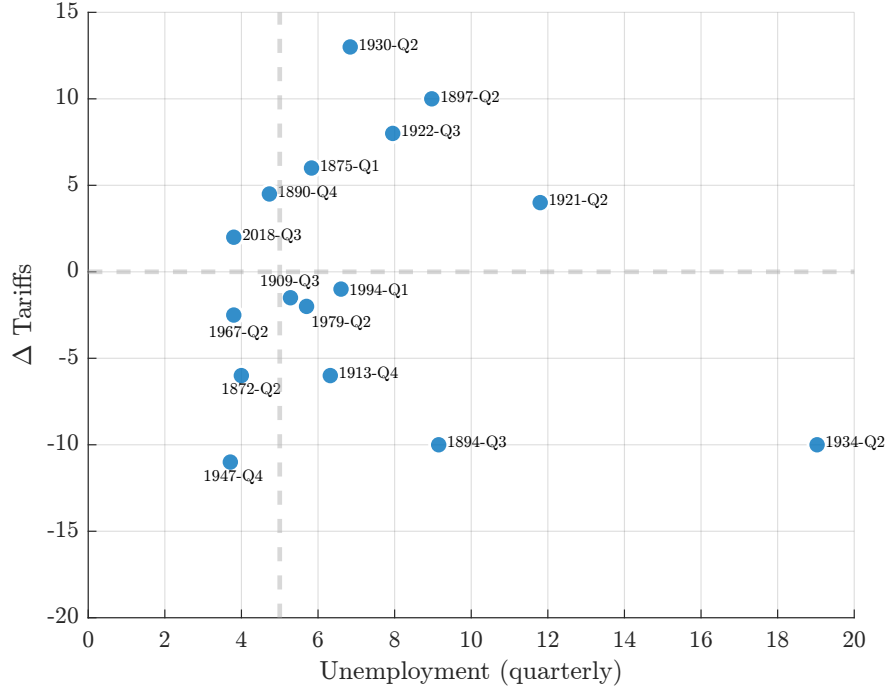
$$\Delta \tau_i = \alpha + \beta x_i + e_i \tag{1}$$

where i indexes one of the 16 permanent tariff changes discussed above, $\Delta \tau_i$ is the magnitude of the enacted tariff change, and where x_i is a cyclical indicator; the unemployment rate in the quarter preceding the tariff change.[7] We can see that there is no relationship between tariff changes and the state of the cycle.

To validate our hypothesis that tariff changes are quasi-randomly distributed over the cycle because Republicans and Democrats held opposite views on thee effects of tariffs, we also need to show that the state of the economy did not favor one party vs another. To do so, we repeat regression (2) but using as the left-hand side variable a dummy capturing the

---

[7]Using unemployment rate averaged over the four quarters before the policy change gives the same conclusions. Using the inflation rate gives similar conclusions as well.

Figure 3: Tariff changes and unemployment, United States

party (+1 for Republicans and -1 for Democrats) winning the election in presidential election i. Alternatively, we use as the left-hand side variable a dummy capturing a power flip (a dummy equal to 1 for a Democrat-Republican or Republican-Democrat transition during an election and 0 otherwise).

The second and third coluns of Table 2 reports the results when we only include the presidential elections that occured before one of the 16 main tariff changes discussed above. We find no systematic effect of the state of the economy on the results of the US election.

The second-to-fourth rows of Table 2 then repeat a similar regression but using all presidential elections since 1870. With a larger sample size, we can include a larger set of controls and we consider the regression

$$d_i = \alpha + \beta X_i + e_i \qquad (2)$$

where d_i a presidential election dummy, and X_i is a vector of controls with contemporaneous and 4 quarterly lags of unemployment and inflation. Again, the F-stats are very small with p-values always comfortably above 50 percent. The larger sample size allows to split the sample before and after World War II, and we obtain similar results: the state of the cycle

Table 2: Tariff changes and the state of the cycle

p-value	Tariff change	Republican victory	Power flip
Major tariff change	.67	.71	.60
1868-2018	—	.20	.31
1868-1939	—	.19	.30
1946-2018	—	.44	.01***

Notes: The entries report the p-value for the F-test comparing the fit of the model against a model with only an intercept. The first row "Major tariff changes" uses only the 16 permanent tariff changes over 1870-2018 and discussed in the narrative account section. The other rows use all presidential elections within the sample period.

does not favor one party over another. However, in the post World War II period, we do find strong evidence that the levels of unemployment and inflation in the year leading to the election do help predict the occurrence of a power flip.

4   Estimation results

Our narrative study of historical US tariff policy offers two strategies to estimate the short-run effects on inflation and economic activity: (i) an IV approach based on our narrative dates with long-run motivated tariff changes, and (ii) an OLS approach based on the insight that tariff changes do not appear to be systematically related to the cycle, because of a unique feature of tariff policy: opposite political parties historically had opposite views on the desirability and effects of tariffs.

Since both methods have pros and cons—the IV approach is more robust to remained endogeneity concerns but exploits a smaller share of the variance than the OLS approach—, we will report results from both methods.
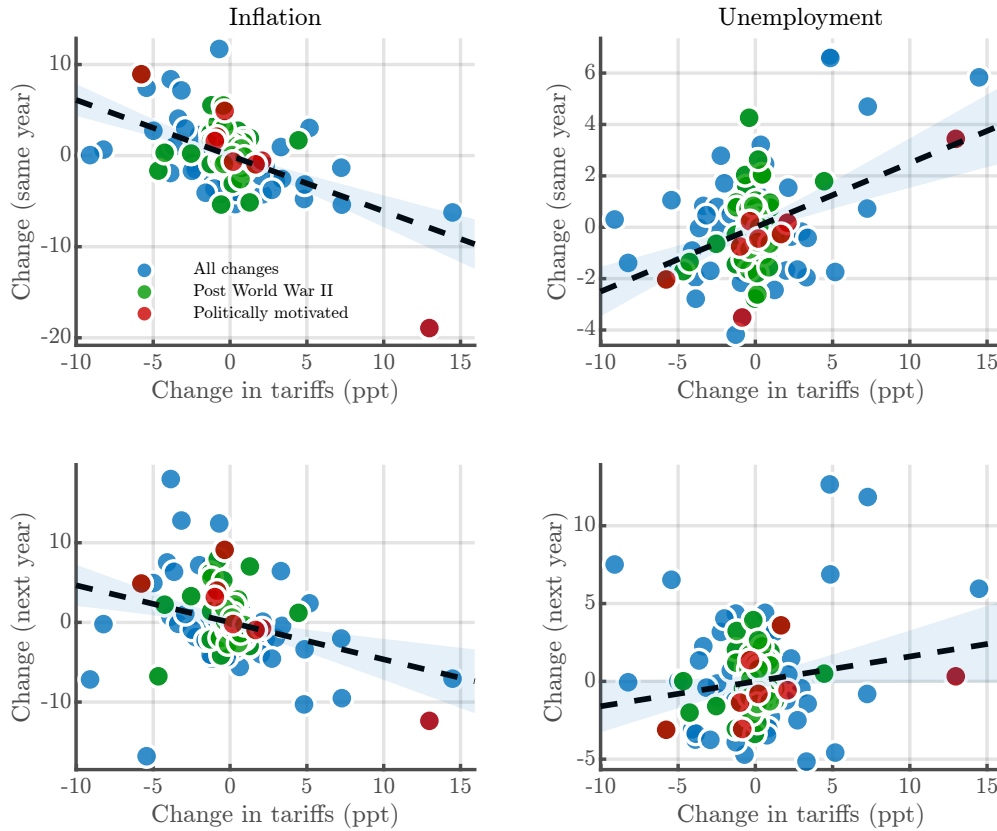
4.1   A first look at the data

To get a first sense of the effects of tariffs on inflation and economic activity, Figure 4 shows a scatterplot with all yearly tariff changes since 1870 against inflation and unemployment changes in the same year (top row) or in the next (bottom row). In addition, the red dots mark the tariff changes that we narratively identified to be independent of the state of the economy or the level of inflation.

In both cases, we obtain similar results: a negative slope for inflation—a tariff hike lowers inflation—and a positive slope for unemployment—a tariff hike raises unemployment. Interestingly, slope estimates are very similar whether we use all tariff changes only the

narrative dates, confirming our narrative assessment that the OLS bias is likely to be small overall.

The blue and green dots visually show the ranges of tariff changes before and after World War II. The range of variation in tariffs is much more limited in the post-World War II sample with green dots confined in the $[-5, 5]$ ppt range, in contrast to pre-World War II variations with blue dots spanning the $[-10, 15]$ ppt range. Interestingly however, notice how both scatter plots paint a consistent picture on the effects of tariffs on inflation and unemployment despite very different historical settings. We will come back to this point.

Figure 4: Tariff changes and the economy, United States

Notes: Changes in tariffs are innovations to tariffs after projecting on two lags of tariffs, unemployment and inflation. Changes in inflation are innovations to inflation after projecting on two lags of tariffs, unemployment and inflation.
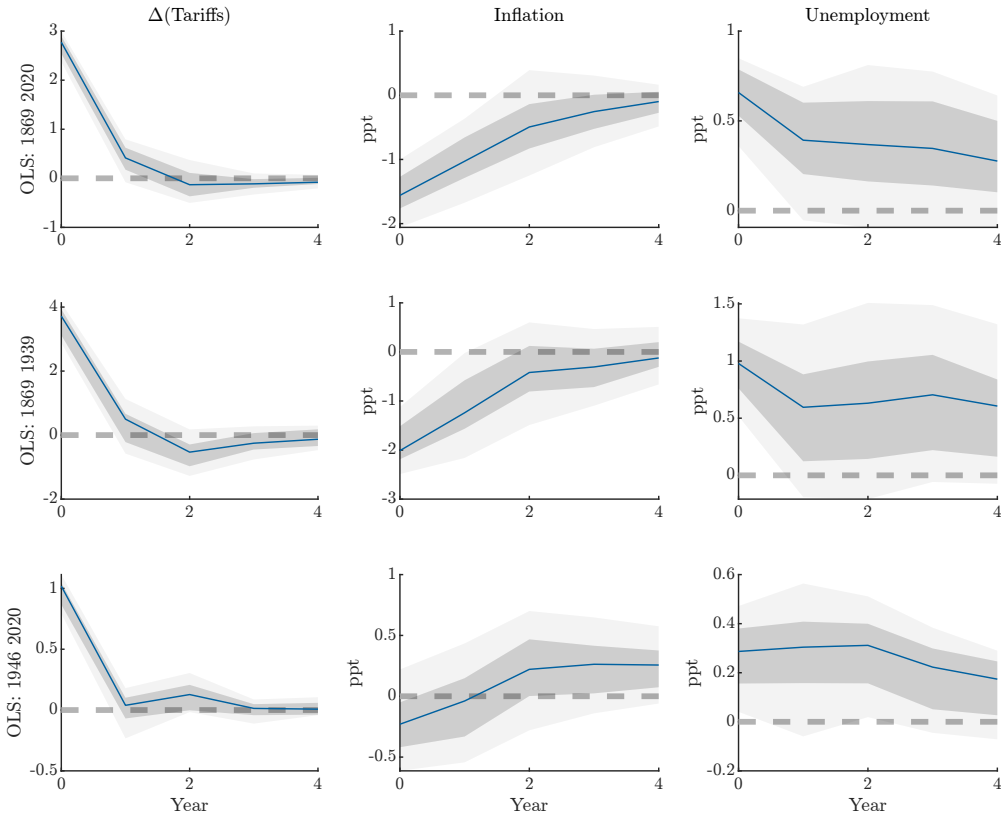
4.2 VAR results

To estimate the dynamic causal effects of tariffs, we use a yearly VAR with two lags and (at least) 3 variables: tariff changes ($\Delta\tau_t$), unemployment (u_t), and CPI inflation (π_t). As "OLS

estimate", we order $\Delta\tau_t$ first and report the impulse responses to innovations to $\Delta\tau_t$.[8] As "IV estimate", we enter our narratively identified tariff shock series ε first in the VAR for $(\varepsilon, \Delta\tau, u, \pi)$, and we report the impulse responses to innovations to ε.

Figure 5 plots the "OLS estimates", i.e., treating innovations to the average tariff rate as independent of the business cycle. The different rows report estimates over different sub-samples.

Figure 5: Impulse responses to tariff shock, United States, OLS estimates

Notes: Impulse responses estimated from a VAR with two lags for $(\Delta\tau), \pi, u$ where τ is average tariffs, π is CPI inflation and u the unemployment rate. Shaded areas denote the 68 and 95 confidence bands.
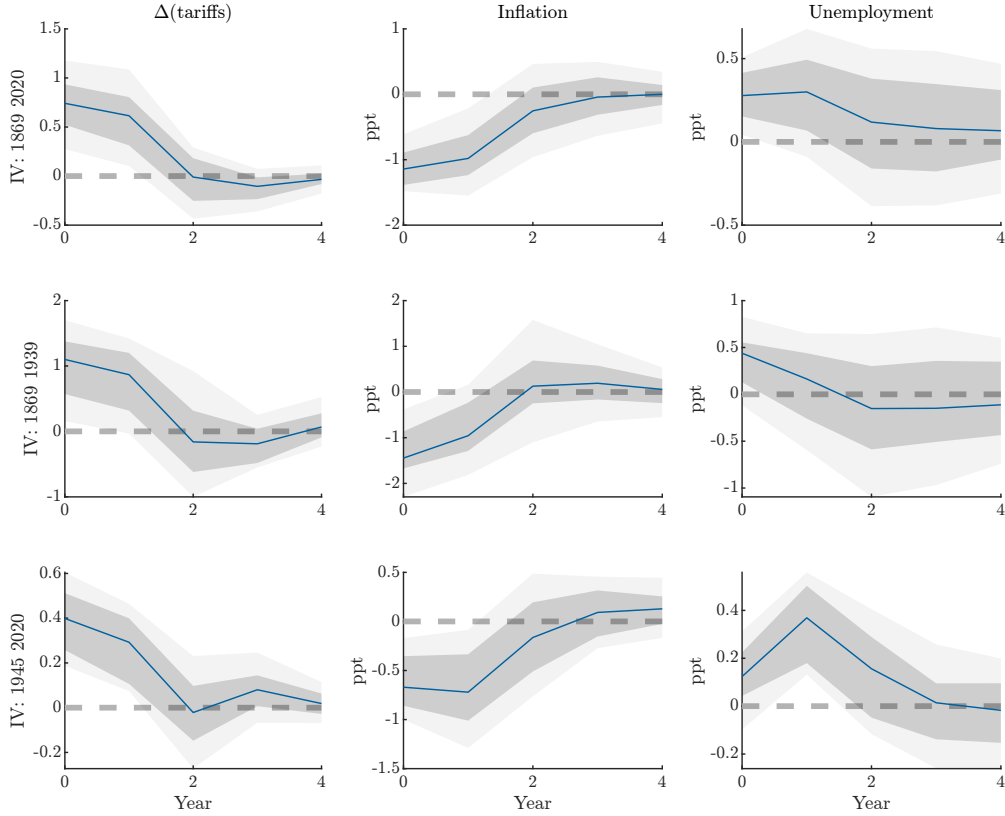
The results are remarkably consistent across sample period; whether we use the full historical dataset (1869-2020), only pre-World War II data (1869-1939), or only post World War II data (1946-2020) period. We find that a permanent tariff increase has a large effect on inflation and unemployment. Over the pre-WWII sample, a roughly 4ppt permanent increase in tariff rate lowers inflation by 2ppt on impact and raises unemployment by about 1ppt. The estimates are economically large and strongly statistically significant. Over the post-

---

[8]An alternative interpretation of this estimate is that of a recursive identification strategy, which relies on the idea that tariff changes can be implemented in reaction to the state of the economy, but only with a one year delay because a complicated legislative process.

WWII sample period, the estimates are more uncertain (which is not surprising given the much more limited variation in tariff rate over that period), but show the same conclusions: higher tariffs lower inflation and raise unemployment.

Next, Figure 6 presents our "IV estimates" based on our narratively identified dates. The results are similar: after an increase in tariffs, inflation declines and unemployment increases. And as with the "OLS estimates", the results are similar qualitatively over the post-WWII period. Further, comparing the magnitudes of the OLS and IV results, the estimates are similar, and there is no clear directional bias for the OLS estimates, in line with our narrative reading that US tariff changed are quasi-randomly distributed over the cycle.

Figure 6: Impulse responses to tariff shock, United States, IV estimates

Notes: Impulse responses estimated from a VAR with two lags for $(\varepsilon_t, \Delta(\text{tariffs}), \pi, u)$ where π is CPI inflation and u the unemployment rate. Shaded areas denote the 68 and 95 confidence bands.

4.3   Tariff shocks as aggregate demand shocks?

What does theory predict about the effects of tariff shocks? A prominent prediction is that tariff shocks should act as cost-push shocks, driving up firms' production costs through more expensive imported intermediate goods while raising the prices of foreign final goods (e.g.,

Werning, Lorenzoni and Guerrieri, 2025). Under this framework, higher tariffs would lead to lower economic activity and higher inflation in the short-run.

We find the opposite inflation response with higher tariffs leading to higher unemployment *and* lower inflation, akin to adverse aggregate demand shocks.

One possible explanation relies on the effects of uncertainty: a tariff shock creates (or coincides with) an uncertain economic environment, which by itself depresses economic activity by lowering consumers' and investors' confidence and puts downward pressures on inflation(e.g., Leduc and Liu, 2016). Another possible channel is a wealth channel, whereby an adverse tariff shock leads to a drop in asset prices, which then depresses aggregate demand and leads to higher unemployment and lower inflation.

To study the plausibility of these mechanisms, we extend our VAR by incorporating a common stock price index and a proxy for uncertainty—stock market volatility. As stock price index, we rely on the NBER Macrohistory database and use the monthly series for all common stock prices available since 1871. We estimate annual volatility from the variance of monthly price changes within each year.[9]

Figure 4 reports the impulse response for stock price index and volatility for three samples: 1871-2020, pre-World War II (1871-1939) and post World War II (1946-2020). We only report the IV estimates, that is the estimated based on our narratively identified tariff shock series. Regardless of the sample period, we find evidence in support of both channels: a tariff increase lowers stock market valuation and raises stock price volatility.
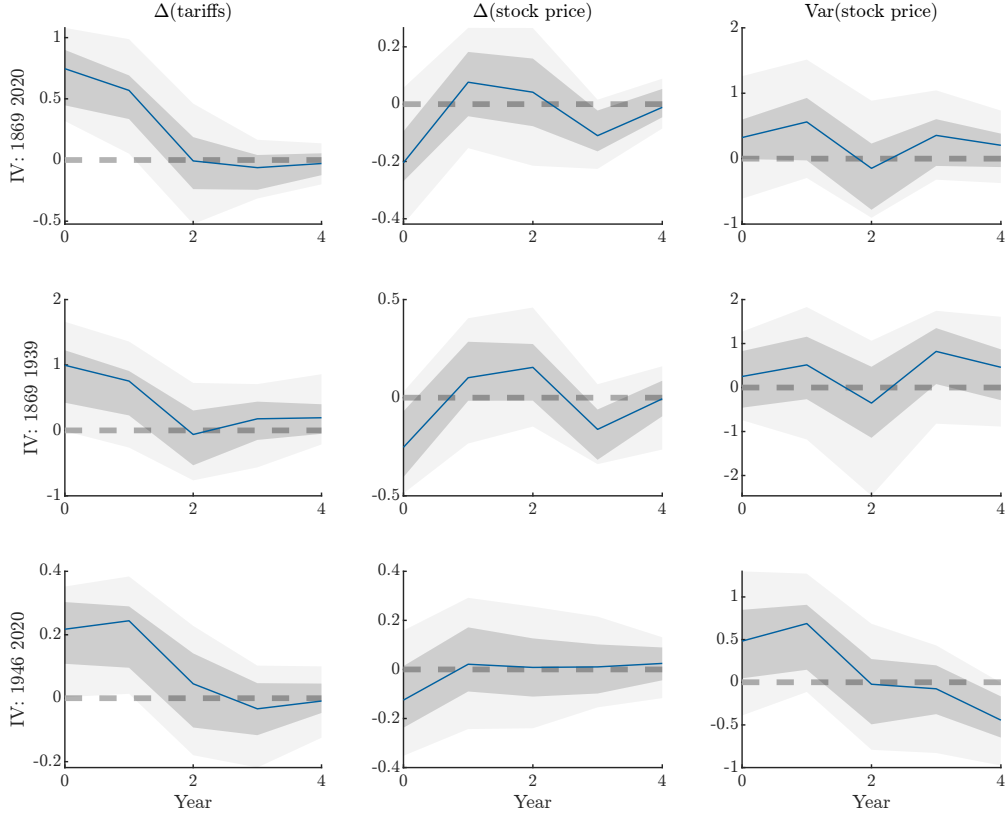
5   Evidence from France and the UK

To expand the sources of variation and alleviate external validity concerns, we also consider two advanced economies with different tariff histories: France and the UK. In a number of ways, France and the UK are more comparable to the US today. Both had central banks during the first wave of globalization, and both (particularly the UK) were exporters of manufactured goods.[10] Relatedly, the share of intra-industry trade in total trade was relatively high in France and in the UK over 1870-1913 (at about 30 and 20 percent respectively against about 40 percent today) versus only 8 percent for the US.

Reassuringly, we get similar results using independent variation coming from tariff changes in France and the UK during the first wave of globalization: in response to higher tariffs, inflation declines and economic activity contract.

---

[9]As robustness, we measured volatility from daily price changes in the Dow Jones index, though the data only start in 1885 (MeasuringWorth). Results were similar.

[10]The US was an exporter of raw materials (and an importer of manufactured goods) up until 1900 (Reinbold and Wen, 2020).

Figure 7: Inspecting the mechanisms: Responses of stock prices and stock market volatility

Notes: Impulse responses estimated from a VAR with two lags for $(\varepsilon, \Delta\tau, \pi, u, i, \Delta(SP), \text{Var}(SP))$ where τ is average tariff, π is CPI inflation, u the unemployment rate, i the short-term (3-months) interest rate, and SP is a price index of common stocks and Var(SP) a measure of stock price volatility.

France

For France, we proceed similarly as with the US, reporting both the "OLS" estimates and the "IV" estimates obtained from a narratively identified series of tariff shocks. Table 3 details the tariff shocks identified for France, summarizing the main reason for the policy change.
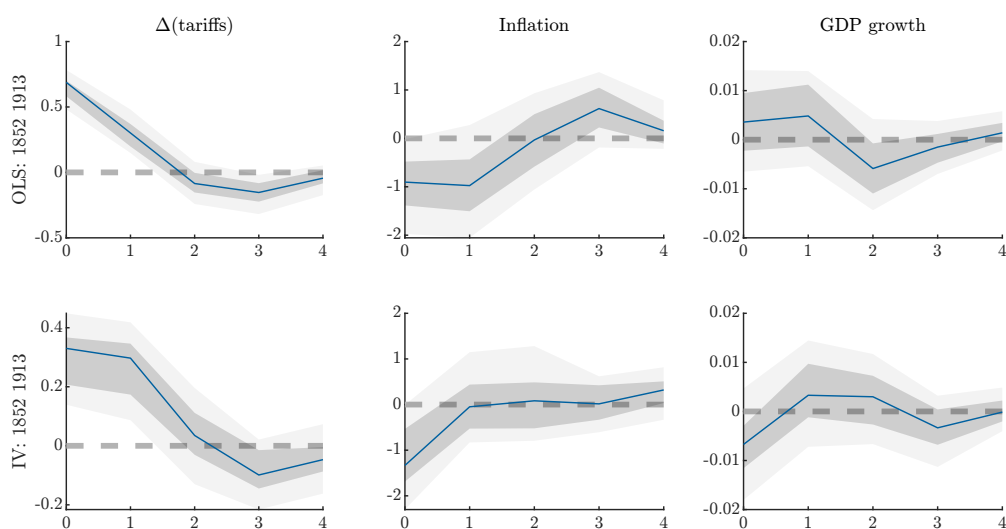
Figure 8 presents the estimated impulse responses, first the OLS (recursive identification) and then the IV (narrative shock) estimate. The results are consistent with the US ones, with a tariff hike lowering inflation and lowering GDP growth.[11]

---

[11]Restricting the sample to 1872-1913 (i.e., starting after the Franco-Prussian conflict of 1870-1871) gives very similar results.

Table 3: Narratively identified tariff shocks, France (1850–1913)

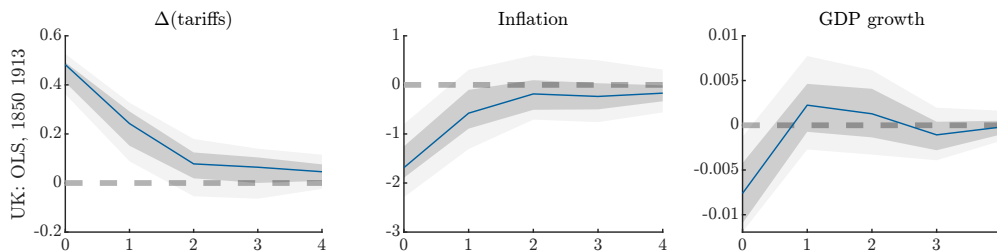| Year	Policy Change	Tariff	Main Reason for Change
1860	Cobden–Chevalier Treaty	Cut	Promote industrial modernization and free trade
1872	Import Surtax	Hike	Raise revenue to pay for war reparation
1885	Tariff Increases on Iron, Steel, Sugar	Hike	Protect domestic industry
1892	Méline Tariff Law	Hike	Protect domestic agriculture and industry

Figure 8: Impulse responses to tariff shock, France

Notes: Top row ("OLS"): Impulse responses estimated from a VAR with two lags for $(\Delta\tau, \pi, y)$ where τ is average tariff rate, π is inflation and y real GDP growth. Bottom row ("IV"): Impulse responses estimated from a VAR with two lags for $(\varepsilon, \Delta(\text{tariffs}), \pi, y)$ where ε is the narratively identified tariff shock.

UK

For the UK, it is difficult to extract sufficiently many tariff shocks—the narrative records only point to one unambiguous exogenous tariff change—the 1860 Cobden-Chevalier Treaty. We thus only report the "OLS estimates", the recursive identification scheme that orders tariff changes first. The results are again remarkably consistent with US and France evidence, see Figure 9.

Figure 9: Impulse responses to tariff shock, UK

Notes: Impulse responses estimated from a VAR with two lags for $(\Delta\tau, \pi, y)$ where τ is average tariff rate, π is inflation and y real GDP growth.

6 Conclusion

In this paper we exploit 150 years of tariff policy in the US and abroad to estimate the short-run effects of tariff shocks on macro aggregates. A careful review of the major changes in US tariff policy since 1870 shows no systematic relation between the state of the cycle and the direction of the tariff changes, as partisan differences on the effects and desirability of tariffs led to opposite policy responses to similar economic conditions. Exploiting this quasi-random nature of tariff variations, we find that a tariff hike raises unemployment (lowers economic activity) and lowers CPI inflation. Using only tariff changes driven by long-run considerations—a traditional narrative identification—gives similar results. We also obtain similar results if we restrict the sample to the modern post World War II period or if we use independent variation from other countries (France and the UK).

The inflation response goes against the predictions of standard models, whereby CPI inflation should go up in response to higher tariffs. We provide suggestive evidence that an aggregate demand channel can be at play, but an important avenue for future research is to understand the theoretical reasons for these surprising yet robust findings, which are central to the appropriate monetary response to tariff shocks.

References

Amiti, Mary, Stephen J Redding, and David E Weinstein. 2019. "The impact of the 2018 tariffs on prices and welfare." *Journal of Economic perspectives*, 33(4): 187–210.

Auclert, Adrien, Matthew Rognlie, and Ludwig Straub. 2025. "The macroeconomics of tariff shocks." National Bureau of Economic Research.

Auray, Stéphane, Michael B Devereux, and Aurélien Eyquem. 2025. "Trade wars, nominal rigidities, and monetary policy." *Review of Economic Studies*, 92(4): 2228–2270.

Balke, Nathan S, and Robert J Gordon. 1989. "The estimation of prewar gross national product: Methodology and new evidence." *Journal of Political Economy*, 97(1): 38–92.

Bandyopadhyay, Sujan, Domenico Ferraro, and Lorenzo Octavio Vera Bower. 2025. "How do tariffs impact the US economy?" *Economics Letters*, 112406.

Barattieri, Alessandro, Matteo Cacciatore, and Fabio Ghironi. 2021. "Protectionism and the business cycle." *Journal of International Economics*, 129: 103417.

Bergin, Paul R, and Giancarlo Corsetti. 2023. "The macroeconomic stabilization of tariff shocks: What is the optimal monetary response?" *Journal of International Economics*, 143: 103758.

Bianchi, Javier, and Louphou Coulibaly. 2025. "The optimal monetary policy response to tariffs." National Bureau of Economic Research.

Caliendo, Lorenzo, Samuel S Kortum, and Fernando Parro. 2025. "Tariffs and trade deficits." National Bureau of Economic Research.

Cuba-Borda, Pablo, Albert Queralto, Ricardo Reyes-Heroles, and Mikaël Scaramucci. 2025. "Trade Costs and Inflation Dynamics."

Eaton, Jonathan, and Samuel Kortum. 2002. "Technology, geography, and trade." *Econometrica*, 70(5): 1741–1779.

Fajgelbaum, Pablo D, Pinelopi K Goldberg, Patrick J Kennedy, and Amit K Khandelwal. 2020. "The return to protectionism." *Quarterly Journal of Economics*, 135(1): 1–55.

Hobijn, Bart, and Fernanda Nechio. 2025. "The Effects of Tariffs on Inflation and Production Costs." *FRBSF Economic Letter*, 2025(12): 1–6.

Hoover, Ethel D. 1960. "Retail prices after 1850." *Trends in the American economy in the nineteenth century*, 141–190.

Ignatenko, Anna, Ahmad Lashkaripour, Luca Macedoni, and Ina Simonovska. 2025. "Making America Great Again? The Economic Impacts of Liberation Day Tariffs." National Bureau of Economic Research.

Imlah, Albert H. 1958. *Economic elements in the Pax Britannica: Studies in British foreign trade in the nineteenth century.* Harvard University Press.

Itskhoki, Oleg, and Dmitry Mukhin. 2025. "The optimal macro tariff." National Bureau of Economic Research.

Jeanne, Olivier. 2021. "Currency Wars, Trade Wars, and Global Demand." National Bureau of Economic Research.

Kalemli-Özcan, Şebnem, Can Soylu, and Muhammed A Yildirim. 2025. "Global Networks, Monetary Policy and Trade." National Bureau of Economic Research.

Leduc, Sylvain, and Zheng Liu. 2016. "Uncertainty shocks are aggregate demand shocks." *Journal of monetary economics*, 82: 20–35.

Lévy-Leboyer, Maurice, and François Bourguignon. 1985. "L'Economie Française au XIXe siècle: Analyse macro-économique."

Monacelli, Tommaso. 2025. "Tariffs and Monetary Policy." CEPR Discussion Paper.

Ossa, Ralph. 2014. "Trade wars and trade talks with data." *American Economic Review*, 104(12): 4104–4146.

Piketty, Thomas, and Gabriel Zucman. 2014. "Capital is back: Wealth-income ratios in rich countries 1700–2010." *The Quarterly journal of economics*, 129(3): 1255–1310.

Reinbold, Brian, and Yi Wen. 2020. "How Industrialization Shaped America's Trade Balance." *Federal Reserve Bank of St. Louis.*

Rodríguez-Clare, Andrés, Mauricio Ulate, and Jose P Vasquez. 2025. "The 2025 trade war: Dynamic impacts across US States and the global economy." National Bureau of Economic Research.

Schmitt-Grohé, Stephanie, and Martín Uribe. 2025. "Transitory and Permanent Import Tariff Shocks in the United States: An Empirical Investigation." National Bureau of Economic Research.

Vernon, J.R. 1994. "Unemployment rates in postbellum America: 1869–1899." *Journal of Macroeconomics*, 16(4): 701–714.

Weir, David R. 1992. "A century of US unemployment, 1890-1990: revised estimates and evidence for stabilization." *Research in Economic History*, 14(1): 301–46.

Werning, Iván, Guido Lorenzoni, and Veronica Guerrieri. 2025. "Tariffs as Cost-Push Shocks: Implications for Optimal Monetary Policy." National Bureau of Economic Research.

Appendix

Data construction

We assembled a historical annual macroeconomic dataset for the United States, the United Kingdom, and France, beginning in 1868, 1860, and 1872 respectively, with the starting years determined by historical considerations. 1968 corresponds to US normalizing to a peace time economy after the end of the Civil War in 1865. For the UK, 1860 is the date of the Cobden-Chevalier treaty between the UK and France, which triggered a wave of bilateral free trade treaties across Europe and is often seen as marking the beginning of the first wave of globalization. For France, the sample only starts in 1872 to avoid the Franco-Prussian of 1870-1871, which was highly disruptive for the French economy.

While US data are available from the Historical Statistics of the United States (1976) and in electronic form from the Yale Budget Lab, we digitized French tariff data from Lévy-Leboyer and Bourguignon (1985) and US tariff data from Imlah (1958). Average tariffs are computed as the ratio of custom duties over import values.

All data are annual except noted otherwise. For the US, inflation is measured from the CPI reconstructed by Hoover and Rees over 1851-1912, and the constructed by the BLS over 1913-2020, as made available by the Minneapolis Fed. The unemployment rate before 1948 is taken from the NBER Macrohistory database over 1929-1948 and extended back to 1869 by Weir (1992) and Vernon (1994).[12] Figure A1 plots the raw US data.

For the UK, average tariff rates are taken from Imlah (1958). CPI inflation, unemployment rate, and monthly stock price index are taken from the Bank of England database "A millennium of macroeconomic data". For France, average tariff rates, CPI inflation and real GDP growth are taken from Lévy-Leboyer and Bourguignon (1985). Yearly changes in stock price index of common stocks is taken from Piketty and Zucman (2014).

---

[12]Estimates for the unemployment rate over 1890-1940 were constructed by combining decadal unemployment benchmarks created from U.S. census survey with annual data on labor force and employment. Data before 1890 were constructed from annual real GDP growth data (Balke and Gordon, 1989) and an Okun's law, see Vernon (1994). As for the CPI, the consumer price index before 1913 was reconstructed from Census publications and notably the "Report on the Average Retail Prices of Necessaries of Life in the United States," see (Hoover, 1960).

Figure A1: Raw data, United States

Sample: 1869 2020