What effects is EMU having on the euro area and its member countries?
16 – 17 June 2005, Frankfurt am Main

Session V:
Inflation persistence and inflation differentials

Discussant:

William Dickens
Brookings Institution, Washington D.C.

EUROPEAN CENTRAL BANK

Comments on “Price Setting and Inflation Persistence: did EMU Matter?”

European Central Bank

17 June, 2005

Frankfurter Hof Hotel

What I Want to Do

- Heap praise on the authors and the organizers of the IPN.
- Go over results of Angeloni et. al.
- Express some concerns about the results and their interpretation.
- Present some preliminary results from the International Wage Flexibility Project (a sister project of IPN which has also been generously supported by the ECB).

This is Hard Work

- Perhaps no one in this room knows better than I do how much work goes into a project like the IPN.
- Until you have tried to coordinate 13 teams of researchers in 12 countries dealing with more than a dozen unique sets of data and tried to administer a common protocol and make sense of the results…
- So my hat is off to the authors. Been there, done that, its not easy!

Angeloni et. al. Present Two Types of Evidence

- Micro data on frequency and magnitude of price changes from surveys of consumer and producer prices
- Regression estimates of inflation persistence (sum of coefficients in a regression of inflation on many lags) using product level inflation data.

Did EMU Matter? Major Findings

- **PRICE CHANGES:** No. Other than an abrupt and limited increase in the frequency of price changes around the time of cash conversion there is no evidence of any change in the frequency or magnitude of price changes.
- **INFLATION PERSISTENCE:** Some evidence that inflation persistence declined in mid 90s, but same thing happened in US and likely reflects change in nature of inflationary expectations (which is likely due in some sense to EMU).

Why Do We Care About Frequency of Price Changes?

- What I would most like to see is reference to a model of firm behavior that would allow me to judge whether the estimated frequency is “high” or “low” relative to some policy relevant benchmark. Ideally what would be reported and tested for change would be parameters such as implied cost of adjusting and/or not adjusting prices.
- But, at the very least it would be good if measures of frequency of change were adjusted for inflation rates.

Adjust Change Frequencies for Inflation?

- We might expect the frequency of price changes to decline considerably with declining inflation.
- What I think we care about (and without an explicit model I'm not sure) is whether EMU (and the single market more broadly) affected the costs of changing, or not changing, prices.
- The fact that there has been no change in the frequency of price reductions in countries that have had significant drops in their rates of inflation may indicated an increase in price flexibility.

Why Do We Care About Persistence?

- Persistence measures are tied to new Keynesian Phillips curve and as such are directly connected with policy concerns (how quickly will shocks abate and how aggressive must policy be to stabilize inflation and output).
- But link is tenuous due to nature of estimates ("reduced form" auto-regressions rather than estimates of models).
- Thus we don't know how persistent persistence is (could be structural or ephemeral).

We May Not Believe Model Estimates…

- … but at least they give us some breakdown of the source of persistence. (Is it due to past inflation affecting current inflation, the way expectations are formed, or auto-correlation in real or nominal innovations?)
- I would be remiss as a discussant if I didn't take this opportunity to mention my favorite model of this phenomena – Akerlof, Dickens and Perry (2000).

ADP 2000 and Persistence

- Our model predicts the decline in "persistence" as inflation falls as the result of people increasingly ignoring expectations in price setting with lower inflation.
- We find that once we take account of this the parameters of our Phillips Curve for US data are quite stable.
- Our model suggests that an inflation target of about 3% minimizes unemployment for the US (model doesn't fit well for European data).

The International Wage Flexibility Project

What is the IWFP?

- 13 Country study of wage inflation supported by the ECB and directed by Erica Groshen (NY Fed.) and me
- using micro data on individual and occupational wages analyzed by teams in each country familiar with the data
- broader than analyzing wage rigidity (sand and grease), but that is the part that I'm going to talk about today

Country Teams

- Austria
- Belgium
- Denmark
- Finland
- France
- Germany
- Italy
- Norway
- Portugal
- Sweden
- Switzerland
- United Kingdom
- United States

Disclaimers

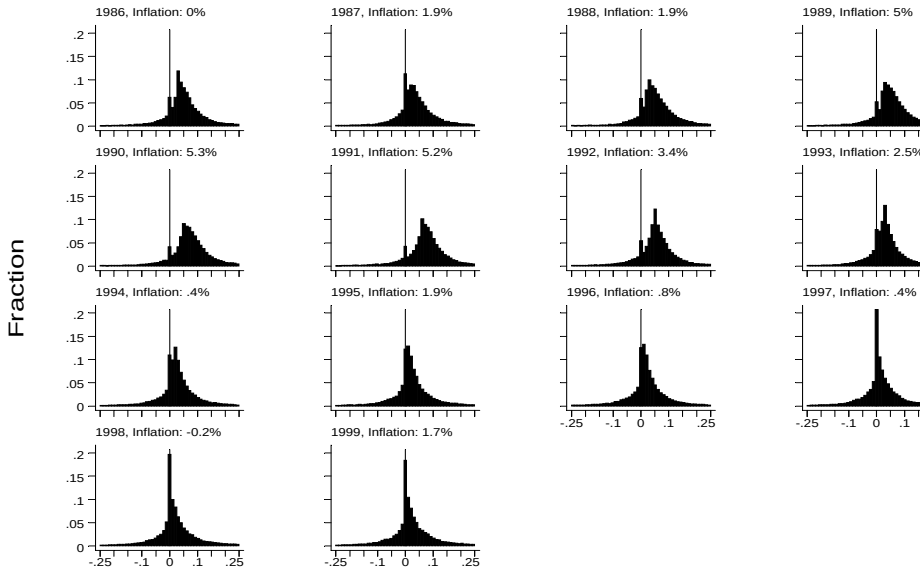
- ***Preliminary*** results! Mainly based on European Community Household Panel data which is quite noisy.
- My views only (not the views of the ECB, Brookings, or any other members of the IWFP project team).

Questions

- Could DNWR be an explanation for Europe's persistent unemployment problems or…
- While ADP model fits very well for US and Canadian data it fits very poorly and gives nonsensical results when applied to European data. Could presence of real rigidity caused by centralized wage setting institutions be the reason for this?
- Some studies done in Europe (notably UK) show much less Downward Nominal Wage Rigidity than US and Canadian data, so is DNWR a problem in Europe? Might problem be downward real rigidity instead?

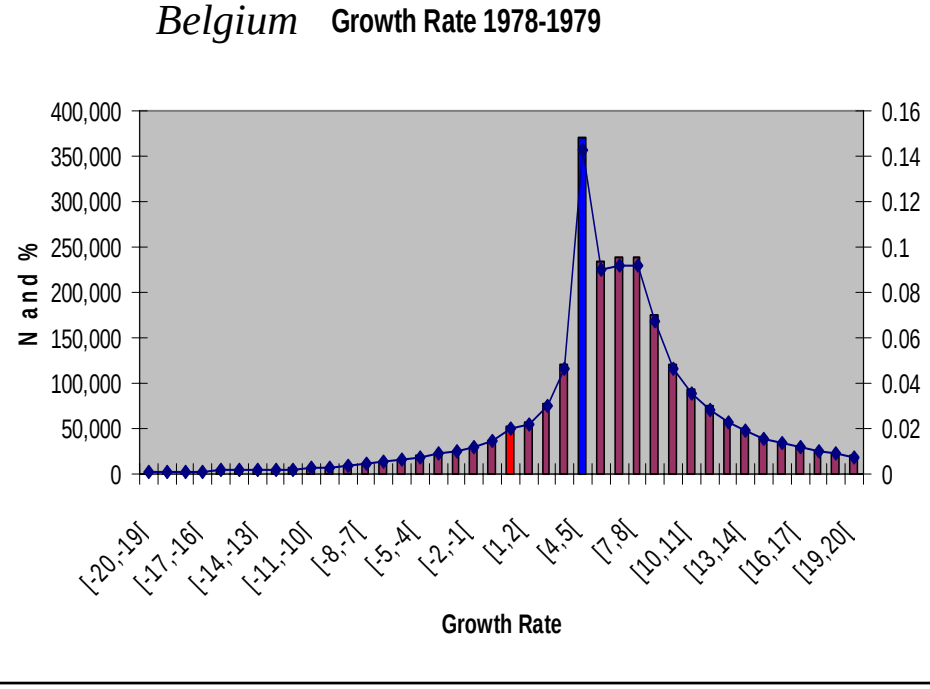
How Could We Answer Questions?

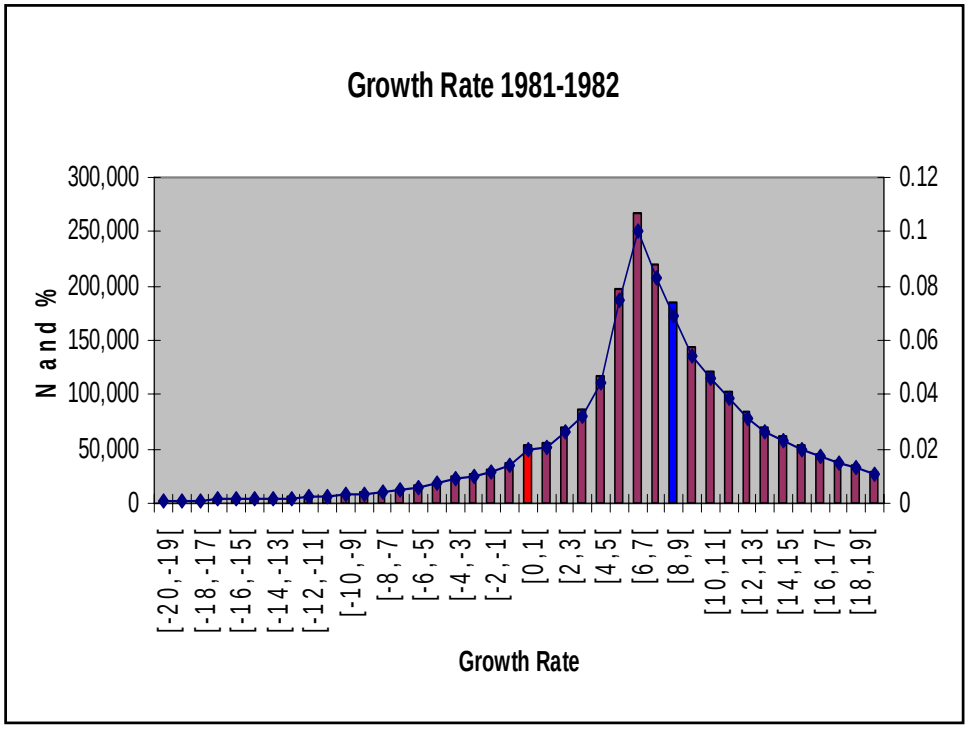
- Initially we were unsure about how to get at presence of different types of rigidity.
- At first meeting some very interesting results emerged examining wage change histograms for job stayers (all results are for job stayers).



The Distribution of Nominal Wage Changes, Switzerland 1986 - 19

Does Low Inflation Eliminate Downward Wage Rigi




Growth Rate 1981-1982
N and %
300,000
250,000
200,000
150,000
100,000
50,000
0
0.12
0.1
0.08
0.06
0.04
0.02
0
[-20,-19[
[-18,-17[
[-16,-15[
[-14,-13[
[-12,-11[
[-10,-9[
[-8,-7[
[-6,-5[
[-4,-3[
[-2,-1[
[0,1[
[2,3[
[4,5[
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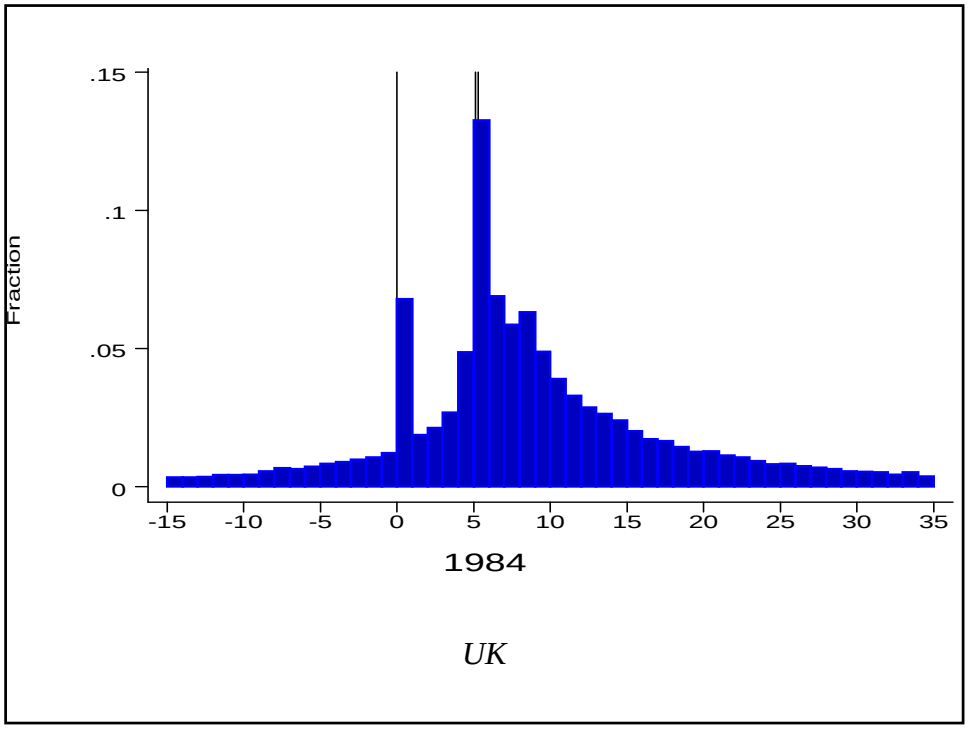
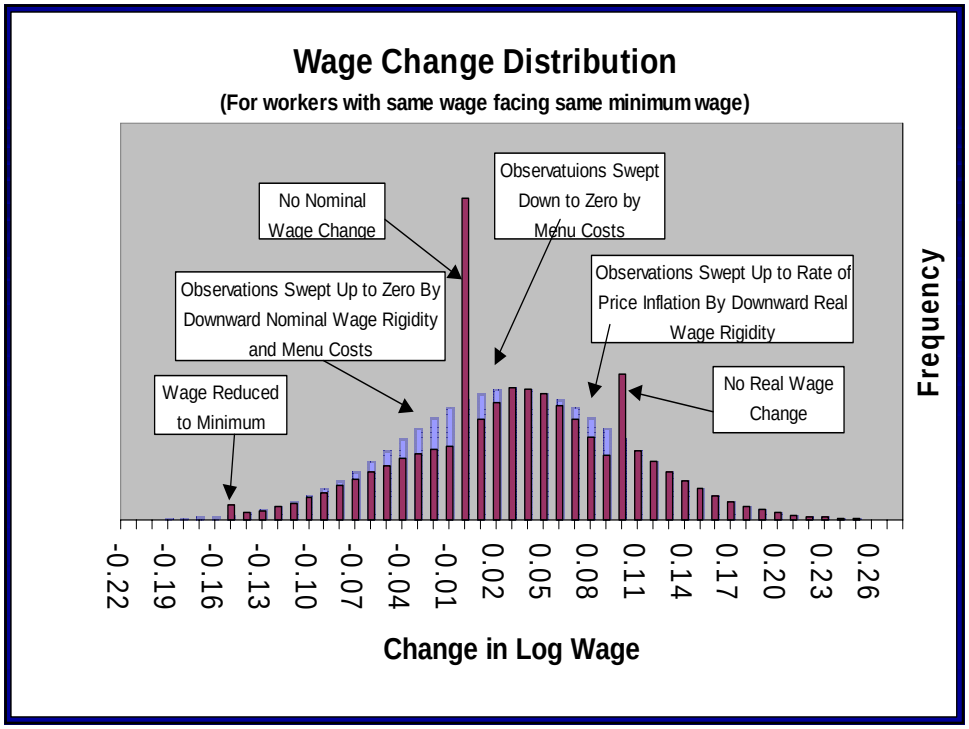
[8,9[
[10,11[
[12,13[
[14,15[
[16,17[
[18,19[
Growth Rate


Fraction
.15
.1
.05
0
-15
-10
-5
0
5
10
15
20
25
30
35
1984

UK

Can we use wage change histograms to diagnose nature and extent of wage rigidity?



Big Problem is Measurement Error

- If people make mistakes reporting their wages then we see wage changes where there are none.
- If we compute wage=income/hours we see “wage” changes due to overtime, bonuses, or mistakes in reporting hours.
- If we use social security data we have similar problems since most countries don’t have data that allow us to accurately identify base wage.
- All evidence suggests that for most data sets frequency and extent of errors make this a very serious problem (evidence suggests that in many data sets most reported wage cuts are actually errors of these sorts).

New Approach:

Use information in correlation of changes between years

- Abowd and Card (1989) suggest that wages have two components:
  - permanent changes
  - transient (one period) changes (which result in negative serial correlation of wage changes)
- New method identifies transient changes as errors and uses auto-covariance and frequency of sign switching in changes to identify error rate and error variance.
- This information is used to identify semi-non-parametric mixed method of moments estimate of true wage distribution.

Rigidity Measures

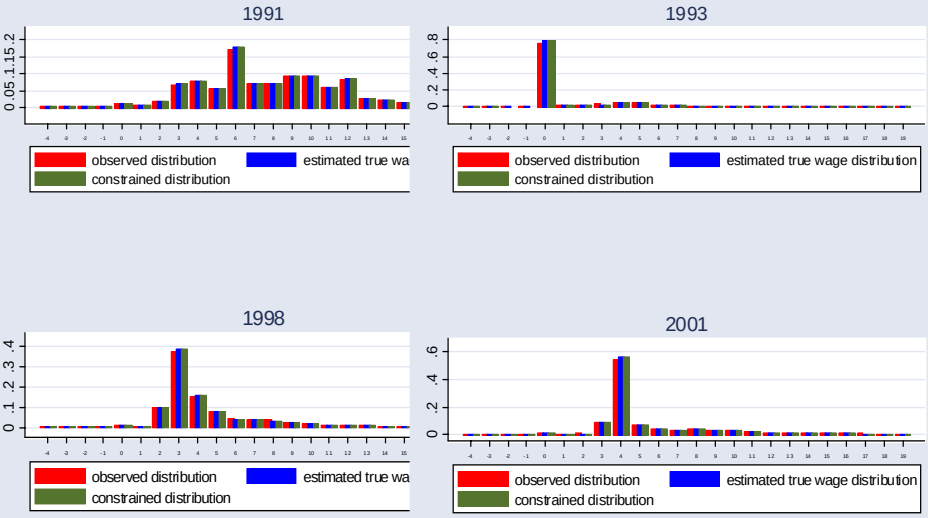
- Estimated true wage change distributions are then used as data for GMM estimate of a simple model of three types of rigidity
  - Downward nominal wage rigidity
  - Symmetric nominal wage rigidity (menu costs)
  - Downward real wage rigidity
- Measure is fraction of notional wage cuts (or small changes) that don't happen due to rigidity (so could be independent of rate of inflation).
- No measures of insensitivity to fundamentals (another concept of rigidity).

Validating New Error Correction Method

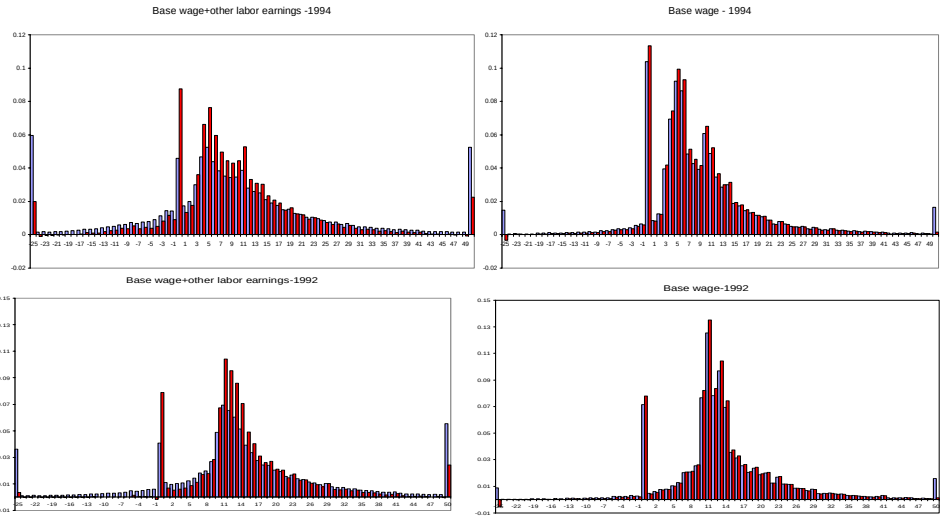
- Results applying new method to US largely fit with those of other studies (a very high degree or downward nominal rigidity).
- Gottschalk method identifies true wages and measurement error in quarterly data. True wage changes have auto-correlation of zero (our key assumption).
- Finnish data have very few errors and procedure makes very few corrections
- Portuguese have good and bad data. Procedure doesn't correct good data and makes distribution of bad data resemble the good data.

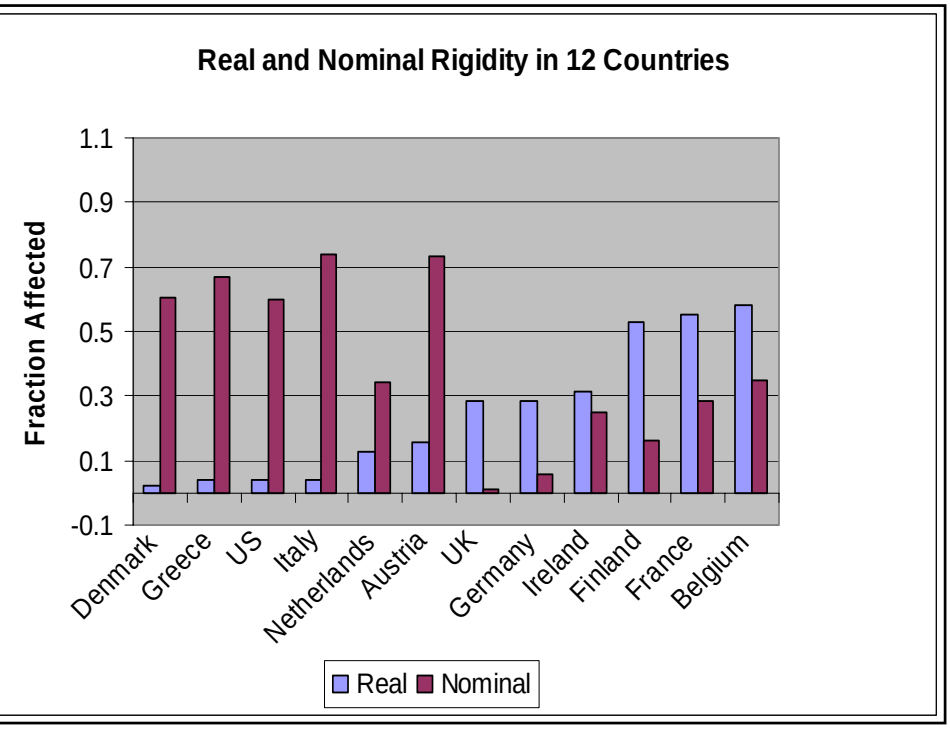
US PSID Error Correction Model

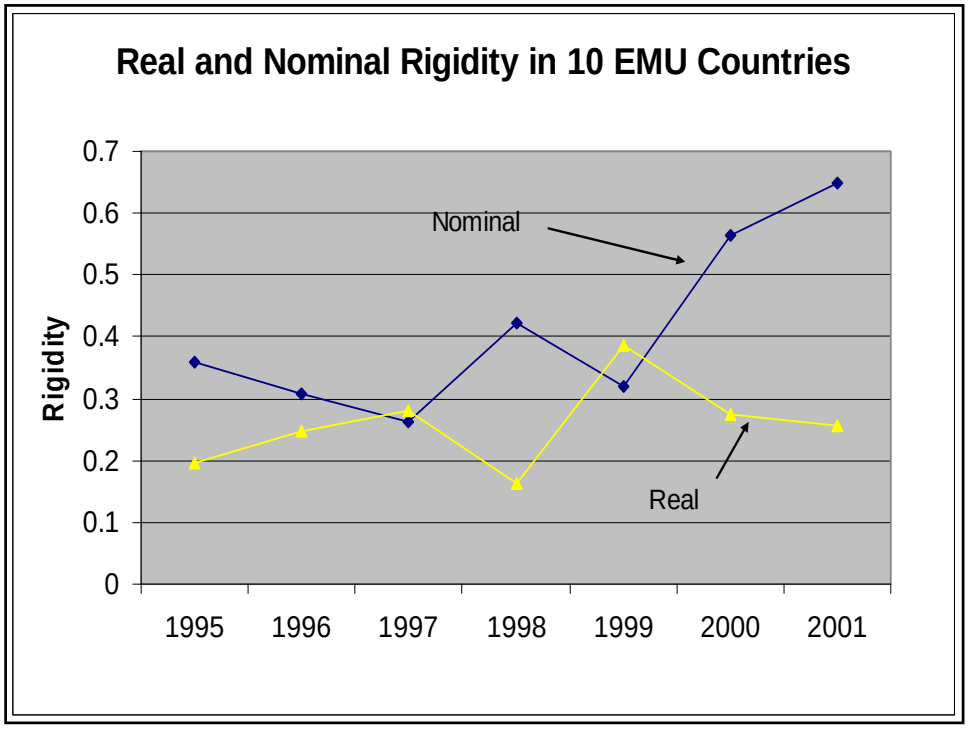
Finland Service Sector

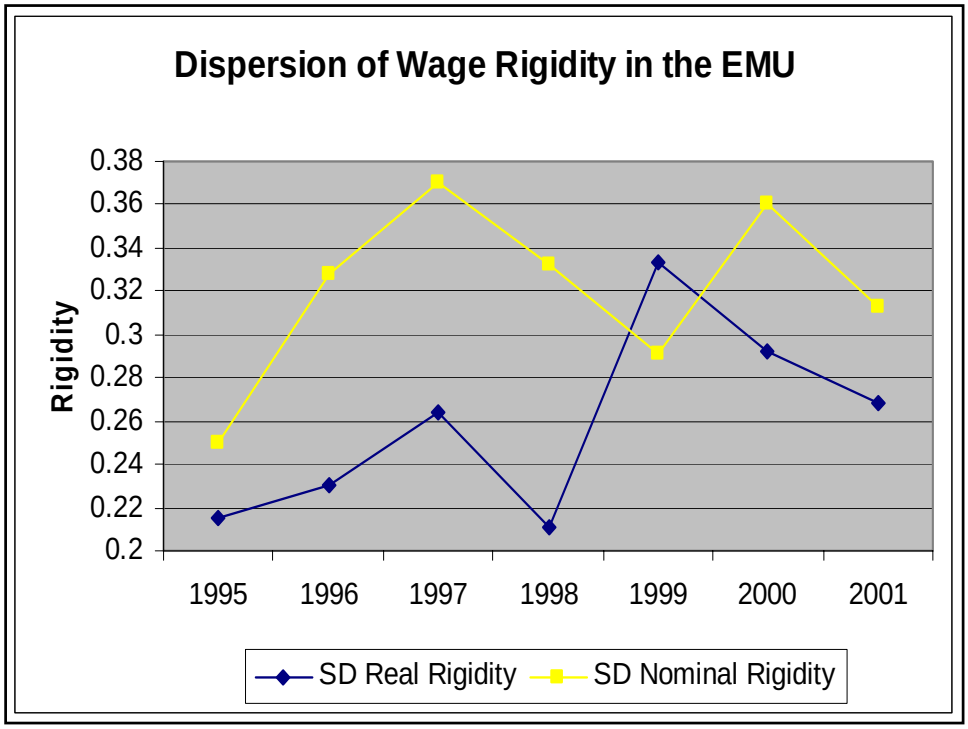


Portugese Data






Real and Nominal Rigidity in 10 EMU Countries
Rigidity
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Nominal
Real
1995
1996
1997
1998
1999
2000
2001


Dispersion of Wage Rigidity in the EMU
Rigidity
0.38
0.36
0.34
0.32
0.3
0.28
0.26
0.24
0.22
0.2
1995
1996
1997
1998
1999
2000
2001
SD Real Rigidity
SD Nominal Rigidity

Conclusions

- Too early to conclude much, but…
- Much of Europe is different from the US showing few signs of DNWR and substantial evidence of DRWR.
- Real and nominal rigidity seem to be negatively related and there are both high and low real rigidity countries in EMU
- Preliminary evidence suggests that wage setting institutions (centralized collective bargaining) are important determinants of regime.