Globalisation, Bargaining Power, and the Phillips Curve

Structural Shifts in Inflation - Unemployment Dynamics

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ABSTRACT

Phillips curve captures a tradeoff that happens between inflation and unemployment. My research works on the hypothesis that with the advent of global integration through increased globalisation and countries forming a global village, this relationship between unemployment and inflation has been systematically weakened, creating a flatter phillips curve relationship that is more pronounced in developed countries with higher level of global integration and higher real wage relative to those in developing countries.

My research argues that in the era of globalization, governments actually have more freedom (what they call "policy space") to use economic policies like government spending (fiscal policy) to boost the economy and reduce unemployment, without causing runaway inflation. This goes against what many mainstream economists believe.

Introduction

- **The Phillips Curve Framework**

The Phillips curve describes an inverse relationship between unemployment and inflation. This fundamentally suggests that periods of low unemployment are associated with higher inflation rates, and vice versa, creating a policy trade-off that has guided monetary and fiscal policy decisions for decades.

Originally observed by A.W. Phillips in 1958, this framework guided macroeconomic policy until stagflation in the 1970s challenged its validity (also analysed further in this report).

- **Inflation**

Inflation represents the increase in general price levels, measured through indices like the Consumer Price Index (CPI). Moderate inflation (2-3% annually) encourages economic activity by promoting spending over hoarding, while excessive inflation erodes purchasing power and creates market uncertainties. It can be actively controlled by the Central Bank through monetary operation, particularly by changing nominal interest rate (i).

- **Unemployment**

It measures the number of people who are looking for work but can't find a job i.e. are involuntary unemployed.

The New Keynesian Phillips curve has evolved to incorporate expectations and other dynamic factors, expressing current inflation as a function of expected future inflation, the output gap, and various supply shocks.The slope of the Phillips curve indicates the sensitivity of inflation to changes in economic slack, with a steeper curve suggesting that monetary policy can more effectively influence inflation through demand management.

An equation determining the wage level

$$W = PeF(u,z)$$
$$(-,+)$$

The aggregate nominal wage W depends on three factors:

1. The expected price level Pe - Both workers and firms care about real wages (W/P), not nominal wages (W). Workers do not care about how many currency units they receive but about how many goods they can buy with those currency units. They care about W/P. Firms do not care about the nominal wages they pay but about the nominal wages W they pay relative to the price P of the goods they sell. They also care about W/P.

2. The unemployment rate u - If we think of wages as being determined by bargaining, then higher unemployment weakens workers' bargaining power, forcing them to accept lower wages. Higher unemployment allows firms to pay lower wages and still keep workers willing to work.

3. The catchall variable z - It stands for all the factors that affect wages, given the expected price level and the unemployment rate. Unemployment insurance or Unionization, i.e. the share of trade union membership among workers, may increase bargaining power.

An equation determining the Price level

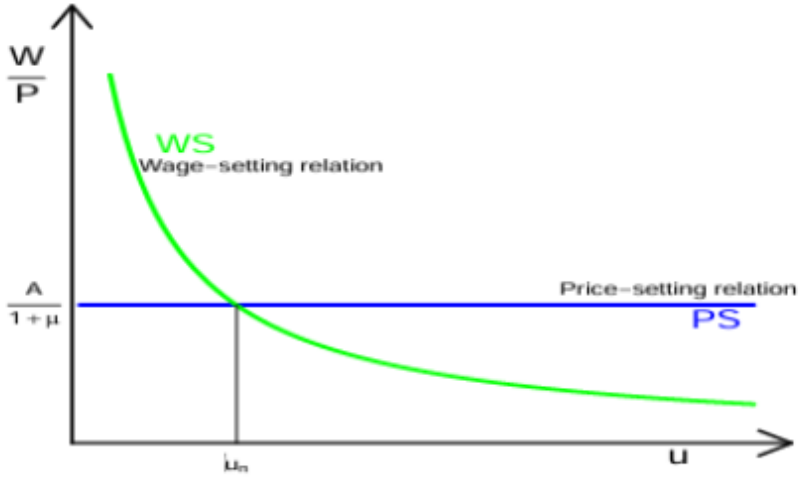
There is bargaining power for workers, and there is market power for entrepreneurs. Thus, it is assumed (with A = 1) that

$$P = (1+\mu)W$$

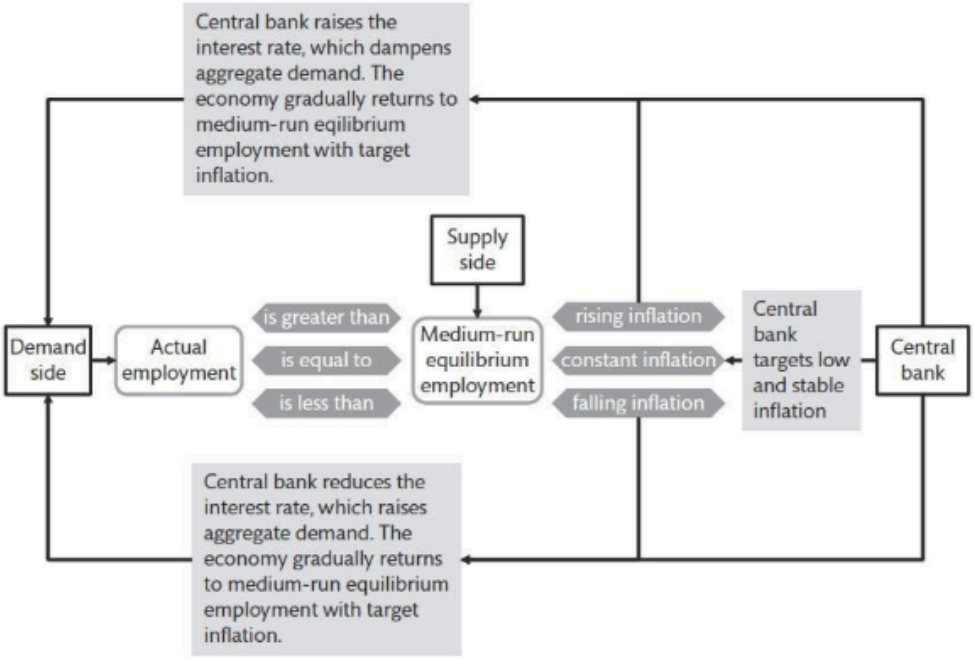
with μ being a mark-up of the price over the cost of production. We now have the wage-setting equation $W = PeF(u,z)$ and the price-setting equation $P = (1+\mu)W$.

Wage setting, price setting, equilibrium

Now these two together helps in determining what we call as 'Natural Rate of Unemployment'



This relationship is self - equilibrating i.e. in case of any shocks or disequilibrium due to any reason, the economy has a tendency to come back to natural rate of unemployment in long run, this can be fastened through monetary or fiscal policies by the way described in the below image.



Data and Estimation Issues

This paper utilizes seasonally adjusted data for the United States and India spanning 1980 to 2023 to analyze the flattening of the Phillips curve in the post-globalization era. Inflation data for both countries have been sourced from the World Bank Data Centre, which aligns closely with national estimates by the respective statistical agencies. Unemployment data for the United States is obtained from the IMF and ILO for all years in the sample, providing a reliable and continuous series. For India, unemployment figures from 1990 onwards also come from the IMF and ILO, ensuring methodological consistency with the US data.

However, for the period 1980 to 1990, Indian unemployment data is taken from comprehensive surveys conducted jointly by the World Bank and ILO, as official data from that era is widely recognized to be unreliable. All data series have been seasonally adjusted to account for shocks and temporary fluctuations, thereby enhancing the robustness of the estimation.

Pre- Globalisation data

Year	Inflation_India	Inflation_USA	Unemployment_India	Unemployment_USA
1980	11.3	13.5	5.4	7.1
1981	12.7	10.4	5.3	7.6
1982	7.7	6.2	5.3	9.7
1983	12.6	3.2	5.3	9.6
1984	6.5	4.4	5.2	7.5
1985	6.3	3.5	5.2	7.2
1986	8.9	1.9	5.2	7
1987	9.1	3.6	5.1	6.2
1988	7.2	4.1	5.1	5.5
1989	4.6	4.8	5.1	5.3
1990	11.2	5.4	5.2	5.6

Post- Globalisation Data

Year	Inflation_India	Inflation_USA	Unemployment India	Unemployment USA
1991	13.5	4.2	6.737	6.8
1992	9.9	3	6.815	7.5
1993	7.3	3	6.798	6.9
1994	10.3	2.6	6.83	6.119
1995	10	2.8	7.014	5.65
1996	9.4	2.9	7.181	5.451
1997	6.8	2.3	7.279	5
1998	13.1	1.5	7.487	4.511
1999	3.4	2.2	7.709	4.219
2000	3.8	3.4	7.77	3.992
2001	4.4	2.8	7.957	4.731
2002	5	1.6	8.102	5.783
2003	4.1	2.3	8.36	5.989
2004	4	2.7	8.531	5.529
2005	3.7	3.4	8.7	5.084
2006	6.7	3.2	8.625	4.623
2007	5.9	2.9	8.536	4.622
2008	9.2	3.8	8.354	5.784
2009	10.6	-0.3	8.384	9.254
2010	9.4	1.6	8.319	9.633
2011	8.1	3.1	8.168	8.949
2012	10	2.1	8.095	8.069
2013	9.4	1.5	8.037	7.375
2014	5.8	1.6	7.981	6.168
2015	4.9	0.1	7.915	5.28
2016	4.5	1.3	7.842	4.869
2017	3.6	2.1	7.733	4.355
2018	3.4	2.4	7.65	3.896
2019	4.8	1.8	6.51	3.669
2020	6.2	1.3	10.195	8.055
2021	5.5	4.7	7.713	5.349
2022	6.7	8	7.33	3.65
2023	5.4	4.1	4.172	3.638
2024	4.7	3	4.202	3.67

Country specific Analysis

Phillips Curve Results

India: Pre and Post-Globalisation Analysis

Empirical results are reported in Table 1 to Table 4. Conventional OLS method is used in compliance with all the CLRM assumptions.

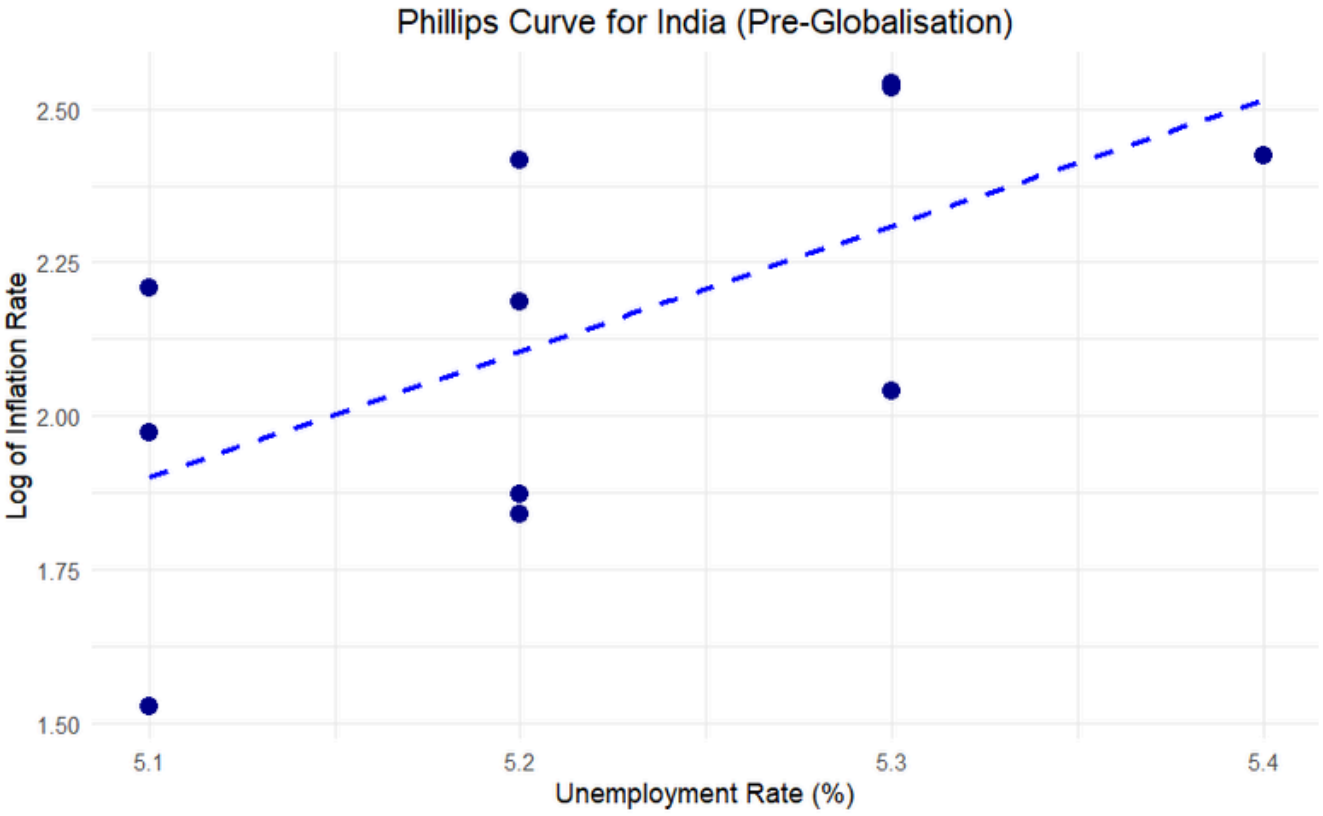
Regression Results: India Pre-Globalisation Phillips Curve

	Dependent variable:
	Log(Inflation Rate)
Unemployment Rate	2.048**
	(0.867)
Constant	-8.544*
	(4.525)
Observations	11
R^2	0.383
Adjusted R^2	0.314
Residual Std. Error	0.269 (df = 9)
F Statistic	5.578** (df = 1; 9)
Note:	*p<0.1; **p<0.05; ***p<0.01
	Standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001

Table 1

The regression results for India's pre-globalization Phillips curve reveal several noteworthy findings that challenge conventional economic theory. The estimated coefficient on the unemployment rate is 2.048, statistically significant at the 5% level ($p<0.05$), indicating a positive relationship between unemployment and the change in inflation rates. This finding contradicts the traditional Phillips curve hypothesis, which posits an inverse relationship between these variables.

This counterintuitive result may reflect the unique structural characteristics of India's economy during this period. It was a phenomenon largely driven by a confluence of factors: the pervasive global stagflation and oil price shocks that inflicted cost-push inflation; adverse domestic supply shocks, particularly recurring monsoon failures impacting agricultural output and food prices; deeply embedded adaptive inflation expectations that fueled a wage-price spiral; systemic structural rigidities within the "License Raj" era, hindering flexible labor market adjustments and efficiency.



The model demonstrates moderate explanatory power with an R^2 of 0.383, indicating that unemployment accounts for approximately 38.3% of the variation in log inflation rates.

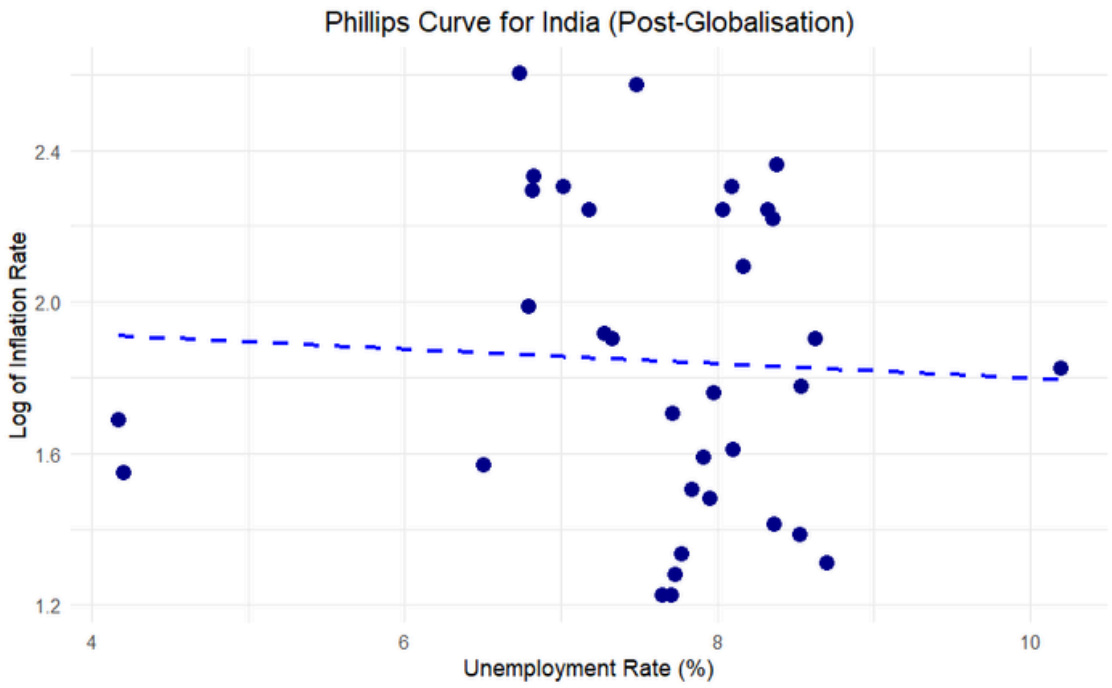
The regression results for the post-globalisation period in India show a dramatic change compared to the pre-globalisation era. The coefficient on the unemployment rate is now -0.019 and statistically insignificant, indicating a very weak and essentially nonexistent relationship between unemployment and inflation. This is a stark contrast to the pre-globalisation period, where the coefficient was 2.048 and statistically significant.

Regression Results: India Post-Globalisation Phillips Curve

	Dependent variable:
	Log(Inflation Rate)
Unemployment Rate	-0.019
	(0.064)
Constant	1.991***
	(0.493)
Observations	34
R^2	0.003
Adjusted R^2	-0.028
Residual Std. Error	0.416 (df = 32)
F Statistic	0.090 (df = 1; 32)
Note:	*p<0.1; **p<0.05; ***p<0.01
	Standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001

Table 2

The sharp reduction in the coefficient—from 2.048 before globalisation to -0.019 after—illustrates a substantial flattening of the Phillips curve in India. While the pre-globalisation results suggested a strong (and even positive) relationship between unemployment and inflation, the post-globalisation results show that this relationship has almost disappeared.



Country	Period	Coefficient (β)	Significance
India	Pre-Globalization	+2.048**	Significant
India	Post-Globalization	-0.019	Insignificant

USA: Pre and Post-Globalisation Analysis

The United States provides an archetypal example of how globalisation has transformed Phillips curve relationships in a developed economy context. During the pre-globalisation era, roughly spanning from the 1960s through the early 1980s, the U.S. economy exhibited relatively clear Phillips curve patterns, though these were disrupted by significant supply shocks and policy changes.

The early 1980s marked a critical transition period that highlighted both the limitations of simple Phillips curve relationships and set the stage for subsequent globalisation effects. The recession of 1981-1982 was deliberately induced by Federal Reserve monetary policy aimed at breaking persistent inflationary expectations, resulting in unemployment reaching 10.8% by December 1982. This period demonstrated that the Phillips curve relationship could be shifted through credible policy commitments

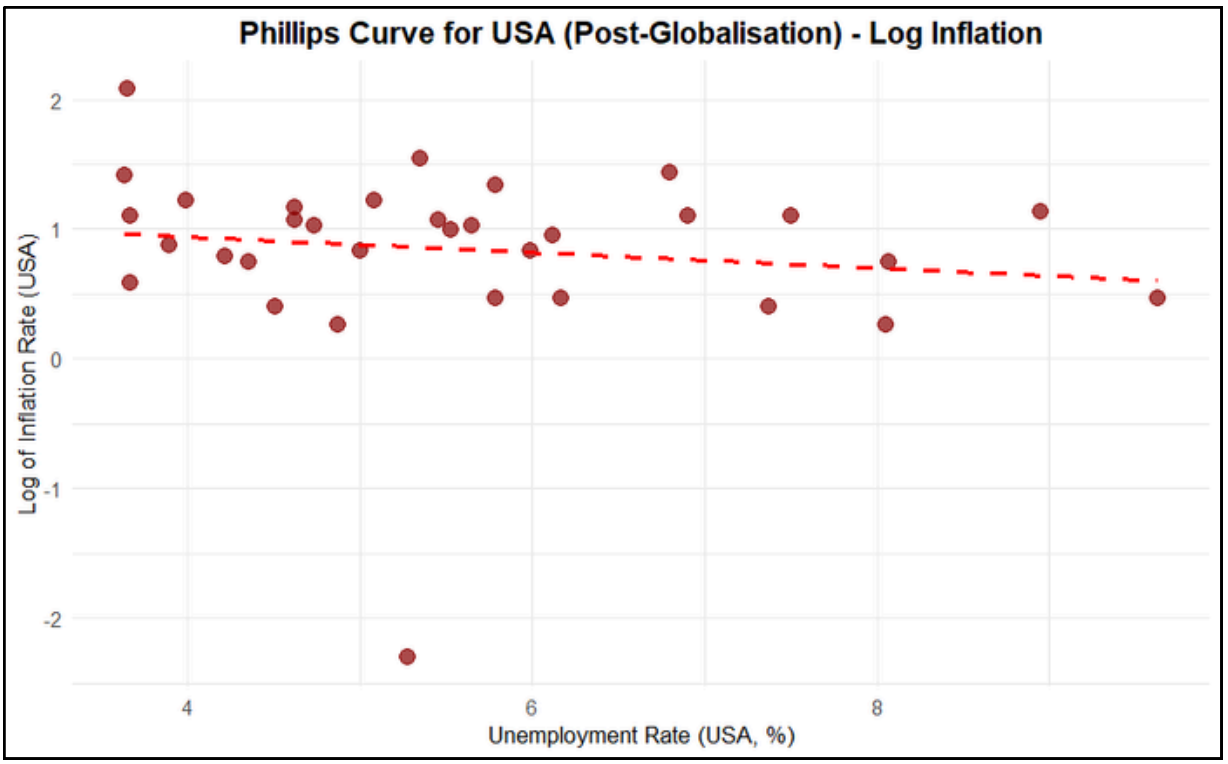
Regression Results: USA Pre-Globalisation Phillips Curve

	Dependent variable:
	Log(Inflation Rate)
Unemployment Rate	0.018
	(0.122)
Constant	1.441
	(0.884)
Observations	11
R^2	0.002
Adjusted R^2	-0.108
Residual Std. Error	0.575 (df = 9)
F Statistic	0.022 (df = 1; 9)
Note:	*p<0.1; **p<0.05; ***p<0.01
	Standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001

The regression results for the USA pre-globalisation period indicate a very weak and statistically insignificant relationship between unemployment and the log of the inflation rate. The coefficient on the unemployment rate is 0.018, with a standard error of 0.122, and is not statistically significant at conventional levels. This suggests that, prior to globalisation, changes in unemployment had virtually no measurable effect on inflation in the USA (which is result of stagflation USA was experiencing)

Regression Results: USA Post-Globalisation Phillips Curve

	Dependent variable:
	Log(Inflation Rate)
Unemployment Rate	-0.060
	(0.078)
Constant	1.180**
	(0.453)
Observations	33
R^2	0.019
Adjusted R^2	-0.013
Residual Std. Error	0.695 (df = 31)
F Statistic	0.593 (df = 1; 31)
Note:	*p<0.1; **p<0.05; ***p<0.01
	Standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001



The coefficient for Unemployment Rate in the USA Post-Globalisation Phillips Curve is observed at -0.060, which stands in stark contrast to a pre-globalization unemployment coefficient of 0.0018. This transition from a near-zero or slightly positive slope in the pre-globalization period to a negative, yet statistically insignificant, coefficient post-globalization, illustrates the substantial flattening of the Phillips curve. This flattening signifies a diminished responsiveness of inflation to changes in unemployment.

Time series plots (Trend Analysis)

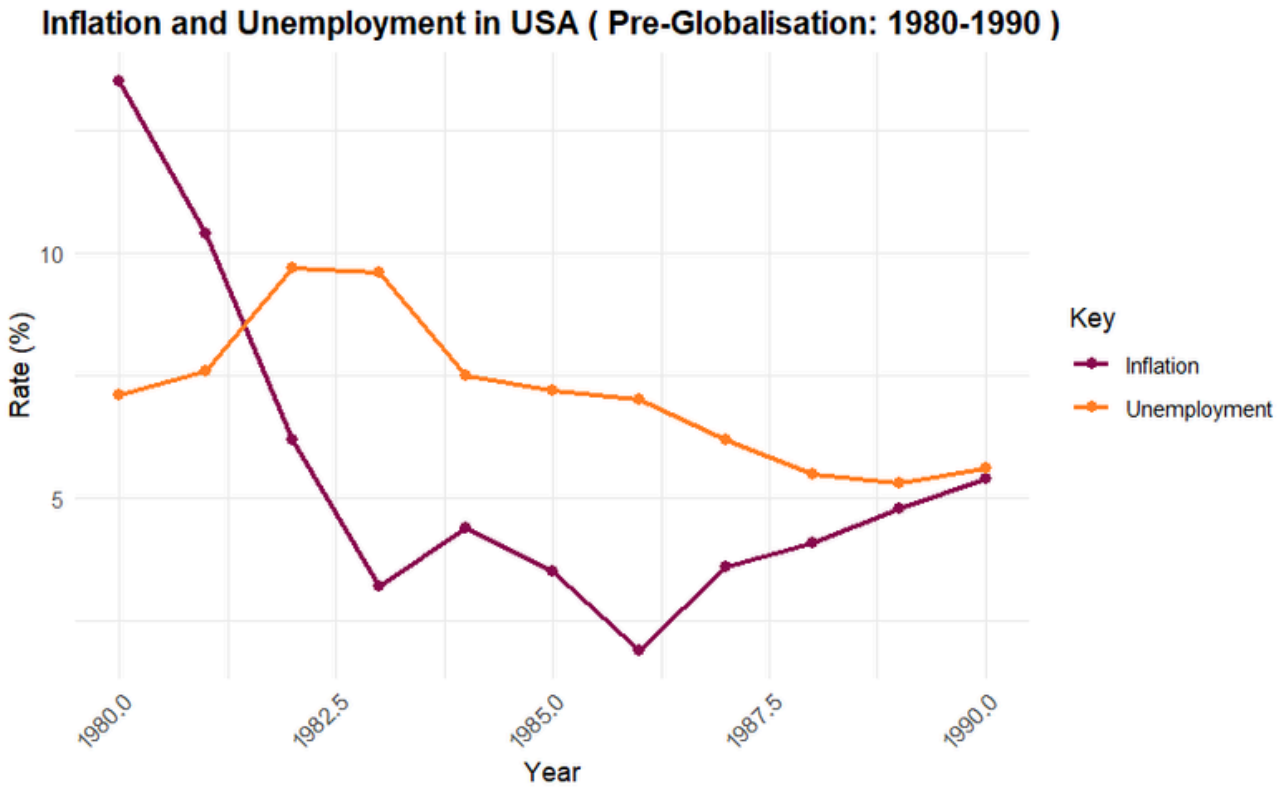
India Pre-Globalization (1980-1990):

The pre-liberalization era in India shows a complex relationship between inflation and unemployment. Due to lack of data estimates during the time period, datapoints are 5-yearly estimates of ILO smoothened for seasonal fluctuation. During this period, inflation exhibited significant volatility, while unemployment remained relatively stable within a narrow band. The data reveals several instances where high inflation coincided with stable unemployment rates, contradicting the traditional Phillips curve expectations. This anomaly can be attributed to India's closed economy during this period, where domestic supply shocks dominated economic dynamics.

India Post-Globalization (1991-1923):

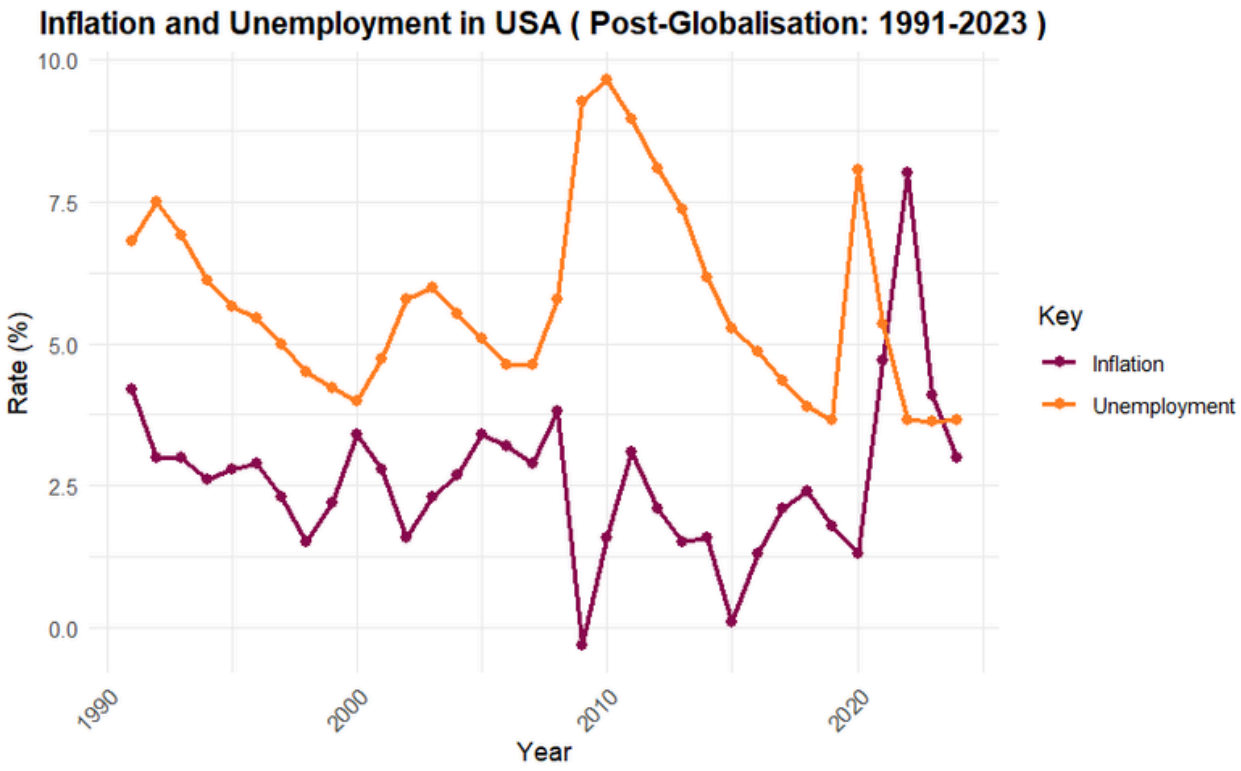
The post-liberalization period shows how inflation has became less volatile compared to the pre-reform era, while unemployment demonstrated greater sensitivity to economic cycles. The graph reveals that while some inverse relationship between inflation and unemployment persists, it has become significantly weaker than traditional Phillips curve models would predict. This flattening reflects India's increasing integration with global markets, where domestic price levels became more influenced by international commodity prices and less responsive to local labor market conditions.

USA Pre-Globalization (1980-1990):



The U.S. economy during the early 1980s presents a textbook case of stagflation, where both inflation and unemployment remained persistently high. The graph shows inflation peaking in the early 1980s before beginning its gradual decline following the Federal Reserve's aggressive monetary tightening. Unemployment followed a similar downward trajectory but with a lag, creating a period where both indicators improved simultaneously rather than showing the expected trade-off. This period was marked by significant structural changes in the U.S. economy, including Volcker's disinflation policies and the beginning of manufacturing sector decline.

USA Post-Globalization (1991-1923):



The U.S. post-globalization data demonstrates a near-complete breakdown of the traditional Phillips curve relationship. For most of this period, inflation remained anchored at low levels despite significant fluctuations in unemployment, a phenomenon economists attribute to globalization's disinflationary effects and improved monetary policy frameworks. The graph shows brief periods where the traditional trade-off reappeared, particularly during economic crises like the Great Recession and COVID-19 pandemic, but these proved temporary.

CONCLUSION

The observed flattening of the Phillips curve in both developed and developing economies, particularly post-globalization, can be attributed to structural shifts in wage-price dynamics, driven by the increasing integration of global markets. This phenomenon is more pronounced in developed economies due to their higher levels of global integration and the relative decline in domestic labor bargaining power.

The traditional wage-setting equation, $W = Pe\ F(u, z)$, highlights the importance of the catchall variable z, which encompasses factors such as unionization, unemployment benefits, and worker bargaining power. Globalization has systematically weakened these domestic determinants of wage growth through the following channels

With the rise of international trade and global labour markets, globalisation weakened workers' bargaining power in developed countries, as companies no longer relied solely on domestic labour. With globalisation, firms gained access to international labour markets. They could outsource production or services to countries with lower labour costs.This offshoring process reduced the reliance on domestic labour, directly undermining workers' ability to negotiate for higher wages which increased competition among workers globally, as domestic workers now had to compete with cheaper labour abroad. Globalisation also led to a decline in unionisation in many developed economies. As jobs become more mobile, unions struggled to maintain collective bargaining power. As a result, even when unemployment was low, workers were less able to push for higher wages, and inflation did not rise as it once did.

India's pre-globalization period exhibited a counterintuitive positive relationship ($\beta = +2.048$) between unemployment and inflation while United States displayed a near-zero relationship

(β = +0.018) during its stagflation period, where supply shocks had already undermined traditional Phillips curve mechanics.

The post-globalization estimates demonstrate a dramatic flattening in both nations, but with important distinctions. India's coefficient shifted to a statistically insignificant -0.019, indicating a weakened but not entirely dissolved relationship. The United States, however, moved to a slightly negative but equally insignificant -0.060, representing a more pronounced impact.

The comparative analysis demonstrates that while globalization has universally altered (flattened) the Phillips curve relationship, the effect proves strongest in economies with: (1) flexible capital mobility, (2) deep global integration, and (3) credible monetary policy frameworks. These conditions, most fully realized in the United States, explain why advanced economies exhibit more complete decoupling of inflation from domestic unemployment in the post-globalization era. Future research should examine whether this pattern holds across other developed/developing country dyads.

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