Ned Phelps' Contributions as Viewed from Today through My Personal Filter

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Today’s Seminar is both on Phelps and about my “filter”

- Where my implicit macro model started, and how it was influenced by Phelps’ inventions and those of his co-authors and followers
- My resistance to some ideas or treatments, and how these debates stand today
- Aided today by two critiques, Woodford’s 1994 review of *Structural Slumps* and Akerlof’s 2007 Presidential Address

Even a Partial List of Phelps Contributions is Awesome

- Golden Rule of Capital Accumulation
- Expectations-augmented Phillips Curve
- Island Model of search unemployment
- Efficiency Wages
- Inflation targeting
- Models of staggered wage setting
- “Customer market” model of price setting
- Labor market hysteresis
- Time inconsistent preferences
- Macro analysis of supply shocks
- Structural Slumps

Look at the Names of the People Who Have Picked Up the Ball that Ned Threw

- Golden Rule of Capital Accumulation
  - Cass-Koopmans
- Expectations-augmented Phillips Curve
  - Everybody
- Island Model of search unemployment
  - Lucas, Mortensen, Mortensen-Pissarides
- Efficiency Wages
  - Calvo, Shapiro-Stiglitz
- Inflation targeting
  - Taylor, Sargent

Continuing the list of "Followers"

- Models of staggered wage setting
  - Taylor
- "Customer market" model of price setting
  - Okun
- Labor market hysteresis
  - Blanchard, Summers
- Time inconsistent preferences
  - Laibson
- Macro Analysis of Supply Shocks (with Gordon)
- Structural Slumps (with J-P F)

Ned had Many Children, I will focus on Two

- He founded New-classical Macro (with Friedman), leading to Lucas, Sargent, Sargent-Wallace, Barro, Kydland-Prescott
- But he also was up at dawn in the founding of the competing New-Keynesian macro. Phelps-Taylor on staggered wage setting and Phelps-Gordon on the macro impact of supply shocks (often forgotten)
  - Supply shocks is not even in the index of the Festschrift volume (!!) edited by Aghion, Frydman, Stiglitz, Woodford

A Few Other Children I Admire

- Labor-market churning as seen through the lens of Mortensen-Pissarides
- Efficiency Wages and its Relation to Sticky Wages
- Customer markets (Phelps-Winter) and the Okun distinction between auction and customer markets
  - What is the right theory of price stickiness?

The A-Bomb Dropped on Keynesian Macro in 1968

- What We Learned at MIT in 1964-68 was summed up in the Modigliani/Ando-led Fed-MIT macro model
- There was a permanent Phillips curve tradeoff
- In 1967 I was on a panel discussion, sanguine that inflation would not accelerate despite a 3.5 percent unemployment rate
- *Fortunately* I did not do my PhD dissertation on macro!
  - Otherwise it would have been instantly obsolete

The Timing of the Bomb was Important

- Friedman and Phelps introduced models showing that there was no long-term tradeoff
- At first, some of us resisted with empirical equations that claimed to show the tradeoff still existed
- The Friedman-Phelps timing was critical in this intellectual revolution, because the American economy proved them right, almost instantly

Let’s go back to 1968

- Inflation was accelerating, breaking through every forecast
- Monetary policy was still targeting interest rates
  - As inflation accelerated, real interest rates fell, fueling the fire
  - 18-month lag between LBJ’s economic advisers advocating tax increase and the actual tax surcharge of July, 1968
  - But the tax surcharge did not slow down the economy because of expansionary monetary policy fueled by interest-rate targeting and accelerating inflation that pushed down real interest rates

A firestorm happened to me in September, 1968

- Fresh from MIT (via Harvard), I arrived at the University of Chicago in 9/68 as an assistant professor with my Modigliani/MIT view of the world
- I taught an advanced grad class in macro and was shot down every day by a bunch of students who knew more than I did
  - Frenkel, Dornbusch, Mussa, Darby, Hugh McCulloch and Rachel Larsen
- No thanks to MIT, I had missed the Friedman-Phelps revolution and had to catch up fast
  - Friedman's Money Workshop made it easy to learn (Lucas was still at Carnegie Mellon and Becker still at Columbia)
- Why? Partly the Univ of Chi connection with Latin America! How could there be a long-term tradeoff?

Why was the Friedman Version of the NRH More Cited and Popular?

- Friedman: A simple verbal model talked through but not written down in equations
- Labor demand and supply curves, key innovation was the the LD curve depended on actual W/P, the supply curve of workers depended on the expected W/P^e
- Firms had the right price, workers the wrong expected price, workers were "fooled"
- This became known as the "fooling model" and was converted into the rational expectations new-classical equilibrium model by Lucas
  - We opponents immediately focused on the fooling, didn't workers learn the CPI every month?!
  - What about the Great Depression??

The Phelps Version

- Nominal disturbances have real effects because prices do not adjust instantly
- There is no Walrasian "auctioneer" to coordinate the re-setting of prices and wages
- In 1967 and 1968 he introduced price and wage *expectations* as the key ingredient in decisions by workers and firms
- The business cycle then depended on deviations between actual and expected wages and prices
- No special emphasis on workers being "fooled" by firms. Expectations mattered equally for workers and firms, a "boom" meant inflation expectations were *too low* for everyone, not just workers.

As Interpreted by Akerlof (2007)

- Phelps and Friedman deserved their Nobel Prizes for switching from the old Keynesian P Curve of the 1960s, from depending of real U on nominal rates of change to real U depending on changes in *real wages and real prices (relative to each other)*
- But there were some negative consequences

Phelps is Credited with Bringing Imperfect Info into Macroeconomics

- But at a deeper level imperfect info is not the core problem.
- Unless we can explain the Great Depression, we're not serious macroeconomists
- The Phelps-Friedman innovation claimed that the *only* cause of the high unemployment of the Great Depression was that people didn't adjust their expectations of inflation downward fast enough
- Does anyone think that US unemployment stayed at 20-25% during 1933-34-35 because people didn't know the price level?
- Let's go back to Keynes

What Keynes Got Right

- Firms and workers are rationed; their sales and employment depend on effective demand.
- A worker with no choice of the wage or price finds him/herself laid off
- A firm finds the inventories piling up
- There is no "choice" about the amount to produce or to work; it's a *CONSTRAINT*
- A firm has no "choice" but to cut production when sales evaporate. It has nothing to do with incorrect expectations of the price level

The Neglected "Closed Closet" of Keynesian Economics

- Patinkin on the labor market, 1965; Clower on the product market at the same time
- Unified by Barro-Grossman *AER* in 1971, their joint book in 1976
- People are not making choices involving expectations. In this sense Phelps and Friedman are responsible for pushing macroeconomics in the wrong direction for the last 40 years
- People are *rationed, they are not choosing*

Patinkin’s “Brick Wall”

- Critical Distinction between “Notional” downward sloping labor demand curve and “Effective” labor demand curve constrained by demand
- In a recession the effective labor demand curve shifts left at the given W/P, pushing the brick wall to the left. Workers can’t climb over it.
- No individual firm can climb over its wall either
- So the crucial issue is the source of wage and price “stickiness” or “rigidity”. Keynes was right and Phelps/Friedman pushed the wrong model

Okun in 1970s Taught Us How to think about this

- What is the decision problem faced by firms and workers in a recession?
- The Neoclassical paradigm is that all workers and firms are fully employed but make bad decisions about expectations
- In reality, nominal sales decline and nominal prices and wages do not. Firms find fewer people walking into the sales room, and workers find themselves laid off
- They have no choice to do anything to save their sales or job. The workers can't save themselves by a personal, unilateral wage reduction because the entire system has a price level too high re nominal GDP.
- The "Daylight Saving Time" analogy to the coordination failure.

The Standard “Modern Macro” Paradigm is Wrong

- Neglects the “Coordination Failure” in the absence of perfect and instantaneous market clearing, total nominal flexibility of prices
- Ned was a leader in thinking about the reasons for price and wage rigidity, but he never integrated NMC into his mind set
- In the index of the Festschrift volume, there is no mention of Benassy, Grossman, Malinvaud.
- Just Barro, but that is for the growth empirical literature, not for non-market-clearing economics

Friedman/Phelps created New Classical Macro "Mark 1"

- Because Friedman/Phelps had created the paradigm that business cycles were created by "expectational errors"
- This opened the way for Lucas to create a world in which "rational expectations" would eliminate business cycles.
- Lucas 1973 distinction between aggregate and local shocks
  - Neat and convincing: slope of Phillips curve was much steeper in Argentina than US
  - Culmination of connection of U Chicago with Latin America, but Lucas was still at Carnegie

Something Interesting in 1973 Quickly Became Crazy in 1975

- If the only reason for business cycles is expectational errors, this leads to the Sargent-Wallace "policy ineffectiveness proposition"
- Monetary Policy cannot influence output without doing something different from what agents expect
- All based on the "Lucas supply equation"

$$Y = f(P-P^e)$$

- Thus the Great Depression occurred because people did not know the price level or the nominal money supply

New Classical Mark I Collapsed in the Rubble of its Empirics

- Run a Regression of Real GDP on differences between actual and expected inflation
- Problem: Expectations can adjust to eliminate errors within a few weeks or months but business cycles last for years
- Not just the Great Depression – Actual real GDP was below natural real GDP for six straight years, 1981-86

Robert Barro would prefer to forget this part of his career

- New Classical Mark I is market-clearing economics dependent on a rapid adjustment of prices to nominal shocks
- Barro's Empirical Work showed a four-year lag of nominal prices behind nominal money
- These empirical results supported non-market-clearing Barro-Grossman, not Friedman-Lucas-Phelps

The High Point at Bald Peak NH

- October 14, 1978
- Barro presents his empirical results on inflation showing long lags and denying New Classical Macro Mark I
- Simultaneously, Lucas and Sargent announce that macroeconomics must be reconstructed starting from the rubble and wreckage of Keynesian Economics

Ned Came to Save Macro, Even if the Festschrift Volume Didn't Notice

- We'll come back to staggered wage setting
- What was crucial in 1975 was the need for a theory to explain the positively sloped Phillips curve
- *New York Times* in fall 1974, "Inflation Creates Recession"
- New-Classical Economics announced the death of Keynesian Macro but they were left up the creek without an explanation

Simultaneous Gordon-Phelps Model of Supply Shocks

- I had the advantage of the *Brookings Papers,* published in 1975
- Ned published in the *JMCB* in 1978
- Same basic idea, although different in details, integrated in my *AEA Proceedings* paper in 1984
- Price-inelastic demand means that a higher share of nominal GDP must be spent on energy/ food.
- A "wedge" must open up between nominal GDP and nominal wage to "pay for" higher percentage of GDP spent on energy and food.

The New Macro Opened up by Textbooks

- Suddenly we had a unified macro
- The unemployment-inflation correlation could be negative (demand shocks) or positive (supply shocks)
- Integration of aggregate AS-AD with micro AS-AD
- A new generation of textbooks worked this all out (intermediate macro: Gordon and Dornbusch-Fischer 1978 and econ principles Baumol-Blinder 1979).
- They key diagram (SP-DG) can be traced to a classroom handout of Rudi Dornbusch in March 1975

A Remarkable Sequence of Events which Everyone has Forgotten

- Lucas-Sargent in 1978 announced Keynesian Economics was Dead on the basis of the positive U-inflation tradeoff
- Three years earlier, the theory had been developed by Gordon-Phelps to explain the possibility of a positive U-inflation tradeoff
- Textbooks and econometrics (Gordon 1975, 1977) were faster than theory to rebuild macro from the Lucas-Sargent “wreckage”

Mid 1970s, Ned Also Planted Seeds of “New Keynesian Economics”

- He opened up the route to a theoretical understanding of “staggered wage setting”
- Key idea turns New Classical Mark I (and his previous work) on its head
- Once you explain why wages are sticky, you can no longer claim that business cycles are due to expectational errors
- An exogenous constraint sets the length of labor contracts
- They do not all expire at the same time, assume they last N months, 1/N expire this month

Phelps-Taylor at the Dawn of New-Keynesian Macro

- They deserve joint credit with Fischer (1977)
- Muth invented rational expectations for micro in 1961, Lucas introduced into macro in 1972-73
- Fischer, Phelps-Taylor “stole” rational expectations and showed that it was a separate idea that could span New-Classical and new-Keynesian macro

What Phelps-Taylor Showed

- Two-sided lead-lag distribution
- Wage changes had to depend on lags because the price level faced by today’s wage setters depends on the wage contracts of the past
- Expectations matter because today’s wage setters have to guess about macro conditions in the future

Opened the Way to a Unification of New-Classical and New-Keynesian

- The forward-looking element allowed a link to Sargent's famous "The End of Four Big Inflations"
- When inflation is dominated by expectations (German hyperinflation, Argentina or Brazil) staggered wage-setting can adjust rapidly
- When inflation is slow, staggered wage setting is largely backward-looking
- "Rational Expectations is Adaptive after All" (Ben Friedman, 1977)

A Unified Framework Beyond Lucas

- Lucas (1972, 1973) introduced distinction between aggregate and local shocks
- Individual suppliers assess difference between local price and aggregate price
- When they observe a big increase in local price, they assess the likelihood that the aggregate price has increased
- With US historical variances, they increase supply, with South American history they assume it’s aggregate
- So the slope of the P Curve is endogenous to the historical variances

Broaden Lucas Local and Agg Shocks to both Supply and Demand

- Gordon JEL 1990 with reliance on Blanchard BPEA 1987
- The absence of perfect price flexibility comes from reasons that price level does not “mimick” changes in nominal GDP
- In a recession firms cannot afford to cut prices unless they know their input prices will fall (wages and intermediate goods)
- Why should wages and intermediate goods prices mimick nominal GDP?

The Four-way Shock Analysis

- Aggregate and local, supply and demand
- Aggregate demand shocks raise output because prices/wages are sticky; expectations matter in volatile economies like Latin America
- Aggregate supply shocks with inelastic price elasticity of oil/food cause recessions unless wages are perfectly flexible

The Local Part of the Four-way Analysis

- Local supply shocks explain why firms do not immediately change price in proportion with nominal GDP
  - They do not know what commodity prices are going to do
  - They “sit by the mailbox” waiting for news about intermediate materials costs
- Local demand shocks mean that prices do not mimick nominal GDP, think corn and ethanol

Summary So Far on Phelps

- He created the NRH and revolutionized macro
- By embedding his analysis in expectational errors, he pushed macro in the wrong direction
- He rescued his contribution by developing the model (with Taylor) of staggered wage setting
- And he helped develop modern macro by integrating the analysis of supply shocks, showing that the correlation of inflation and unemployment could be in any direction

The Island Parable and Customer Markets

- Like much of new-classical macro, the “island” parable makes more sense restated from prices to quantities
- Real-world workers are not moving from Detroit to Greenville SC because they think the wage is higher
- They move because they think jobs are available in Greenville to replace their destroyed Detroit job as GM fails to compete with Toyota

Much of Informational Frictions in Early Phelpsian Econ Makes Sense

- The pathetic stories from the Great Depression of men leaving their families and riding on boxcars in search of employment
- This had nothing to do with wages or prices, it was about rationed quantities
- Tie back to Barro-Grossman-Clower-Patinkin

Customer Markets

- (Phelps-Winter in the Phelps volume)
- Imperfect information keeps customers attached to existing merchants, they have to search to find lower prices elsewhere and this is costly
- This is proposed as a source of price stickiness since merchants lose customers only gradually if their prices are too high

The Big Payoff: Okun

- Maybe Phelps thought this up first, but I associate with Okun the distinction between "auction markets" and "customer markets"
- Surveyed in my JEL paper 1981
- "Why are there no auctions for tunafish in the supermarket aisle?"
  - Dispersion of time and location of local purchases
  - Phelps-Winter idea of imperfect information weakened by weekly supermarket advertising supplements
  - Also weakened by IO-reality of scale economies that give customers limited choices within feasible geographical range.

Combining Customer Markets with the Input-Output Table

- Long Literature back to Berle-Means in the 1930s that the degree of price flexibility differs across products
- Stylized fact: farm prices 1929-33 fell by 75%, tractor prices fell 10%
- Why? "Business Cycles and the Price of Lettuce"
- Food prices are very flexible, reflect land rents. Tractor prices are inflexible, reflecting large labor component not just in assembly of tractors but in each of the many complex components

Efficiency Wages

- Replaces classical equilibrium model in which all workers earn the same wages
- A true descendant of the “island” search model
- Workers are constantly thinking about alternatives
- If “training capital” is embedded in each worker, the firm has a big incentive to keep them from quitting, so pay them more than their “opportunity wage”

What does this have to do with macro?

- Efficiency wage story establishes a premium of actual wage over opportunity or alternative wage
- If the alternative wage is completely flexible to changes in nominal GDP, then the efficiency wage story has no consequences for business cycles.
- Viewed further from input-output 4-way theory, efficiency wages introduce yet another source of frictions

What About "Structural Slumps"?

- An ambitious cosmic model of the world economy
- Defining elements are the wage-setting curve and the powerful role of the real interest rate in setting aggregate demand
- How does this hold up?
  - World interest rate rose in 1981-85 with American shift to tight money/ loose fiscal
  - But evolution of US and EU economies were very different after that
  - 1981-2007 big increase in EU unemployment rate relative to US unemployment rate, decline in H/N

Phelps Applies Structural Slumps Model to Historical Episodes

- Following the org of Woodford (JEL, 1994)
  - The Economics of WWII
    - Phelps claims that there was an increase in the relative price of capital goods
    - Oh, do I know a lot about WWII
    - A controlled, rationed economy. No role for relative prices at all since prices were controlled, both capital goods and consumer goods
    - Jan 1942, production of cars = 0. INSTANTLY
    - The government pushed money into corporate America with only one goal – MAXIMIZE production

Further Problems with WWII Story

- The central mechanism of "Structural Slumps" cannot play a role in US WWII
- The "Accord" between Fed and Treasury maintained low nominal interest rate in WWII (until 1951)
- Price controls were effective and eliminated (measured) inflation 1942-45
- Thus real interest rates were fixed during WWII, could not have had any part in allocation between capital and consumer goods

Forget WWII, the True Application of Phelps Theory is to Europe

- The Facts to be Explained
  - The obvious facts: US unemployment corrected for the business cycle and supply shocks (important!) has been stationary over 1960-2007
  - Europe's (EU-15) unemployment rose from 2% in the early 70s to ~10% in the last decade. Why?

What Happened to European Unemployment

- In a striking reversal, Phelps realizes that his 1960s natural rate approach won't work
- The 1970-90 increase in European unemployment *was permanent*, no expectational errors will help in explaining it
- Phelps attributes it primarily to the oil shock of the 1970s and the fiscal shock (orginating with Reagan) that raised the world real interest rate in the early 1980s

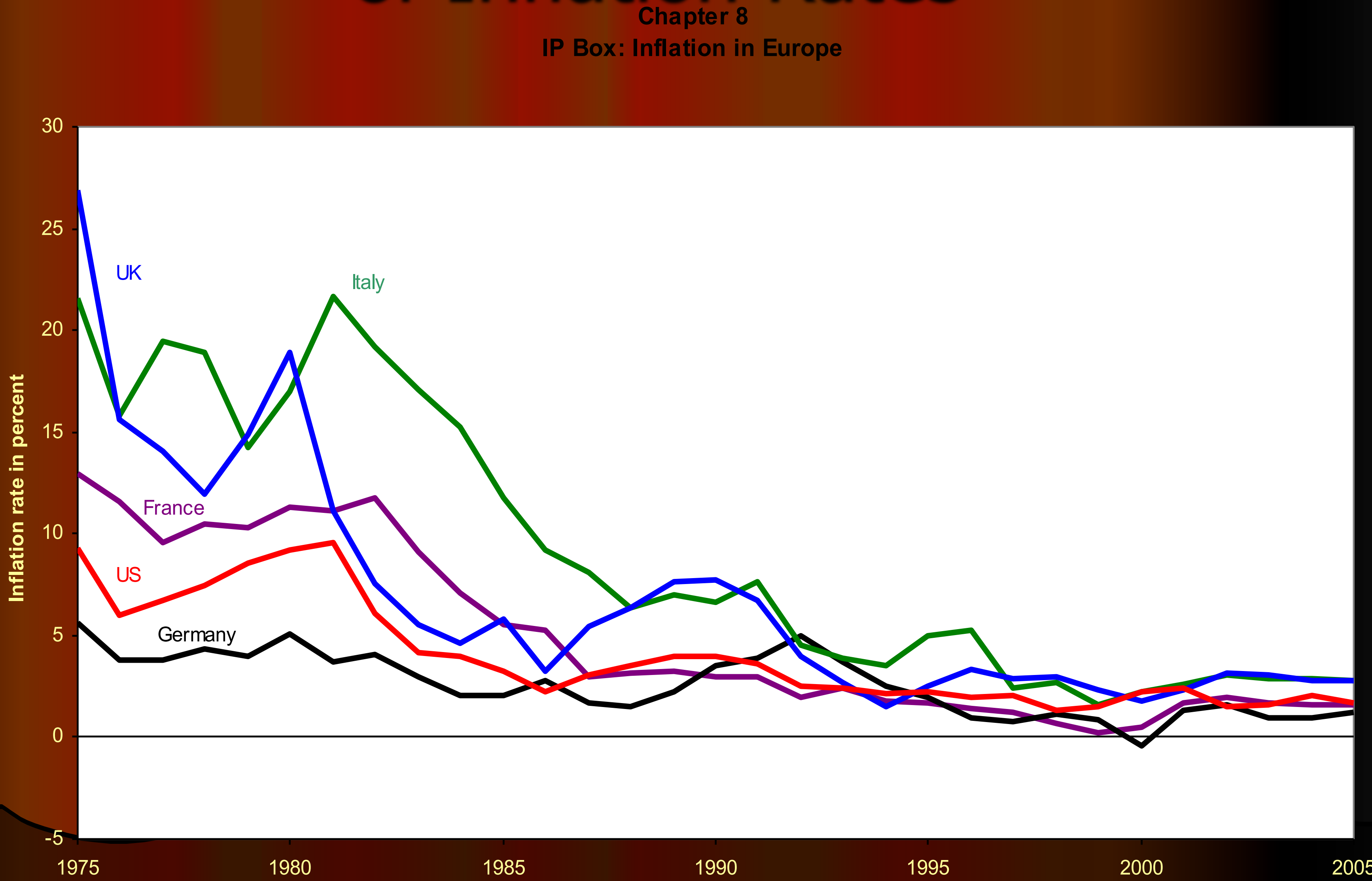
But This Won't Work, Why?

- European Unemployment Remained High Until Recently
- Oil Prices in real terms collapsed in 1986. Oil prices were ~$12 a barrel in early 1998
- Real interest rates are worldwide and capital markets are open, why any special effect on Europe compared to the US?
- US dollar was pushed up 1981-85 by switch in monetary-fiscal mix but then collapsed back to 1981 level by 1987.

Emphasis on EU Unemployment Misses the Two Big Macro Events Post-1980

- Decline in US Business Cycle Volatility
  - Hundreds of papers on this
  - Was it monetary policy?
  - Was it reduction in shocks?
  - Of course the best paper is mine ☺
- 2/3 decline in demand shocks, 1/3 supply shocks, ZERO for monetary policy

Puzzle # 2: The Convergence of Inflation Rates



This is Where We Come Back Full Circle to the Genius of Ned

- I have been skeptical about the relevance of expectations in the US macro context, esp. Great Depression
- But nobody could deny the central role of expectations in
  - The ends of Sargent's "Four Big Inflations"
  - The convergence of European inflation pre-Euro
- How to put all this together? Turn to Akerlof' s Presidential Address

Akerlof’ s Five Neutralities that Overturned Keynes, but GA Revives Them

- Permanent income hypothesis
- Modigliani-Miller “cash flow doesn’ t matter for investment”
- Natural Rate Hypothesis
- Policy Ineffectiveness Proposition
- Barro-Ricardo Fiscal Neutrality

How Does this Affect the Phelps Contributions?

- Fortunately for Ned, he is only involved with the NRH among the five neutralities that GA demolishes
- I don't think the nominal wage band at zero matters except for US Great Depression and Japan in 1990s
  - Why no accelerating deflation??
- Ned never took seriously any of the other four neutralities