The Phillip's Curve and the Relationship between Unemployment and Inflation

Does it Apply to the US Economy?

Christian Conroy

Agenda

Does the Phillip's Curve Hold for the United States?

What is the Phillip's Curve?

Does the Phillip's Curve Apply to the United States?

Doe the relationship between unemployment and inflation change over time?

What correlations between unemployment and inflation exist?

Wages

Natural Rate of Unemployment

Inflation Targeting

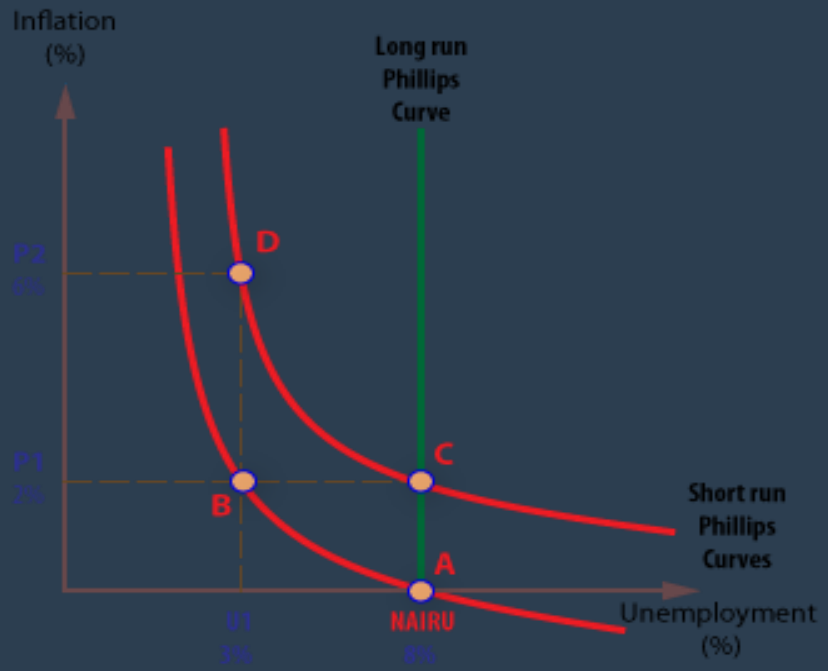
Productivity Growth

Global Factors

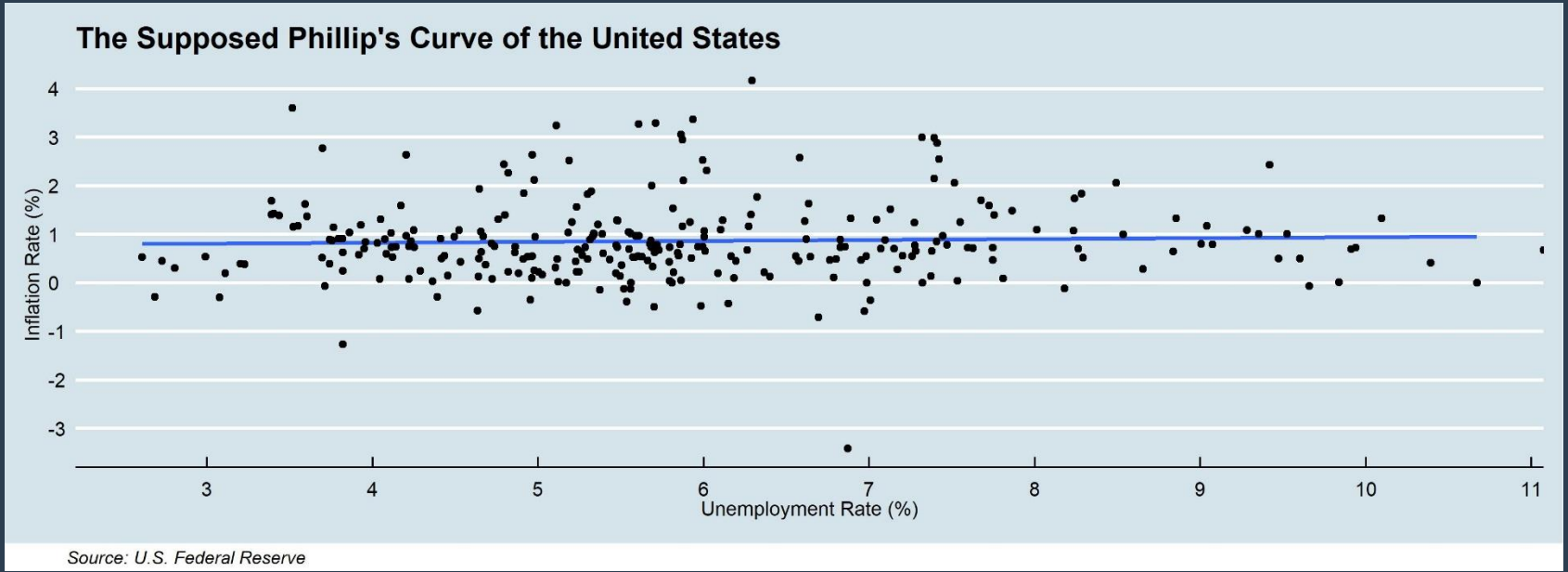
Does the Phillip’s Curve Hold for the United States?

What is the Phillip's Curve

- Suggests that a higher inflation rate will come with lower unemployment
- As employers run out of potential workers who do not already have a job, they'll have to outbid other firms
- The idea is that employers finding it harder to fill jobs will pay higher wages and thereby spur inflation

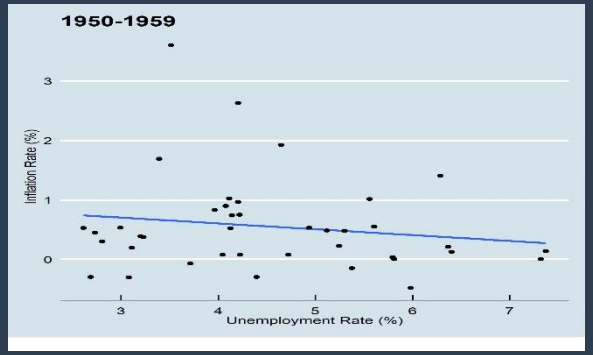


Does the Phillip's Curve Hold in the United States?

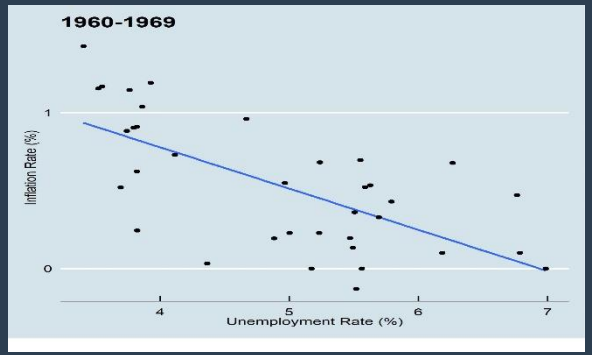


Did the Phillip's Curve Ever Hold in the US?

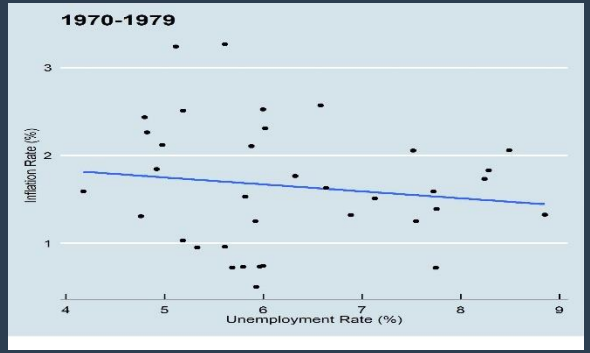
Decade of Prosperity



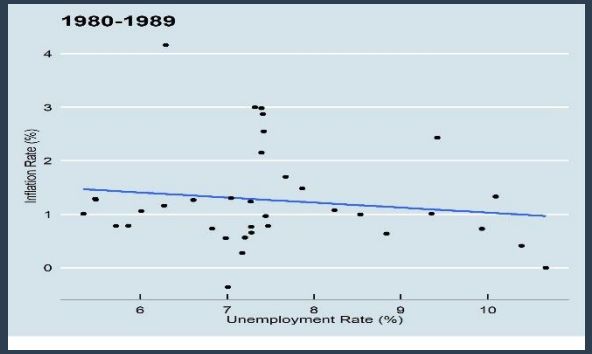
Wartime Inflation



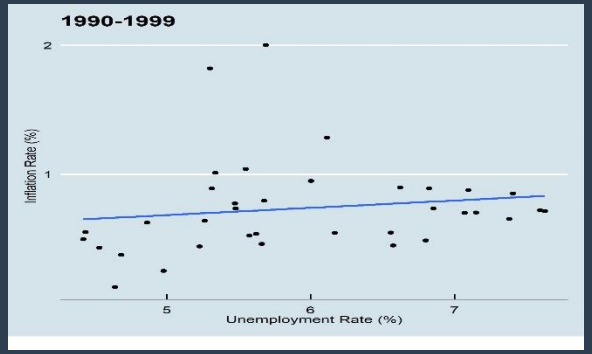
Stagflation and FRA



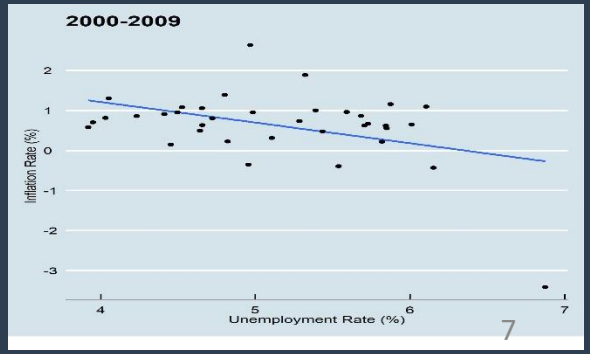
Recession and IR Increase



Savings and Loan Crisis



Dot-com and GFC



Does the Phillip's Curve Hold in the United States?

Evaluating the Phillip's Curve: Relationship Between Unemployment and Inflation

	Inflation (%) (1)	Inflation (%) (2)	Rho Transformed Inflation (%) (3)	Inflation (%) (4)	Inflation (%) (5)	Inflation (%) (6)	Inflation (%) (7)
Lagged Inflation				0.589***	0.587***	0.588***	0.606***
				(0.049)	(0.049)	(0.049)	(0.049)
Unemployment Rate (%)	0.019	0.193		0.002	0.114		
	(0.032)	(0.189)		(0.026)	(0.154)		
Unemployment Rate (%) - Squared		-0.014			-0.009		
		(0.015)			(0.012)		
Rho Transformed Unemployment Rate (%)			-0.000				
			(0.000)				
Lagged Unemployment (1)						0.008	-0.241
						(0.026)	(0.148)
Lagged Unemployment (2)							0.336
							(0.266)
Lagged Unemployment (3)							-0.083
							(0.149)
Dynamic	NO	NO	NO	YES	YES	YES	YES
Quadratic	NO	YES	NO	NO	YES	NO	NO
Rho Tranformed	NO	NO	YES	NO	NO	NO	NO
Observations	276	276	275	275	275	275	273
R^2	0.001	0.004	0.001	0.347	0.348	0.347	0.375
Adjusted R^2	-0.002	-0.003	-0.003	0.342	0.341	0.342	0.366
Residual Std. Error	0.856 (df = 274)	0.857 (df = 273)	0.693 (df = 273)	0.695 (df = 272)	0.695 (df = 271)	0.695 (df = 272)	0.678 (df = 268)
F Statistic	0.362 (df = 1; 274)	0.613 (df = 2; 273)	0.274 (df = 1; 273)	72.273*** (df = 2; 272)	48.281*** (df = 3; 271)	72.346*** (df = 2; 272)	40.194*** (df = 4; 268)

Notes:

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Other Factors Influencing the Relationship Between Inflation and Unemployment in the United States

It’s Not Just About the Direct Relationship

Other Factors Can Have Large Impact on the Relationship Between Unemployment and Inflation

Wages

More Flattening Lower Rates of Unemployment Not Leading to Higher Wages

Natural Rate of Unemployment

The slack between the unemployment rate and the natural rate of unemployment matters far more

Inflation Rate Targeting

Changing what constitutes expected inflation may have flattened the curve

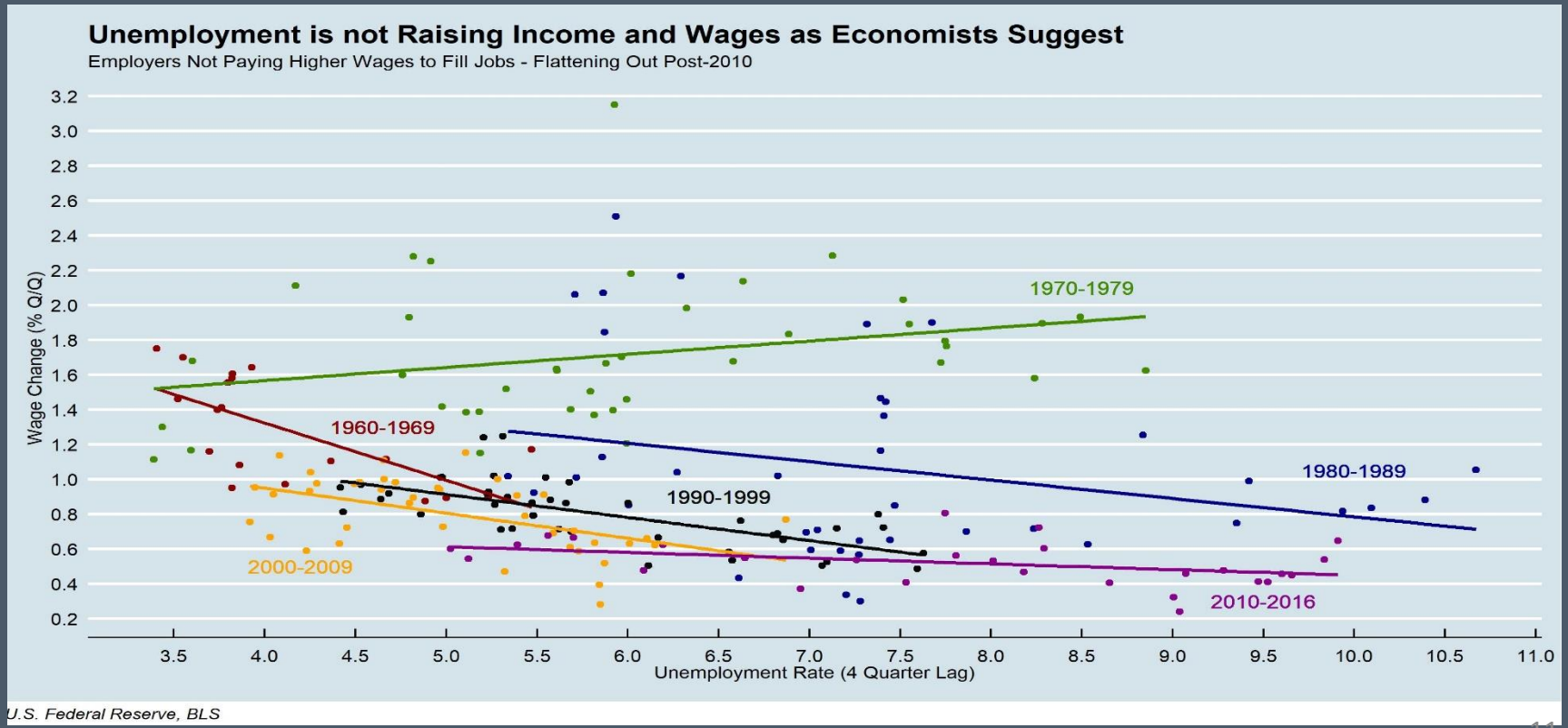
Productivity

Higher Wages do not always follow productivity gains

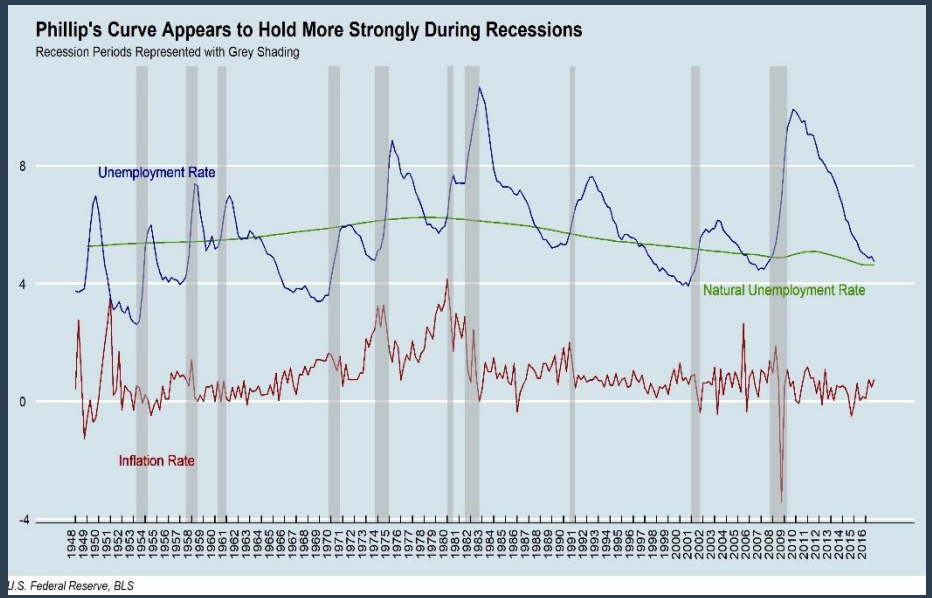
Global Factors

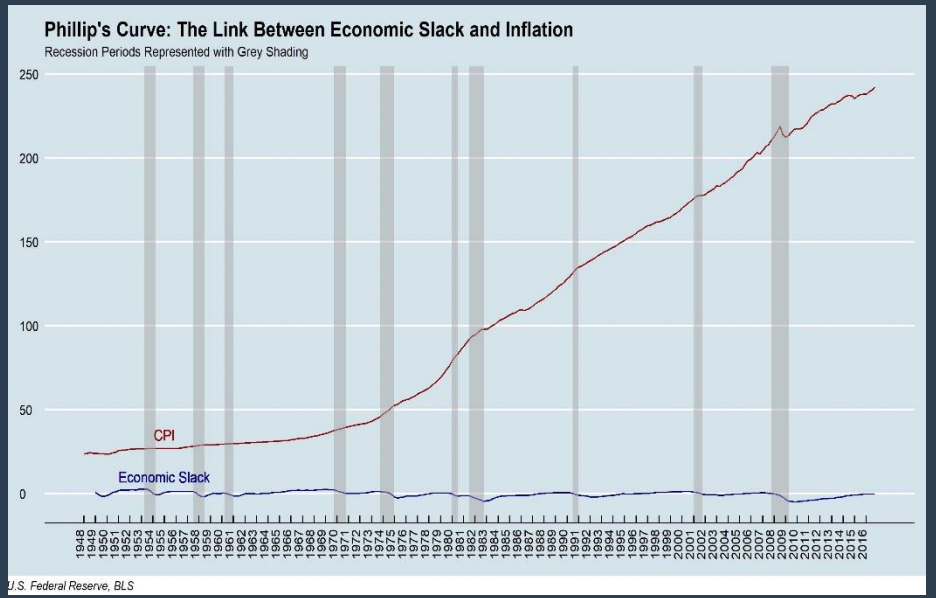
Factors like rising oil prices and global economic slack exert pressures on US inflation

The Broken Chain Between Unemployment and Wage Increases



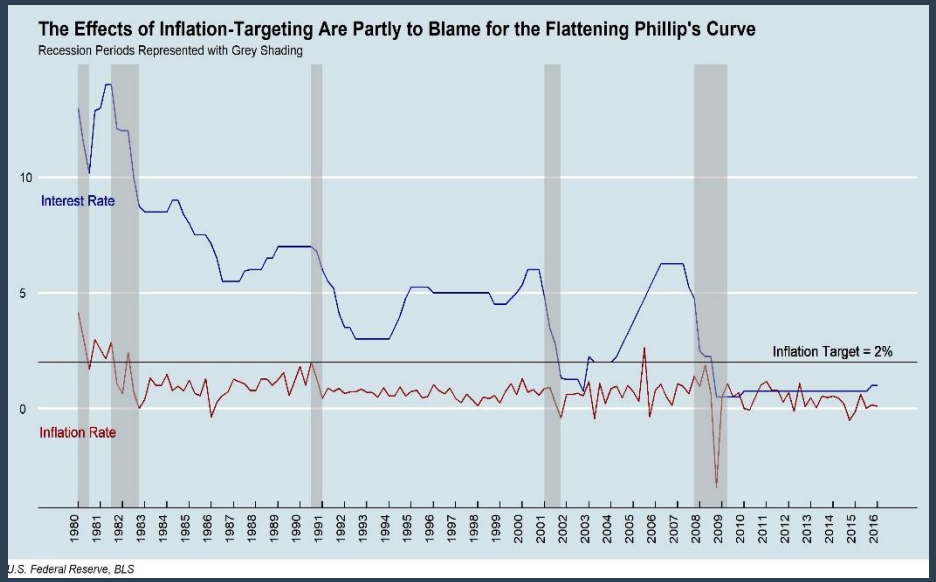
Economic Slack is More Important than the Unemployment Rate



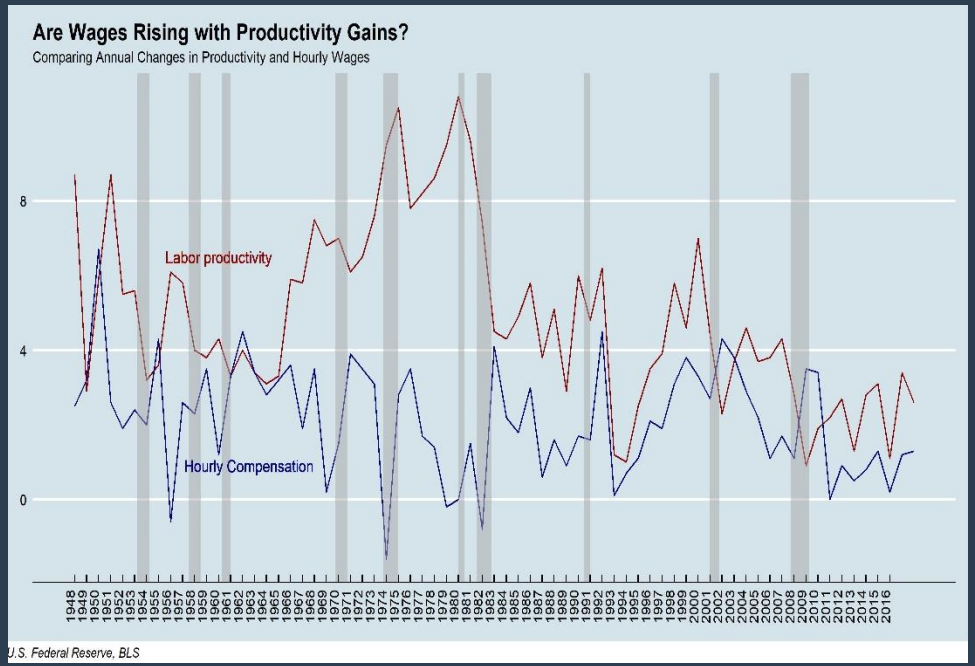


Did the Adoption of Inflation Targeting Flatten the Curve?

- Inflation targeting may have flattened the Phillip's curve
  - In 2012, US Federal Reserve Chairman Ben Bernanke set a 2% target inflation rate
  - People are expecting the target rate of inflation and ignoring what they see as temporary inflation fluctuations
  - What matters then is *unexpected* inflation
- The FOMC cannot effectively use interest rate adjustments under an inflation targeting policy



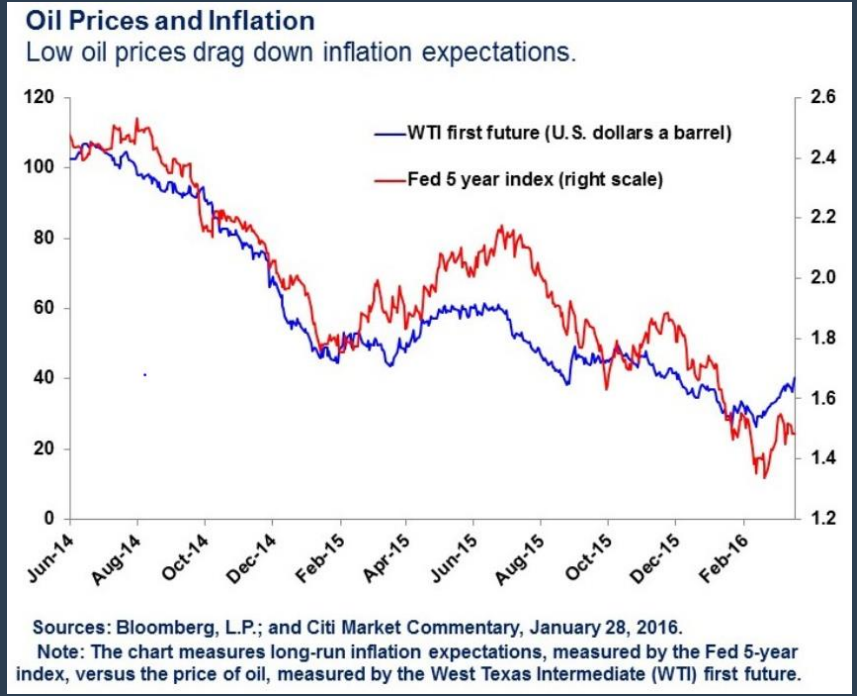
Are Wages Keeping Up with Productivity Gains?



- As productivity increases, new workers are entering the market that do not necessarily have high wages
- Productivity increases often come without the need for higher wages due to technological advancement and automation
- Higher productivity may also lead to higher working pay that does not translate into higher prices via inflation

There is no way to Geographically Contain the Relationship

- Global economic forces
  - Global economic slack may exert downward pressure on US inflation
  - Higher import prices with lower energy prices and higher dollar can produce disinflation
  - Higher oil prices may be keeping inflation above 2% target rate
- Methodology Issues
  - The official unemployment rate may not actually capture the number of potential workers



Does the Phillip's Curve Hold in the United States?

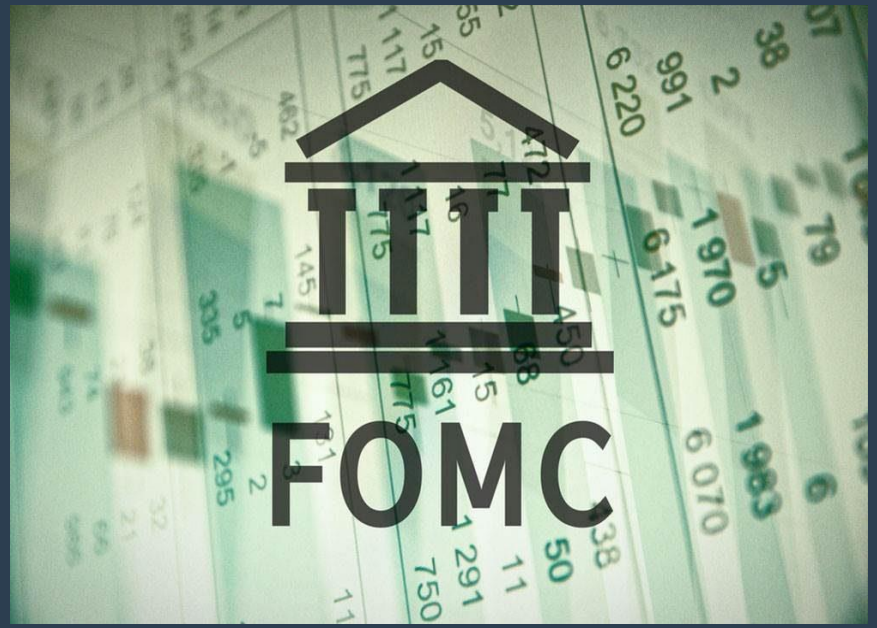
Evaluating the Phillip's Curve: Relationship Between Unemployment and Inflation

	Inflation (%) (1)	Inflation (%) (2)	Inflation (%) (3)	Inflation (%) (4)	Inflation (%) (5)	Inflation (%) (6)	Inflation (%) (7)
Lagged Inflation	0.269***	0.270***	0.270***	0.271***	0.269***	0.170**	0.327***
	(0.069)	(0.069)	(0.069)	(0.069)	(0.070)	(0.068)	(0.068)
Unemployment Rate (%)	-0.107**	-0.156				0.209***	-0.009
	(0.042)	(0.214)				(0.075)	(0.027)
Unemployment Rate (%) - Squared		0.003					
		(0.015)					
Lagged Unemployment (1)			-0.101**	-0.189	-0.547***		
			(0.042)	(0.209)	(0.195)		
Lagged Unemployment (1) - Squared				0.006			
				(0.014)			
Lagged Unemployment (2)					0.919***		
					(0.350)		
Lagged Unemployment (3)					-0.475		
					(0.346)		
Lagged Unemployment (4)					-0.030		
					(0.184)		
Interest Rate	0.052*	0.050*	0.054*	0.052*	0.051*	0.459***	0.108***
	(0.028)	(0.029)	(0.028)	(0.029)	(0.028)	(0.090)	(0.022)
Natural Rate of Unemployment	1.173***	1.210***	1.134***	1.196***	1.286***	0.685*	
	(0.381)	(0.414)	(0.386)	(0.413)	(0.395)	(0.379)	
Recession Dummy	0.165	0.165	0.097	0.094	0.134	0.859*	0.082
	(0.124)	(0.124)	(0.121)	(0.122)	(0.140)	(0.438)	(0.123)
Avg. Hourly Wages	0.060**	0.062**	0.057**	0.061**	0.068**	0.020	-0.015
	(0.026)	(0.028)	(0.026)	(0.028)	(0.027)	(0.026)	(0.010)
Inflation Targeting Dummy	0.103	0.105	0.124	0.129	0.163	1.763**	0.199
	(0.178)	(0.179)	(0.178)	(0.178)	(0.180)	(0.792)	(0.179)
Recession Unemployment Interaction						-0.098	
						(0.068)	
Inflation Targeting Unemployment Interaction						-0.206*	
						(0.117)	
Interest Rate Unemployment Interaction						-0.050***	
						(0.011)	

Implications of the Breakdown of the Phillip’s Curve

Policy Implications

- Under inflation targeting, stronger bank capital buffers may be more effective than interest rate management
- Letting prices rise or fall based on economic slack rather than the Phillip's Curve more effective



Thank you
Christian Conroy