

Comments on Marczak - Beissinger "*Real Wages and the Business Cycle in Germany*" and Gallegati-Gallegati-Ramsey-Semmler "*Productivity and unemployment scale-by-scale relationship*"

by

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## INTRODUCTION

Both papers address very important, much debated and research topics in macroeconomics

- Marczak - Beissinger: real wages and business cycles
- Gallegati et al: relationship between productivity and unemployment

For the former, intuition more often than not suggest procyclical real wages although different theories give different prediction

- "old" Keynesian models with sticky wages: counter-cyclical
- "new" Keynesian models: wage vs price rigidity
  - price stickiness + labour on supply schedule: procyclical (the degree of which depends on wage elasticity of labour supply)
  - price + real wage rigidity (required for NK models to fit the BC facts): can at least dampen procyclicality of real wages

In the case of productivity and unemployment, the balance of the evidence suggest a productivity - employment puzzle, ie the (conditional) negative correlation between supply shocks and employment

- this debate is by no means settled, although the overall balance seems to favour those corroborating the puzzle

- the relationship between productivity and unemployment may tell us something about the relationship between inflation and unemployment, a relationship often in the core of monetary policy models
  - this is especially so if we can interpret short run productivity shocks as short run shocks to inflation of the opposite sign

## **SOME COMMENTS ON THE PAPERS**

Both papers are well written, well structured, enjoyable to read

Both papers present a thorough and interesting analysis of the issue raised in the title

Most of the results produced by the authors of these two papers appear plausible

### **Marczak-Beissinger:**

- Table 5 (p. 17) nicely illustrates how the degree (or strength) of the procyclicality of real wages - as measure by the (unconditional) correlation between cycles in GDP and real wages - depends on the method used to extract the cycle from the data
- Cycles in GDP and real (consumer and producer) wages: AR(4) for GDP and producer real wage, AR(5) for consumer real wage

- -> **Q1**: Implications for macro model building? Ie can we build a macromodel that explains the observed dynamic time series features of these variables
- -> **Q2**: Can the terms of trade  $c - p$  ( $c = \log$  of consumer prices,  $p = \log$  of producer prices) explain the difference in  $c$  and  $p$  dynamics?
- **Specific comment**: the estimated spectral densities of the BN real wage cycles (Appendix A) resemble 'typical spectral shape of economic time series' à la Granger

Trends and unit root tests:  $I(1)$  tests indicate (should be in Appendix A, which shows the spectra!?) a unit root in the DGP for GDP and the real wages

- **Q3**: No test for the hypothesis that the unit root is generated by a structural break in the deterministic trend of the series. So, why derive the cycles using the LBT? LBT cycles appear not to be stationary, running against the idea of estimating the trend with LBT.
- **Q4**: the triple  $(y, w-c, w-p)$  (with the obvious notation) is an integrated system. Why not approach the statistical analysis of this system using CI-techniques? E.g. estimate the system  $(y, w-p, TOT)$ ?
- **Q5**: Although the lead-lag structure between GDP and real wage cycles are plausible in qualitative terms, a lead of 10-11 quarter of GDP cycles over real wage cycles in the case of STSM is too large?

Two (technical) questions about the FD analysis:

## Gallegati et al:

This paper also motivates the research topic nicely through, mainly, the productivity-(un)employment puzzle

Shows first, using CWT, that the wavelet power spectrum of prod and unempl have somewhat different dominant features

- prod: till mid-1980's in relative terms a lot of energy at cycles corresponding to 2 years and longer, after that "pretty flat"
- unempl: energy concentration at cycle corresponding to 4 year and more

It then shows, using wavelet coherence and phase arrows that prod and unempl are strongly correlated at business cycles frequencies (ie at cycles corresponding to 2 - 8 years) except for the mid-80's - mid90's period.

- during this period prod and unempl are in phase with unempl slightly leading prod
- from early or mid-90's a change: prod and unempl in phase but prod slightly leading (internet boom?)

- prior to the financial crisis in 2008 strong correlation at cycles corresponding to 1 - 2 years; in phase prod leading

At longer cycles corresponding to at least 16 years relatively strong wavelet coherence, prod and unempl in antiphase with unempl leading slightly

After noting the problems with the CWT, the paper applies DWT to prod growth and unempl series to decompose them into smooth long run trends and shorter oscillations (around this trend)

- long run components: in antiphase with prod leading unempl
- shorter cycles (8-16 years): in phase with unempl leading
  - early 1990's moving into antiphase and then moving back in phase
- at 2-4 year cycles: prod displays surprisingly large amplitude

Parametric regression analysis of unempl on prod

- aggregate data: positive but but at conventional significance levels not a significant relationship between the two
- at very short run cycles and long run trends a significantly negative relationship between changes in productivity and unemployment
- at intermediate cycles a significantly positive relationship between the two

Nonparametric analysis confirms these findings

The findings explain why results using aggregate data over different sample periods are not necessarily robust

- **Q1:** Figure 5 (p. 16) shows that there is a major fall in long-run productivity growth around 70's - 80's (?) with a corresponding increase in unemployment suggesting this lies behind the regression results (corresponding to long cycles)?
- **Q2:** Productivity changes at short cycles are very, perhaps implausibly volatile. Measurement problems (of hours in particular)?
- **Q3:** Long-run productivity growth and unemployment negatively related: should not take too far, though, since this would imply that by continuing to increase productivity US policy makers would be able to reduce the rate of unemployment all through the zero floor. Perhaps the underlying economic story is this: if productivity improvement increase the growth rate of the economy, a fall in unemployment will result. Hence, from the point of view of reducing unemployment the real problem is to sustain or increase the growth rate of the economy through productivity enhancing investments, for example?

Anyway, as already indicated above, both of these papers apply interesting tools to analyze core questions in macroeconomics and growth, present solid empirical analysis. Happy to recommend them to everybody.

THANKS!