

## 5.1: Comprehension Questions

What was the Bretton Woods system? Discuss some advantages it had over the previous gold standard system.

The Bretton Woods system was a system of fixed nominal exchange rates which pegged the US dollar to gold at \$35/ounce, while other currencies were pegged to the dollar. Compared to the previous system of all currencies being pegged to gold, Bretton Woods provided more flexibility.

Firstly, the previous gold standard required countries to maintain a fixed exchange rate by holding gold reserves, which severely limited their ability to respond to changing economic conditions. Devaluation was almost impossible unless a country completely abandoned gold convertibility. Under Bretton Woods, fixed exchange rates were maintained but adjustable under specific conditions, as the system allowed countries to devalue/revalue their currency to restore stability from a “fundamental disequilibrium”. Therefore, countries had a buffer against economic shocks without completely losing exchange rate stability.

Secondly, under the previous gold standard, countries had to keep interest rates aligned with their gold reserves. If they experienced an economic downturn, they couldn't cut interest rates or print money to stimulate the economy because that would risk depleting gold reserves. Under Bretton Woods, countries were not strictly bound by gold flows. With the U.S controlling the dollar supply, other countries could adjust their peg when necessary (callback to “fundamental disequilibrium” from the first point”). Therefore, countries could engage in monetary policies without immediate gold constraints.

Lastly, the IMF was created by Bretton Woods to provide short-term financial assistance to countries facing economic crises, reducing the need for drastic austerity measures.

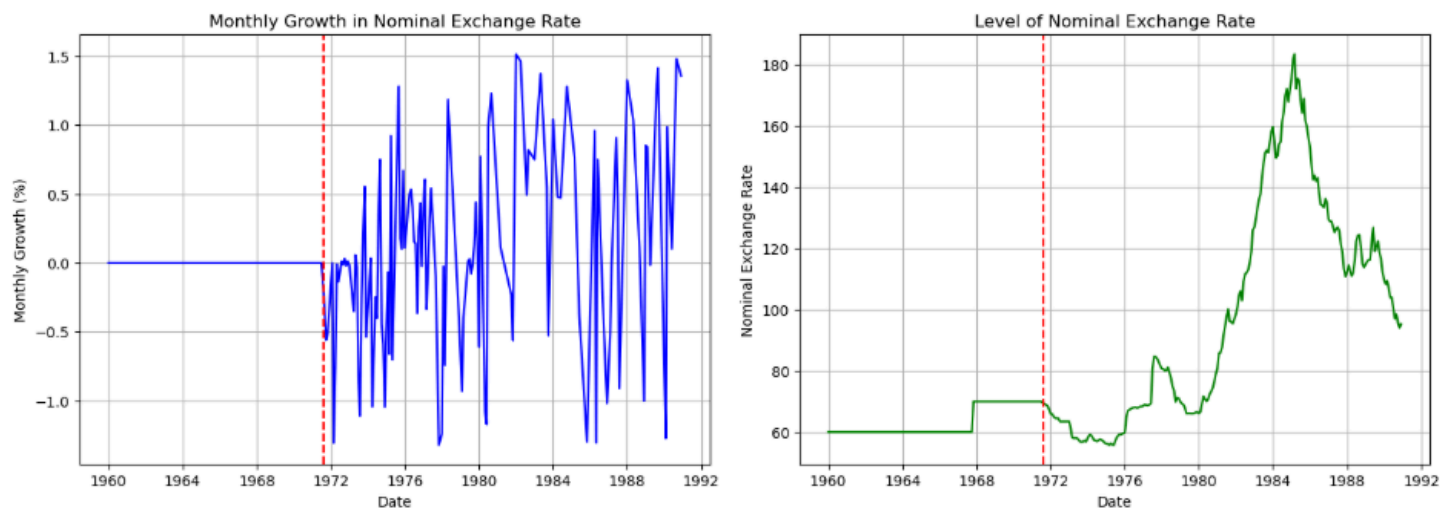
What disadvantages did it have and to what extent did the gold standard system suffer from similar issues?

The Bretton Woods system was heavily dependent on the US dollar, causing global economic stability to be tied to the US economy. When the US experienced high inflation in the 1960s, there was a loss of confidence in the dollar. This pushed countries to demand for gold and also led to speculative attacks on the dollar. Consequently, the US could not deliver due to insufficient gold reserves. The system also made it difficult to correct trade imbalances, as surplus nations like Germany and Japan had little incentive to revalue, while deficit nations like the US struggled to maintain gold reserves.

The gold standard suffered from similar issues, but to a lesser extent. Like Bretton Woods, it created difficulties in adjusting to trade imbalances. Surplus nations had little incentive to revalue, and deficit countries faced deflationary pressures due to the need to maintain gold reserves. However, the gold

standard did not have the same level of flexibility or mechanisms for adjustments as Bretton Woods, leading to more rigid and less dynamic economic responses.

What was the date that your country left the Bretton Woods system? Explain how you determined this (if two dates seem plausible, pick one and explain why you're chosen that particular date).



We picked August 1971 as the date Spain left the Bretton Woods system, as it was when President Nixon suspended the convertibility of the US dollar to gold. This date is also supported by data from our graphs.

From the monthly growth in nominal exchange rate graph, there was 0 volatility before 1972, indicating that Spanish peseta was pegged to a fixed exchange rate, as required under Bretton Woods. After 1972, there was a sharp increase in volatility, with large swings in the monthly exchange rate growth, suggesting that Spain was shifting from the fixed peg and exchange rates became more flexible. This increase in fluctuations is a strong indicator of a floating or managed exchange rate system rather than the fixed exchange rate system under Bretton Woods.

From the nominal exchange rate level graph, the rate remained relatively flat before 1972, reinforcing that Spain's currency was pegged under the Bretton Woods system. After 1972, the exchange rate began to show movements, declining before experiencing a sharp increase from 1980. Suggesting that after 1972, Spain started allowing some devaluation or revaluation, moving away from a strict peg.

Therefore, the periods of stability before August 1971 contrast with sudden drastic changes post August 1971, suggesting that Spain abandoned the Bretton Woods system around this date.

Describe how the departure from Bretton Woods represents a “natural experiment” on the effects of real exchange rate fluctuations on the macroeconomy.

A natural experiment occurs when an external or exogenous event (without deliberate intervention) creates conditions similar to a controlled experiment, allowing observers to isolate cause-and-effect relationships from observational data.

Using this definition of a natural experiment, the departure from Bretton Woods tallies as:

1. **Exogenous shock:** The shift from fixed to floating exchange rates was not planned by individual countries but forced by external pressures (external event without deliberate intervention)
2. **Variation in independent variable:** Countries floated their exchange rates at different timings, some right after the US ended gold convertibility, others held fixed pegs for a longer period. This variation in timing allowed researchers to compare the consequences experienced by early vs late floaters, similar to a controlled experiment where observers test variances in results based on shifting the magnitude of variables (in this case the timing of floating one's currency)

Therefore, the departure from Bretton Woods created a setting where observers can isolate cause-and-effect relationships (timing of float and consequences) from observational data (timing of float) based on an exogenous shock (external pressures unplanned by individual countries), making it an appropriate natural experiment.

Why are we using monthly data? Why not some lower-frequency such as quarterly or annual data?

We use monthly data as it captures more granular changes and shifts.

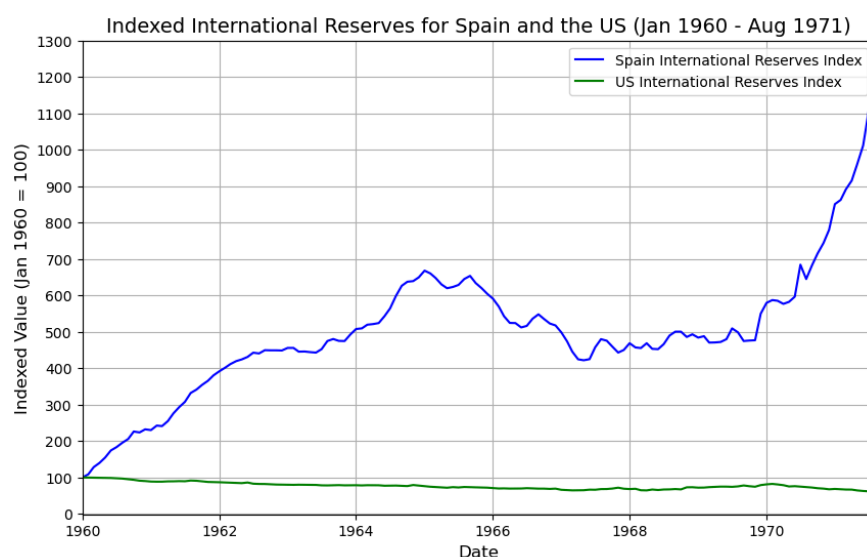
1. Exchange rates can be highly volatile in the short run due to speculative attacks, policy shifts or external shocks. Monthly data captures these high-frequency fluctuations, while quarterly or annually data may smooth them out or miss important events.
2. The departure from Bretton Woods occurred over months, monthly data thus tallies as it allows researchers to pinpoint when changes happened, rather than relying on broader averages that may obscure the impact. Using annual data for example is obviously flawed as there will be way more data beyond the departure period.
3. Central banks and policymakers adjust interest rates, intervene in currency markets and respond to crises within months, not quarters or years. Using broader time frames may thus result in data aggregation, smoothing out large swings and making fluctuations appear smaller than they actually are. Similar to point 2.

Why are we studying industrial production instead of GDP, which seems to be the more obvious choice?  
You may want to view the available GDP data from the IMF.

1. IMF seems to report GDP annually, while industrial production is reported monthly, giving us more granular data that are less prone to data aggregation bias
2. Industrial sectors are highly responsive to exchange rate shifts since they focus on tradable goods (e.g. depreciation can immediately boost exports) while GDP includes things like domestic services which are not directly impacted by exchange rate fluctuations.
3. GDP is subject to revisions and estimations while industrial production is measured directly from output data, making it more reliable for analysing short-term economic effects.

## 5.2: Analysis

### 5.2.1 Exchange Rate and International Reserve Graphs



Was the US dollar over or undervalued in the Bretton Woods system? Refer to data or figures in your answer.

Under the Bretton Woods system, the U.S. dollar became increasingly overvalued. As illustrated by the graph, Spain's reserves (represented by the blue line) rose sharply, while U.S. reserves (green line) remained relatively flat with a gradual decline. This indicates that countries like Spain were accumulating foreign reserves (primarily U.S. dollars) at a rapid pace, whereas the United States was not accumulating equivalent reserves in return. The accumulation of dollars abroad, coupled with the U.S.'s declining gold reserves, signalled a growing imbalance. As more dollars circulated internationally without corresponding increases in U.S. gold holdings, there were more concerns over the U.S.'s ability to maintain the dollar's convertibility into gold. This erosion of confidence is a key indicator that the dollar was becoming overvalued within the system.

Using your above figures, explain one reason for the US's departure from the Bretton Woods system.

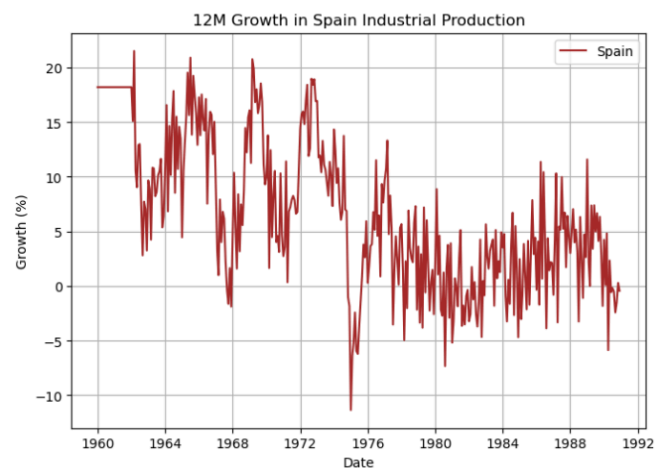
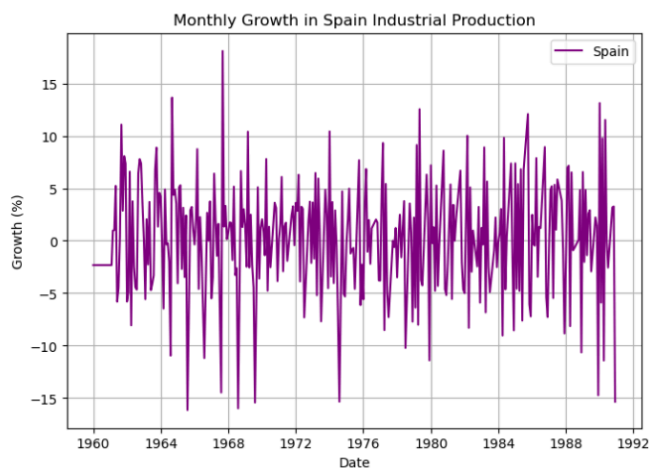
Persistent balance of payments deficit.

Foreign central banks were accumulating excess US dollars, putting pressure on the US to maintain its gold-dollar peg (\$35/ounce) which became unsustainable. Since US reserves did not increase, the US was not receiving enough foreign capital inflows to offset its trade deficits. The growing mismatch between the US's actual gold reserves and the supply of dollars in the global economy led to a crisis in confidence of the Bretton Woods system, ultimately leading to US suspending gold convertibility, ending Bretton Woods.

### 5.2.2 Inflation and Industrial Production Graphs

Why are your results for the monthly versus 12 monthly growth in industrial production so different?

Which measure is more useful?



Monthly:

- Shows more short-term fluctuations
- Appears highly volatile
- Small shocks causes large swings

12M:

- Smoothes out short-term volatility
- Eliminates small shocks such as seasonal noise and highlights broader economic trends

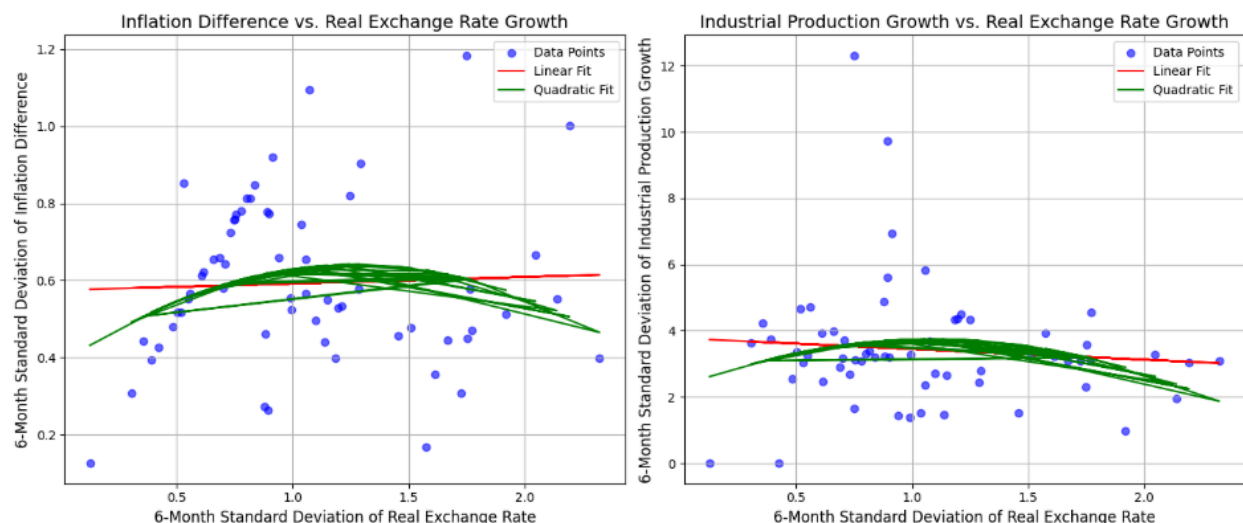
Overall, Monthly measures are more useful for analysing short term economic shocks as they flesh out fluctuations from shocks more clearly, while 12M measures are better for studying long term trends as small shocks are eliminated.

### 5.2.3 Comparison Statistics & Visualisation

When you calculate the standard deviation of variables before Bretton Woods, include data up to 06/1971. When you calculate the standard deviation of variables after Bretton Woods, only include data from 03/1973. Why might it be a good idea to exclude data from 07/1971 - 02/1973 for the above calculations?

1. Transition Period: Exchange rates became unstable during the collapse of the Bretton Woods system.
2. Speculation: Governments experimented with floating and fixed exchange rates, creating unpredictable movements.
3. Noise Reduction: Excluding the data minimizes distortions in analysis, providing clearer insights into the exchange rate regimes.

### 5.2.4 Regression Analysis



Run regressions with the 6-monthly standard deviation of the inflation difference and the 12-monthly industrial production growth as the dependent variable, and the 6-monthly standard deviation in the monthly growth of the real exchange rate as the independent variable. Comment on the results.

1. Inflation Difference vs. Real Exchange Rate Growth
  - a. The linear regression (red line) shows a weak, slightly positive relationship, as it is upward sloping.
  - b. The quadratic fit (green curves) show a non-linear relationship. Inflation volatility initially increases with real exchange rate volatility but reduces at higher levels.
  - c. This shows that minor exchange rate variations may correspond to inflation volatility, but extreme variations may not have a proportional impact.
2. Industrial Production Growth vs. Real Exchange Rate Growth
  - a. The linear fit (red line) shows a slight negative relationship as it is downward sloping.

- b. The quadratic fit (green curves) again suggests non-linearity, with industrial production growth peaking at moderate RER volatility before declining at higher levels.
  - c. This implies that some exchange rate variations may stimulate growth, but excessive volatility could be disruptive.
- 3. Furthermore, the  $R^2$  value for the left graph and right graph are 0.002 and 0.008 respectively.
  - a. This means that only 0.2% of the variations in inflation differences can be explained by the variations in real exchange rate.
  - b. This means that 0.8% of the variations in industrial production growth can be explained by the variations in real exchange rate.
  - c. Hence, the relationship is rather weak according to the regression analysis.

What regressions have been implicitly run to produce these different lines of best fit?

- 1. Simple Linear Regression
  - a.  $Y = \beta_0 + \beta_1 X + \epsilon$
  - b. It portrays the straight-line relationship between the dependent variable and variations in independent variable
- 2. Quadratic Regression (Nonlinear Model)
  - a.  $Y = \beta_0 + \beta_1 X + \beta_2 X^2 + \epsilon$
  - b. It captures nonlinear effects and portrays the straight-line relationship between the dependent variable and variations in independent variable

### 5.2.5 Conclusion

Taken together, what does your analysis in Section 5.2 imply about the effect of real exchange rate fluctuations? How is the end of Bretton Woods being a 'natural experiment' important for your conclusions here?

# Regression Results for Inflation Difference:

## OLS Regression Results

Dep. Variable:	Difference in Monthly Inflation	R-squared:	0.002			
Model:	OLS	Adj. R-squared:	-0.015			
Method:	Least Squares	F-statistic:	0.1043			
Date:	Sun, 23 Mar 2025	Prob (F-statistic):	0.748			
Time:	21:02:37	Log-Likelihood:	9.2884			
No. Observations:	62	AIC:	-14.58			
Df Residuals:	60	BIC:	-10.32			
Df Model:	1					
Covariance Type:	nonrobust					
=====						
	coef	std err	t	P> t	[0.025	0.975]
-----						
const	0.5748	0.062	9.268	0.000	0.451	0.699
Spain Real Exchange Rate Monthly Growth	0.0171	0.053	0.323	0.748	-0.089	0.123
=====						
Omnibus:	1.991	Durbin-Watson:	1.378			
Prob(Omnibus):	0.369	Jarque-Bera (JB):	1.415			
Skew:	0.361	Prob(JB):	0.493			
Kurtosis:	3.164	Cond. No.	4.45			

# Regression Results for Industrial Production Growth:

## OLS Regression Results

Dep. Variable:	Spain Industrial Production 12 Month Growth	R-squared:	0.008			
Model:	OLS	Adj. R-squared:	-0.009			
Method:	Least Squares	F-statistic:	0.4663			
Date:	Sun, 23 Mar 2025	Prob (F-statistic):	0.497			
Time:	21:02:37	Log-Likelihood:	-126.51			
No. Observations:	62	AIC:	257.0			
Df Residuals:	60	BIC:	261.3			
Df Model:	1					
Covariance Type:	nonrobust					
=====						
	coef	std err	t	P> t	[0.025	0.975]
-----						
const	3.7714	0.554	6.804	0.000	2.663	4.880
Spain Real Exchange Rate Monthly Growth	-0.3231	0.473	-0.683	0.497	-1.269	0.623
=====						
Omnibus:	46.782	Durbin-Watson:	1.805			
Prob(Omnibus):	0.000	Jarque-Bera (JB):	208.325			
Skew:	2.087	Prob(JB):	5.79e-46			
Kurtosis:	10.951	Cond. No.	4.45			

The Inflation Difference to Spain Real Exchange Rate Monthly Growth has a correlation coefficient of 0.0171 and the Industrial Production Growth to Spain Real Exchange Rate Monthly Growth has a correlation coefficient of -0.3231. The former has a value very close to 0, so it can be assumed that real exchange rate fluctuations have a minimal effect on the differences of inflation. The latter has a correlation coefficient of -0.3. It can be stated that real exchange rate fluctuations have a noticeable but not significant impact on industrial production. Precisely, it would adversely affect industrial production.

The collapse of the Bretton Woods system in 1971 portrayed a natural experiment by showing how economies behave under two distinct exchange rate regimes, fixed exchange rate system (Before 1971) and floating exchange rate system (After 1973).

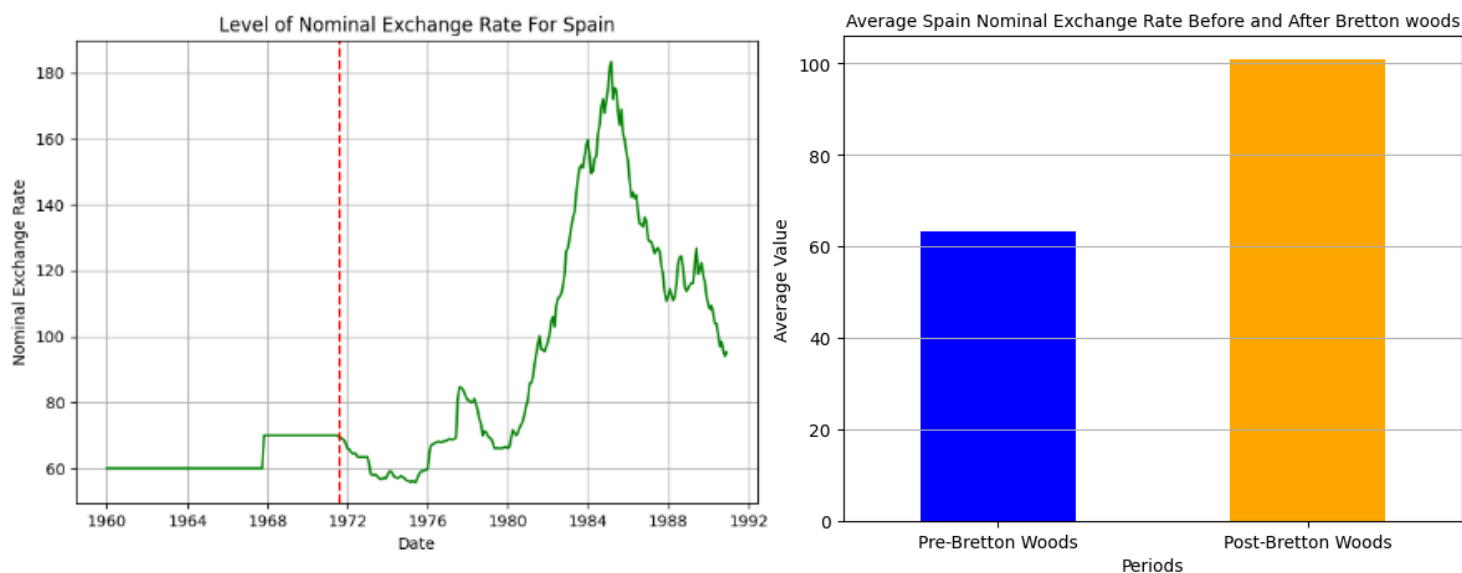


It showed that a fixed exchange rate system provided predictability for international trade and investment, while floating exchange rates introduced uncertainty, which could affect investment decisions and industrial production growth. The collapse showed how exogenous factors could bring about a natural change and such effects can be easily studied.

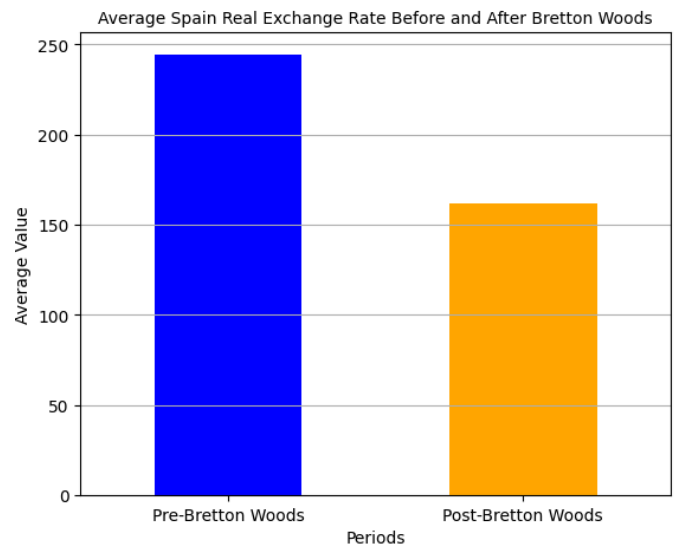
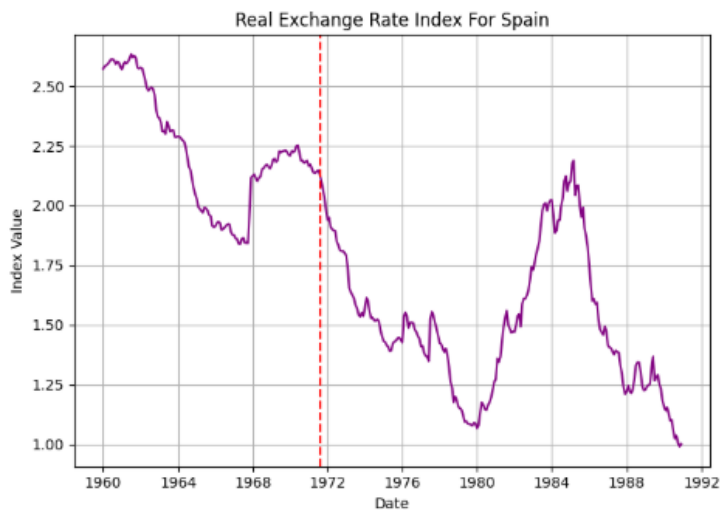
## 6: Extensions

### 6.1 Studying Levels vs Volatility

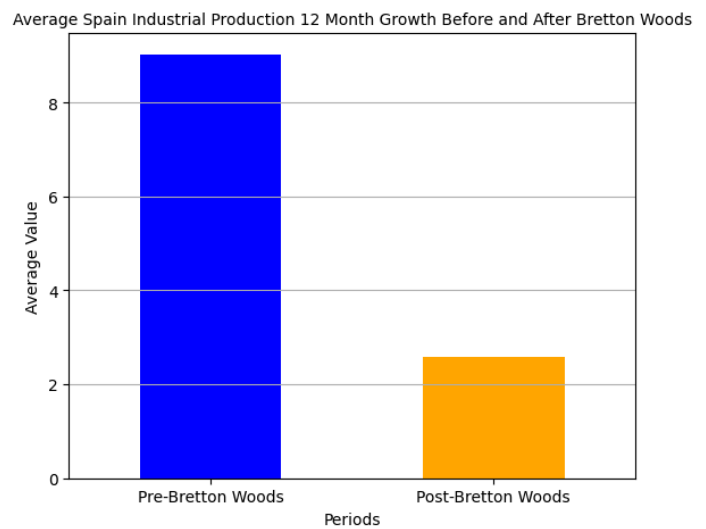
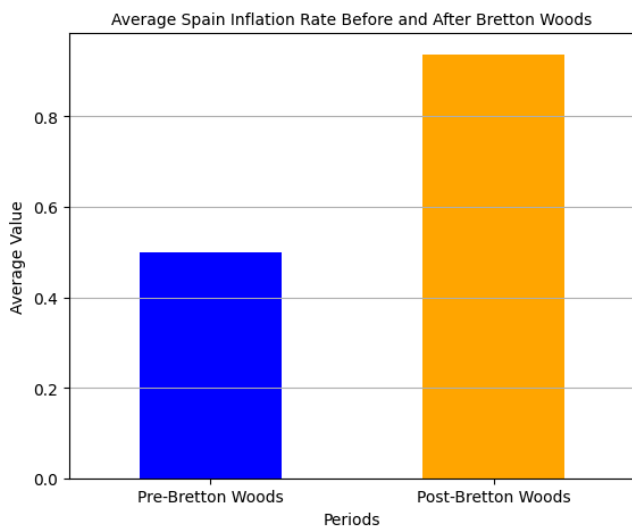
Is there evidence that the average level of nominal and real exchange rates changed markedly around the end of Bretton Woods? What about the average levels of inflation and 12-monthly industrial production growth? You should of course ensure that you include relevant data and graphs in your response.



Yes. From the graphs, nominal exchange rates remained stable (flat) due to fixed exchange rate regimes until August 1971 when Spain started leaving Bretton Woods. After that, there is a period of clear volatility likely caused by devaluation and floating rate dynamics, followed by a substantial rise from 1980 to the mid 1980s, confirming a marked change.

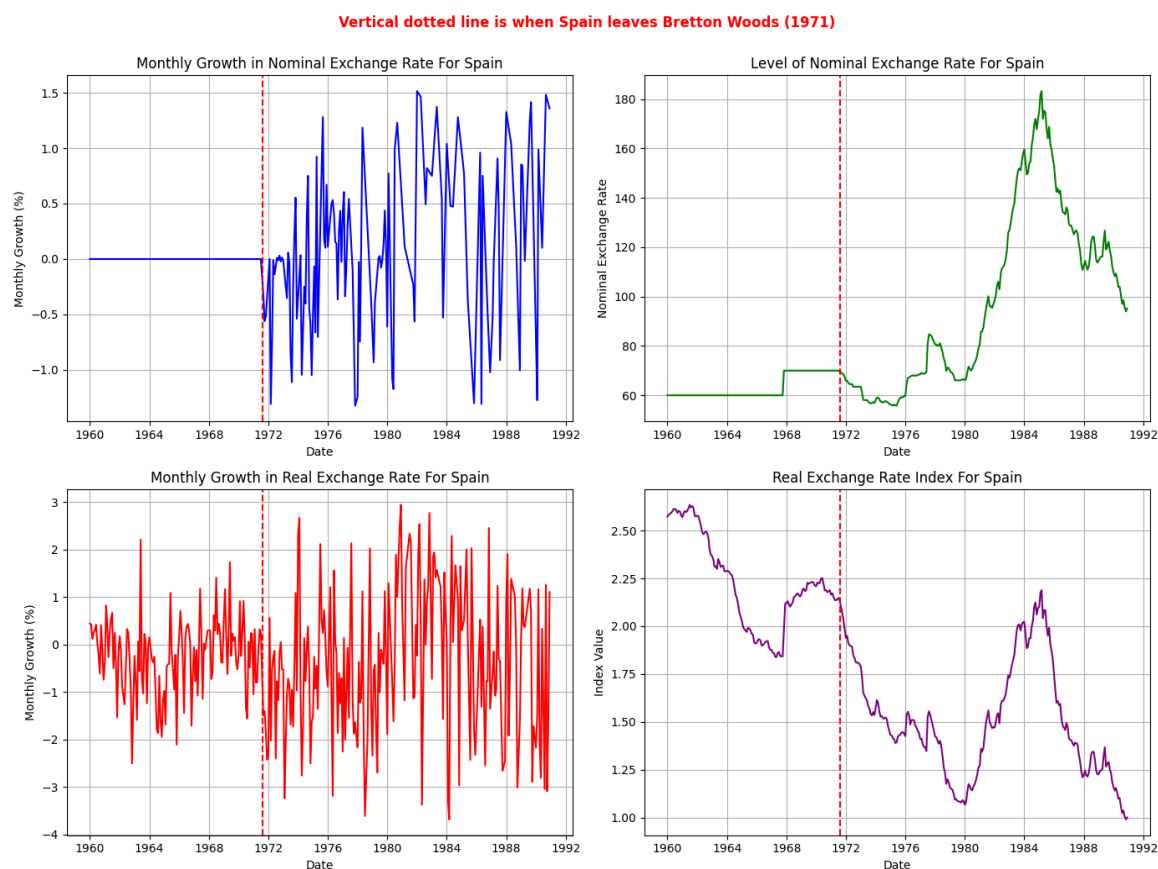


Yes, after August 1971, the level of real exchange rates dropped significantly.



From the graphs, we can see that the average levels of inflation and 12-monthly industrial production growth both changed markedly, with the former increasing and the latter decreasing,

You will need to be clear how you are defining ‘around the end of Bretton Woods’ (i.e. what to define as the pre and post Bretton Woods periods). How do your results change as you consider longer periods of time? What issues are there with using analysis based on longer periods to infer causal changes in the level of industrial production growth or inflation due to exchange rate differences?



1. Pre-Bretton Woods Period:
  - a. Fixed exchange rate regime under Bretton Woods (1944–1971).
2. Post-Bretton Woods Period:
  - a. Floating exchange rate regime after the system collapsed (from 1973 onward, after the Smithsonian Agreement failed).
3. Transition Period (1971–1973):
  - a. A short phase where the system was under stress, and attempts (Smithsonian Agreement) were made to maintain some fixed rates.

#### *Change of Results By Using Longer Time Periods*

1. Short-Term Analysis
  - a. Changes in Spain's industrial output and inflation are likely caused by the breakdown of the Bretton Woods System leading to exchange rate volatility

- i. It would allow for more direct effects of exchange rate volatility on inflation and industrial production to be studied
  - ii. Exchange rate movements that could cause sudden inflation spikes could be easily determined and seen
- 2. Medium-Term Analysis
  - a. Structural changes in monetary policy start to take effect, where the Spanish Central Bank could start intervening in the economy via open market operations or varying interest rates to reduce inflation and spur industrial output..
  - b. During this period, Spain would likely start to adapt to floating exchange rates, so the immediate disruptions will become less significant.
  - c. The effects on inflation may become more stable, while industrial production growth may stabilize with business cycles.
- 3. Long-Term Analysis
  - a. The effects of the collapse of the Bretton Woods System become less pronounced as they are being outweighed by broader macroeconomic trends (globalisation, technological progress, demographic shifts).
  - b. Causal attribution becomes weaker—other reforms (Central bank independence, financial liberalisation) may influence inflation and growth.
  - c. Diminishing influence of the change from a fixed to floating exchange rate system itself as economies adjust to a new norm.

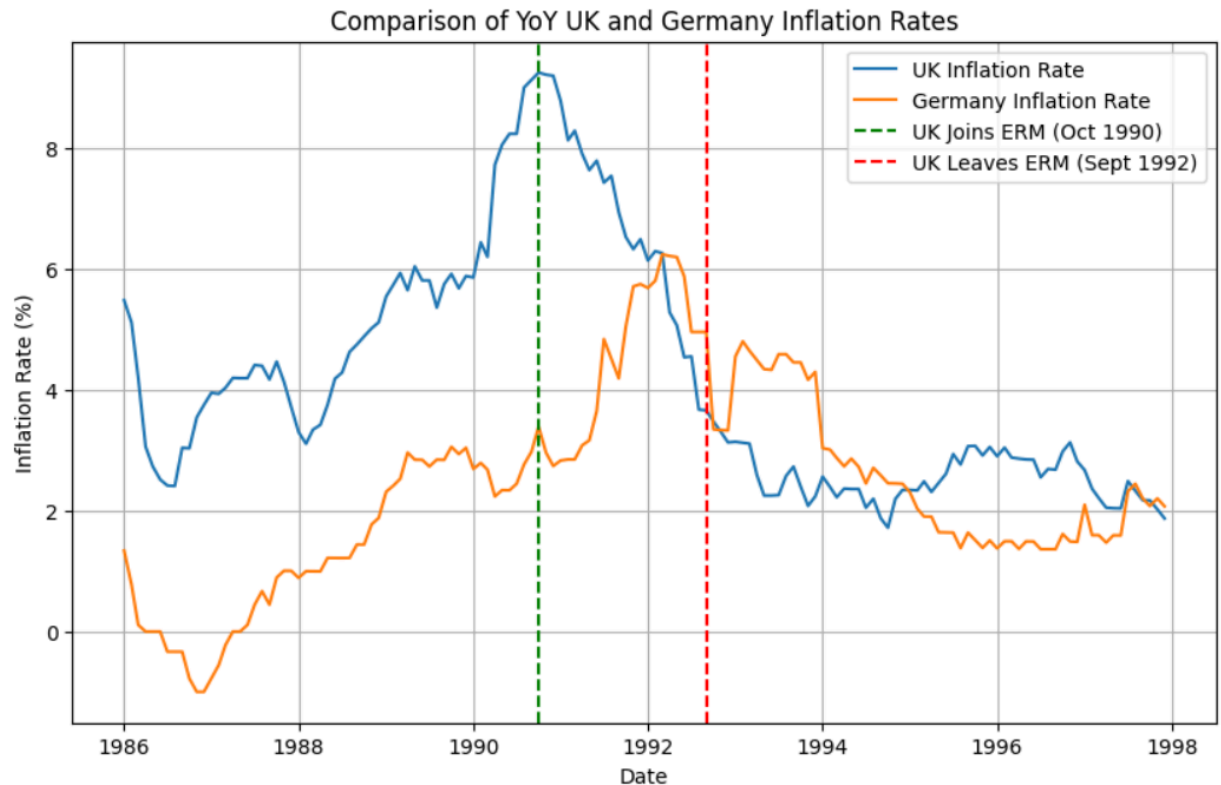
#### *Issues Using Longer Time Periods*

1. If longer time periods are used, this could include post 2000. The economic state of the world would have changed by then, with greater variations in nominal exchange rates due to greater global trade and the interconnectivity of economies. This could make previous fluctuations in nominal exchange rates after 1971 seem minimal, leading to errors in identifying the end of Bretton Woods. Thus it would be hard to isolate the effects of changes in the level of industrial production growth or inflation due to exchange rate differences.
2. Also, confounding variables like Spain's choice to join the EU and adopt the European Union in 1999 could potentially affect Spain's industrial output, inflation, real and nominal exchange rates. Also, technological advancements like the IT revolution in the 1990s which boosted industrial production independently of exchange rates could lead to erroneous overvaluation of the benefits of the collapse of the Bretton Woods System spurring greater industrial output. Thus it would be hard to isolate the effects of changes in the level of industrial production growth or inflation due to exchange rate differences.
3. There may be data quality issues when long term data sets are used. By capturing a larger set of data, the data may be susceptible to inconsistent measurement techniques, changing definitions of key economic variables, and data revisions. The definition of industrial output could change, leading to an inclusion or exclusion of more industrial activities that could affect the data. Also, the ways of measuring inflation could change (Different CPI baskets could be used) leading to inconsistencies and inaccuracies in data collection. Thus it would be hard to isolate the effects of changes in the level of industrial production growth or inflation due to exchange rate differences.

## 6.2 Black Wednesday: The UK Joining & Leaving the ERM

What was a key reason for why the UK chose to join the ERM and fix their exchange rate? Provide data and/or figures to support your answer.

A key reason why the UK chose to join the ERM and fix their exchange rate was due to the high inflation experienced by their economy before joining the ERM. This can be illustrated by the graph below:



The graph visually represents inflation rate trends in the UK and Germany from 1986 to 1996. Before the implementation of the exchange rate, UK inflation rates were significantly elevated. This inflationary disparity can be attributed to three primary factors:

- (1) Expansionary monetary policy in the mid-1980s, which aimed to stimulate economic growth.
- (2) Demand-pull inflation driven by a consumer boom, facilitated by tax reductions (for instance corporation tax falling from 52-35%) and financial deregulation that increased credit availability.
- (3) Cost-push inflation resulting from rising wages, influenced by a tightening labor market and the residual bargaining power of trade unions..

In contrast, Germany maintained stable inflation, averaging around 2.8% a year, mainly due to prudent fiscal policies and the Bundesbank's anti inflation stance. (As seen from the graph comparing UK and Germany Inflation rates).

By pegging the Pound to the Deutsche mark, this meant that they would essentially follow Germany's monetary policy discipline, signaling to markets, businesses and households that it was serious about keeping inflation low. At its crux, the UK government was basically signalling their public commitment to prioritising stable inflation over other goals like growth or lower unemployment.

What factors led George Soros and other currency speculators to run on the pound? Provide data and/or figures to support your answer.

The UK joined ERM at 2.95 DM/pound. At that time, UK interest rates were much higher than Germany's. The UK was in a recession in the 1990s (GDP contracted by 1.4% in 1991) while Germany was hiking interest rates to deal with inflation pressures. Basically, the UK wanted economic growth while Germany was trying to stabilise their own economy, this mismatch in goals made the peg unstable.

$$M_t \bar{V} = P_t Y_t$$

With the UK economy contracting (decreasing Y) and inflation still relatively high (P rising). At a constant V (Money Velocity) it became unsustainable to maintain a constant M (Money supply). However, the Bank of England couldn't expand M (through rate cuts or easing) without breaking the peg. Yet reducing M to support the peg would mean going further into recession and pushing factors like unemployment up. Therefore, there was a fundamental misalignment between upholding the peg and reacting appropriately to current economic conditions at that time.

$$M_{UK} = Reserves_{UK} \times \frac{1}{RCR_{UK}} \times BMM_{UK}$$

Where:

$M_{UK}$ : UK Money supply

$Reserves_{UK}$ : Stock of foreign currency

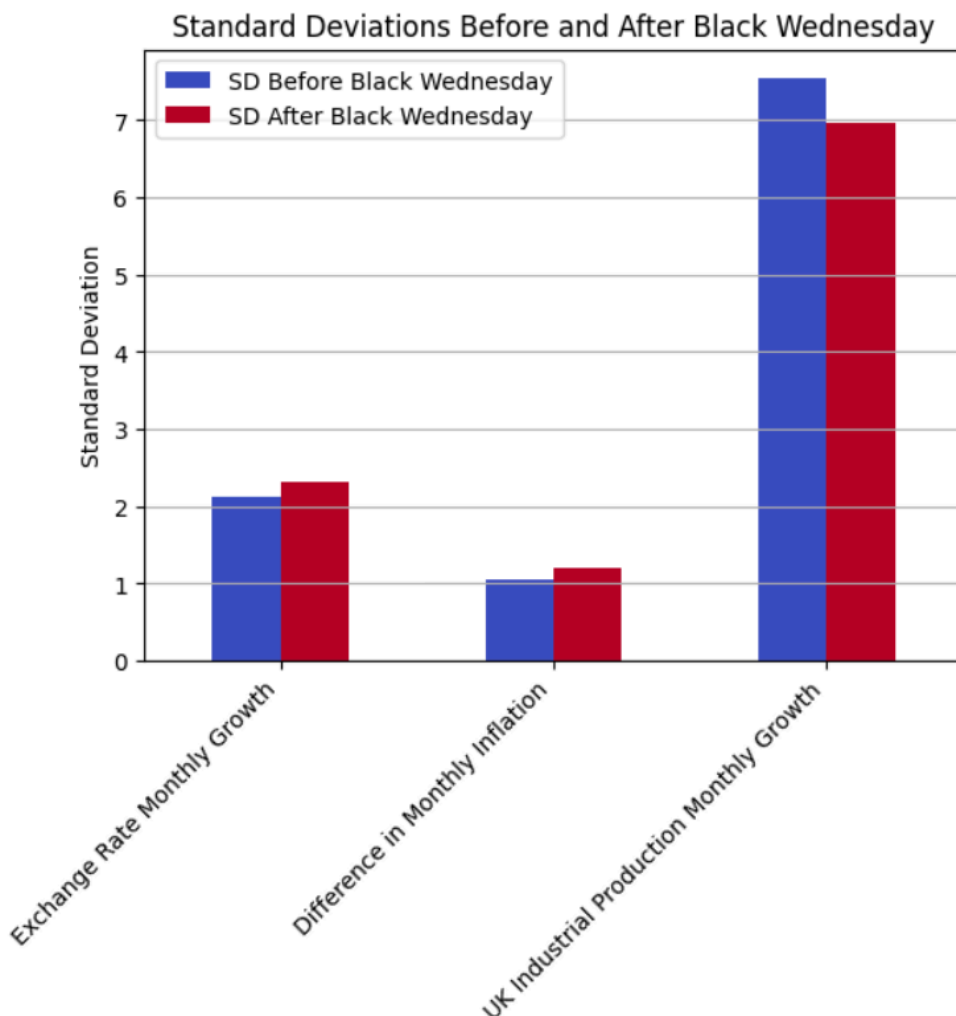
$RCR_{UK}$ : Reserve Cover ratio

$BMM_{UK}$ : Bank money multiplier

On Black Wednesday, the UK spent over 15 billion pounds trying to defend their currency, draining reserves rapidly. Speculators and investors started doubting the UK's ability to hold the peg, they wanted more foreign currency per pound held (raising RCR, dropping 1/RCR). Since interest rates were rising, banks became cautious and credit became tighter (BMM drops). Overall M shrank as all variables in the equation dropped, even though the economy needed easing to get out of the recession.

Soros and others could see that the UK couldn't defend the money supply and the peg simultaneously, thus, betting on devaluation became rational and profitable, as it was looking like the only way was to exit the ERM, regain control over monetary policy and let the pound float, which the UK did.

Is there evidence that the UK joining the ERM and leaving after Black Wednesday led to changes in the volatility of the monthly growth in the real exchange rate? Are there any corresponding changes in the volatility of either the difference in inflation between the UK and Germany or the growth in industrial production? Include graphs in your response.

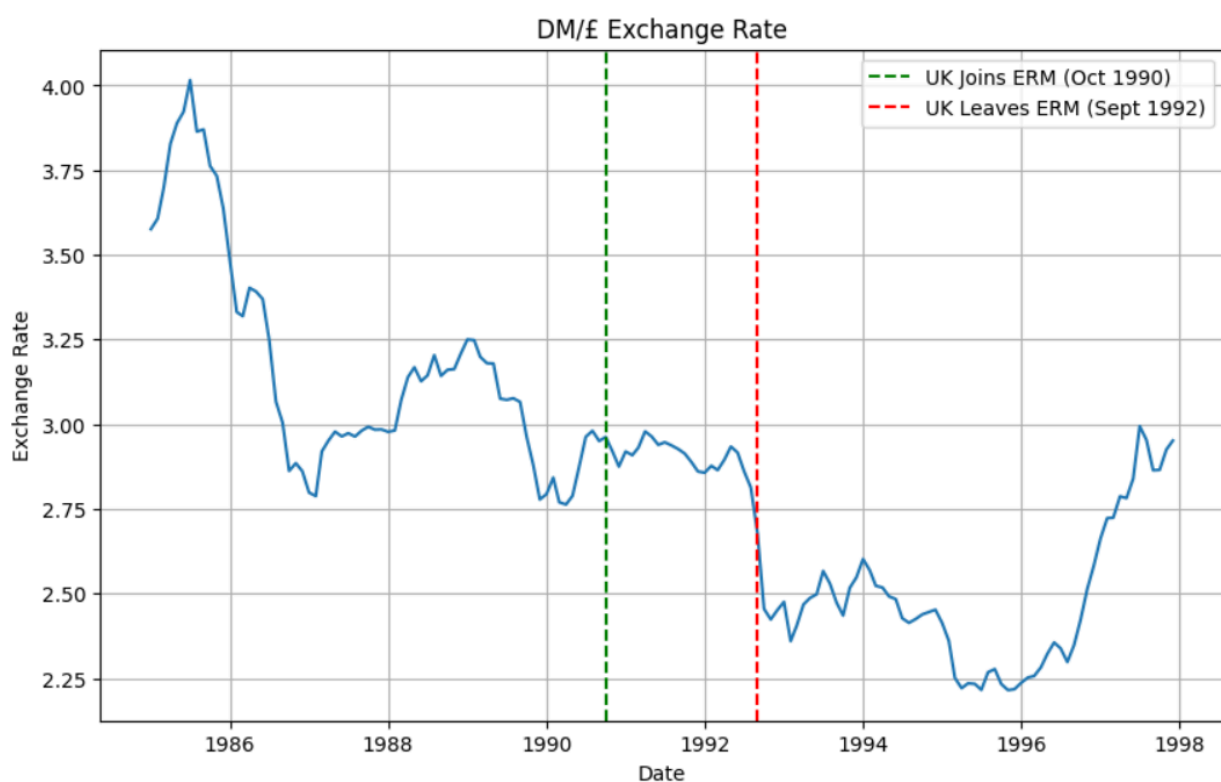


From an analysis of exchange rate data, it provides limited evidence that the UK's participation in the Exchange Rate Mechanism (ERM) and its subsequent departure following Black Wednesday led to a significant change in the volatility of the monthly growth in the real exchange rate. Looking at the graph, the standard deviation of the exchange rate monthly growth increased only marginally from 2.2 (before Black Wednesday) to 2.4 (After Black Wednesday). This small difference suggests that the exit from the ERM did not result in heightened exchange rate instability, contrary to theory that the ERM would provide a nominal anchor and commit monetary policy to an external target. Instead, it could be argued that the post-ERM period would have allowed the UK to adopt a more flexible monetary policy specific to their economy.

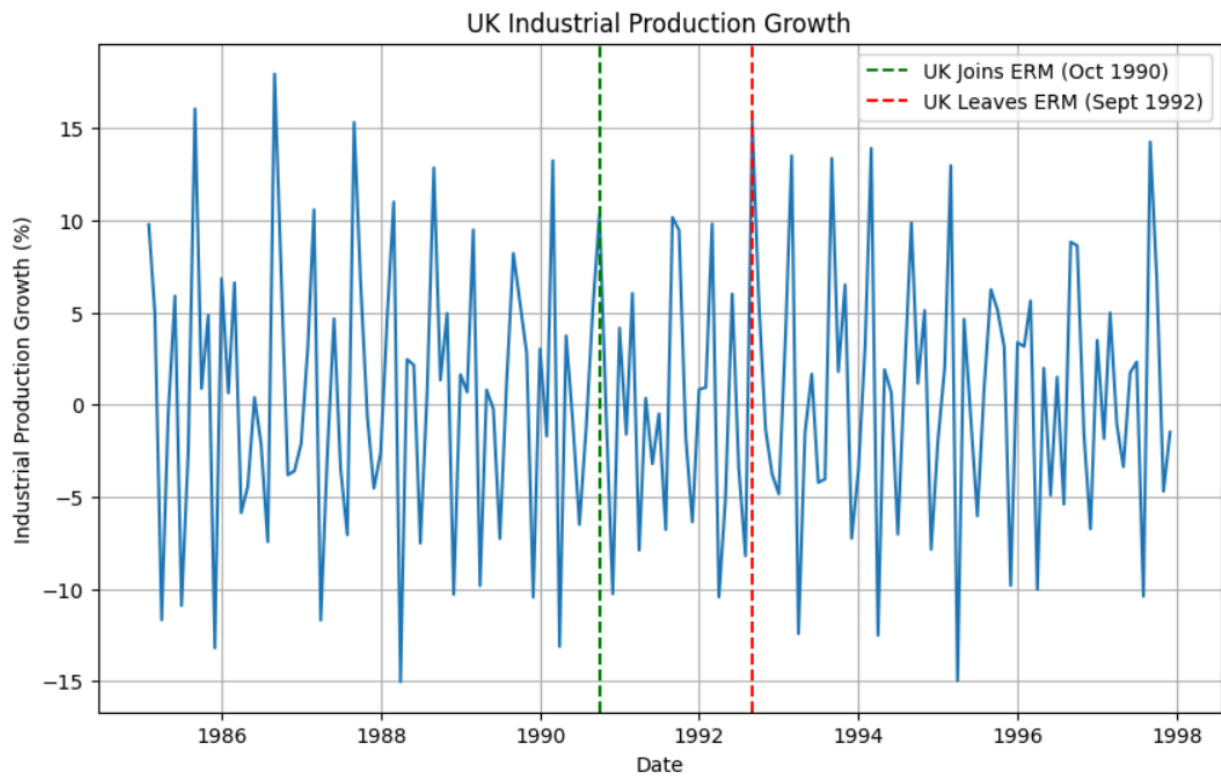
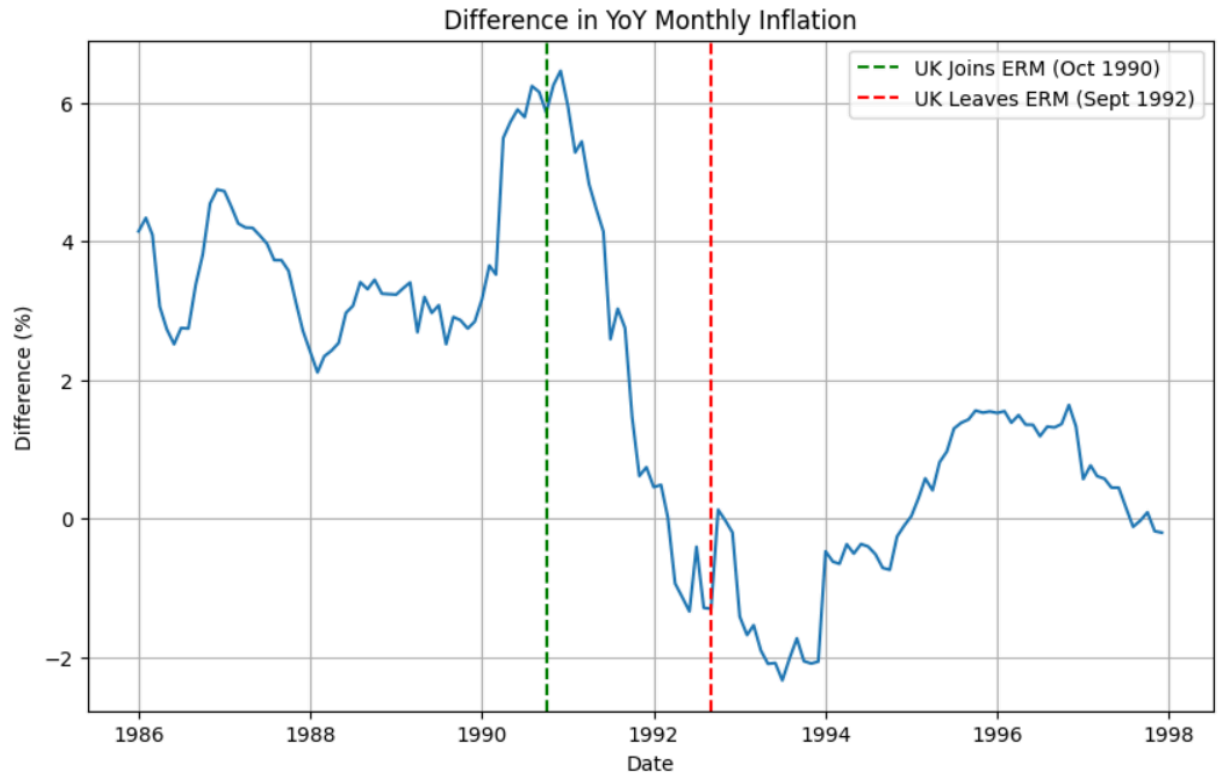
Looking at inflation and industrial production data, the volatility of inflation differential between the UK and Germany increased only slightly from 1.1 to 1.2, which implies that inflation expectations remained stable. This is consistent with the credibility theory of monetary policy: once the UK moved toward an independent inflation-targeting framework post-1992, it was able to maintain price stability even without the ERM's external discipline.

Most notably, the volatility of UK industrial production monthly growth decreased significantly, from approximately 7.4 before Black Wednesday to 6.0 afterward. This supports the view that leaving the ERM gave the UK more control over domestic macroeconomic conditions, enabling counter-cyclical policy responses to support output. Therefore, the observed decline in industrial production volatility may reflect improved macroeconomic management and reduced exposure to external shocks, lending weight to the argument that exit from the ERM had positive effects on real economic stability.

Analyse the extent of the change in exchange rates following Black Wednesday and any corresponding changes in the inflation difference and industrial production growth.







The UK's departure from the Exchange Rate Mechanism (ERM) on Black Wednesday (16 September 1992) marked a pivotal shift in its macroeconomic management, particularly in terms of exchange rate flexibility and monetary autonomy. The first graph, displaying the DM/£ exchange rate, shows a pronounced depreciation of the pound immediately following the UK's exit from the ERM. This sudden adjustment reflects the release of market pressures that had previously been suppressed under the fixed exchange rate system of the ERM. The post-ERM regime, with a floating exchange rate, restored monetary policy autonomy, allowing interest rates to be cut to stimulate domestic demand, particularly crucial during the early 1990s recession.

The second graph, which shows the difference in year-on-year inflation between the UK and Germany, indicates a steep decline in inflation differentials post-1992. Inflation in the UK fell significantly, converging toward German levels shortly after leaving the ERM. This suggests that fears of inflation spiralling under a floating exchange rate were largely unfounded. Instead, the UK's adoption of an independent inflation-targeting regime from 1992 helped anchor inflation expectations, emphasizing the importance of credible monetary policy in achieving low inflation.

The third graph, illustrating UK industrial production growth, shows that while volatility persisted, the magnitude of fluctuations moderately declined post-ERM exit. This could reflect enhanced macroeconomic stability following a shift toward more responsive and flexible economic management.

The broader historical context reinforces this interpretation. The UK's membership in the ERM was marred by recession and high interest rates as the country attempted to maintain the pound's parity amid speculative pressures and divergent business cycles from Germany, especially in the wake of German reunification, which led to contractionary monetary policy by the Bundesbank. Post-exit, the pound's depreciation improved export competitiveness, and lower interest rates fostered economic recovery. Thus, the evidence suggests that while the exchange rate experienced a sharp initial adjustment, the overall shift away from the ERM facilitated a decline in inflation differentials and more stable industrial output, reflecting successful institutional and policy adaptation to a floating regime.

Overall, what do your findings suggest about the importance of exchange rates? What concerns do you have about drawing such conclusions from the analysis of this particular period?

Our findings tell us that exchange rates play a critical role in shaping macroeconomic outcomes. When the UK was in the ERM, its inflation difference with Germany fell significantly although exchange rates were largely constant. In this case, we can argue that the pegging of the pound to a more stable economy helped keep inflation expectations low, leading to lower inflation in the UK. The UK's exit from the ERM and subsequent transition to a floating exchange rate regime facilitated a sharp depreciation of the pound, which, in turn, helped restore export competitiveness and enabled a more accommodative monetary policy stance. This helped aid economic recovery from a recession and in reducing inflation differentials relative to Germany, suggesting that a market-determined exchange rate can serve as an effective shock absorber when domestic economic conditions diverge from those of trading partners.

However, there are some cautions in drawing broader conclusions from this specific episode. Firstly, There were a multitude of variables that shaped the UK economy in the early 1990s, from German reunification, speculative currency pressures, and structural weaknesses in the British economy. This

basket of variables were exclusive to the UK and that time period so there will be inaccuracies in generalising the results for other periods and countries. Second, the observed results may be driven by lag or concurrent policy shifts, such as the introduction of inflation targeting and fiscal consolidation, which distorts the idea that results were purely due to the UK's management of exchange rates. Overall, the results of the incidents we analysed were affected by circumstances exclusive to the UK during the 1990s, and unless the exact same variables are present there will be inaccuracies in generalising causal relations to other nations in other time periods.