Comments on "The Role of Labour Markets for Euro Area Monetary Policy" by Christoffel, Kuester and Linzert

IMonetary policy transmission mechanism in the euro area in its first 10 years

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Unemployment through labour market search?

- Very interesting paper.
- LM search + DSGE currently increasingly popular
- Incorporating UE through LM search: fairly ambitious research agenda
  - two elegant approaches: LM search and DSGE modelling
    - combining the two improves our understanding of macrodynamics?
- Nice papers already exist: Blanchard - Gali (-09), Gertler - Sala - Trigari (-08), Krause - Lubik (-07), Trigari (-06), Walsh (-05) just to mention a few ...

Outline

- Summary of the model
- Comments
- Looking ahead: search frictions in LM markets and macro
  - LM search and LM dynamics (job flows, unemployment ...): seem ok and promising
  - LM search and macroanalysis: beginning to have doubts ...

The Model

- The structure and behaviour of the labour market affect inflation dynamics through:
  - real wages (direct effect on rmc)
  - hours worked (affects rmc through mpl)
- The paper: the institutional features of the labour market affect inflation through both channels
- New Keynesian DSGE model with Mortensen-Pissarides type search frictions in the LM
  - closely related to Trigari (2006)
    - in particular: Right-To-Manage instead of Efficient Bargaining (Surplus Splitting)

The Model: Private agents

- Three types of firms: retail firms (RF), wholesale firms (WF) and labour good firms (LGF)
  - RF: competitive, package (aggregate) wholesale products, via a CRS aggregator, into consumption/investment good
  - WF: impefectly competitive, CRS technology, use labour goods to produce differentiated goods to be sold to RF
  - LGF: DRS technology, hours as inputs, produce labour goods to be sold to wholesale firms
- This structure motivated by the desire to have different agents do price fixing (WF á la Calvo) and matching (LGF)
  - this assumption is typical in the background literature
- Households: intertemporal maximizers; habit persistence in preferences; choose consumption and hours; pool income; feasibility set (budget constraint) affected by vacancy posting costs

The Model: Matching

- Matching:
  - Cobb-Douglas matching function with matching efficiency σ_m
  - LM tightness $\theta = \frac{v}{u}$
  - for a firm the probability of filling a vacancy decreasing in LM tightness: $q = \frac{m}{v} = \sigma_m \theta^{-\xi}$, where ξ denotes elasticity of matching w.r.t. UE
  - for an individual worker the probability of finding a job increasing in LM tightness: $s = \frac{m}{u} = \sigma_m \theta^{1-\xi}$

$\therefore$ need to impose restrictions (eg. σ_m) that ensure q and s are probabilities

- Matches do not become productive immediately, only after a period (quarter)
- Separation rate follows an exogenous AR(1) process

The Model: Bargaining framework

- The value to the family of an employed worker receiving wage W_i: $V^E(W_i)$
- The value to the family of an unemployed worker receiving an UE benefit b: U
- Family's surplus from having its member employed at wage W_i rather than unemployed: $\Delta(W_i) = V^E(W_i) - U$
- The value of a labour firm matched to a worket who receives wage W_i: $J(W_i)$
- Right-To-Manage (RTM): firms unilaterally decide how many hours to employ: the bargaining variable is thus the wage rate, which satisfies

$$W^* = \arg\max_{W_i} \left[\Delta(W_i)\right]^{\eta} \left[J(W_i)\right]^{1-\eta}$$

$\therefore \eta =$ bargaining power of workers (families, possibly time-varying: follows, in logs, and exog. AR(1) process)

The Model: Vacancy posting

- Free entry into the vacancy posting market: ex ante value of a vacancy is zero
  - real vacancy costs equal, in equilibrium, the value of the labour firm

$$\kappa = q\left\{\beta_{+1}\left[\gamma J_{+1}\left(W\left[\Pi^{\xi_w}\overline{\Pi}^{1-\xi_w}\right]\right) + (1-\gamma)\, J_{+1}\left(W^*_{+1}\right)\right]\right\}$$

  $\therefore$newly started jobs subject to the same Calvo wage adjustment mechanism

$\therefore$ wages are indexed for steady state inflation as well as deviations from it

- (Log-)Vacancy posting costs generated by an AR(1) process

The Model: policy

- FiPo: government (log-)expenditure generated by an exogenous AR(1) process
- Government cash flow constraint

$$\underbrace{t + \frac{D}{P} + \left(\epsilon^S - 1\right) x^L}_{\text{source of funds}} = \underbrace{ub + \frac{D_{-1}}{P_{-1}} R_{-1} \epsilon^b_{-1} + g}_{\text{use of funds}}$$

$\therefore$cost push shock modelled as a lump sum tax $\Longrightarrow$ does not enter the economy's resource constraint

- MoPo: CB controls the risk free wholesale interest rate on nominal bonds; Taylor-type interest rate rule

$$\ln R = \text{cons} + \gamma_R \ln R_{-1} + \gamma_{\Delta y} \Delta \ln y + (1 - \gamma_R) \left[\gamma_\pi \widetilde{\pi} + \gamma_y \widetilde{y}\right] + \ln \epsilon^R$$

The Model: market clearing

- Retail output: allocated to private and public consumption as well as vacancy posting activity and fixed overhead costs of producing labour goods

$$y = c + g + \kappa v + n\Phi^L$$

- $y = \left[\int \left(y_j^d\right)^{\frac{\varepsilon-1}{\varepsilon}} dj\right]^{\frac{\varepsilon}{\varepsilon-1}}$; $y_j = l_j^d$; $y_j = y_j^d = \left(\frac{p_j}{P}\right)^{-\varepsilon} y$;
  $l^d = \int l_j^d dj = z \int^{1-u} h_i^{\alpha} di$
- retailer packages wholesale goods; wholesale production of firm j matches its demand; total demand for labour good equal supply

Calibration: data and comparison to US

- Using Euro Area data from AWM database on: output, inflation, nominal interest rate, aggregate wage costs, wages per employee as well as hourly wages
- Proxies for Euro Area data: hours per employee and vacancies
  - two sources: total hours worked annually from KLEMS; interpolated usein GDP and vacancy data from ECB (2002, coverage: 60%)
  - German data for hours and vacancies
    - ie. Euro Area and German business cycles fully syncronized
- Compare business cycle data (2^{nd} moments) from US:
  - US somewhat more volatile at business cycle frequencies
  - apart from wages and inflation, Euro Area data more sensitive to business cycle movement
    - in the US: wages are acyclical, inflation less sensitive to the business cycle

Calibration: fixing parameters

- Calibrated fairly uncontroversially
  - estimated persistence in labour good productivity low relative to government expenditure and premium shock (0.64 vs. 0.79 and 0.85)
  - estimated MoPo shock least volatile
  - benchmark calibration imposes absence of price and wage indexation
  - steady state UE rate is 9.1 % which is the average in the sample; this is pretty high and should be checked against independent estimates of long-term UE rate
- Model simulation vs data:
  - largest discrepancy in the correlation of the interest rate with output; in the model interest rate roughly acyclical, in the data procyclical
  - also, using Euro Area proxies indicates that in the model hourly wages less volatile than in the data and roughly acyclical (data: procyclical), while hours are more volatile and more procyclical than in the data

LM rigidities and MoPo

- More flexible LM:
  - more frequent price revisions
  - lower hiring costs/vacancy posting costs
  - lower UE benefits
  - lower bargaining power of workers
- Wage channel, RTM and EB:
  - EB: wages affect firms' rmc only through the hiring incentives in the extensive margin
  - RTM: direct effect on firms' rmc + a separate effect via the mpl

LM rigidities and MoPo: adjustment frequency important

- Average duration of wage contracts - Calvo parameter - affects the dynamics of macrovariable
  - by and large: after an expansionary MoPo shock convergence of the economy quicker under more frequent wage revisions, though eg. inflation shows stronger response
  - also, apart from the real wage and inflation, less rigid nominal wages reduce volatility of macrovariables
- Apart from LM dynamics, lower hiring/vacancy/separation costs, lower UE benefits or lower bargaining power of workers do not seem to affect post MoPo shock macrodynamics much
- The same appears to be true for job-related fixed costs (overhead costs etc.)

Bayesian estimation: filtering out shocks

- The data is informative of some of the parameters
  - Taylor-rule: mean of the prior for output growth is zero, positive in the posterior
  - there is less habit persistence in the posterior
  - there is less indexaton of wholesale non-optimised prices in the posterior
  - nominal wages are somewhat less rigid than the prior suggests
  - serial correlation structure of the shocks is in the posterior notably different from the prior
    - generally more persistent than priors suggest, but bargaining power of workers almost white noise
  - also, apart from the bargaining power of workers, shocks to the exogenous AR(1) processes are much less volatile than the priors suggest

Comments: smaller ones

- The paper is very long, more than 60 pages
- Contains a lot of different things and details
- Calibrates the model and estimates it
  - focusing more on estimating the model and using calibrated value to advice setting priors would be my preference
- Some of the estimation results challenge understanding:
  - in particular, volatility of the shocks: priors and posteriors are completely different (apart from bargaining power of workers)
    - the difference can be as large as two orders of magnitude
- Flexibility of nominal wages (and prices) can also be increased via indexation
  - estimation results suggest that, relative to the priors, the degree of wage and price indexaton falls as price and wage revisions become more frequent in the posterior

Comments: bigger ones (I think)

- That wage rigidity important under RTM, not under EB (Krause - Lubik) not entirely clear, although authors try give the argument
- Trigari (2006):

$$w_t = \eta\left(\frac{xmpl_t}{\alpha} + \frac{\kappa}{\lambda_t}\frac{\theta_t}{h_t}\right) + (1-\eta)\left(\frac{mrs_t}{1+\phi} + \frac{b}{h_t}\right) \quad \text{EB}$$

$$w_t = \chi_t\left(\frac{xmpl_t}{\alpha} + \frac{\kappa}{\lambda_t}\frac{\theta_t}{h_t}\right) + (1-\chi_t)\left(\frac{mrs_t}{1+\phi} + \frac{b}{h_t}\right) + \chi_t(1-s_t)\frac{k}{\lambda_t q_t}\left(1 - \frac{1-\chi_t}{\chi_t}\frac{\chi_{t+1}}{1-\chi_{t+1}}\right) \quad \text{RTM}$$

- χ depends, in addition to the bargaining power of the parties, on the net marginal benefit from an increase in the wage to a worker and a firm
- So, the form of the two first terms is the same, but the last term in RTM marks an important difference?

Comments: feel disappointed, after all!

- Two elegant, increasingly popular set of models: LM search models and DSGE macromodels
- LM search models, here and more generally, appear to be able to account well for LM dynamics
- But: although we have here a rich set of parameters related to the structure and institutional set up of LMs, what matters for the transmission of MoPo is WAGE RIGIDITY
- Over time, different models have come to the same conclusion; actually much of macro and MoPo analysis rests on this particular feature of wage behaviour
- So: what is the value added of building fairly complex models of LM behaviour if many of the features of these models are basically of no consequence for MoPo transmission?

Comments: LM search models not easily amenable to macroanalysis

- Furthermore: less rigid nominal wages (more frequent optimal revisions), more volatile inflation; cf. simple demand-supply analysis
  - but: is this what CBs want?
  - not sure whether this exercise really explains or, better yet, justifies ECB's focus on LM behaviour in its pursuit of inflation and overall macro stability!?L
  - Lucas critique: endogenous indexation MoPo (Gray 1978, H. Siu 2008 ...), nominal rigidity reduced under more volatile monetary environment (mon. uncertainty)
- To reiterate: LM models highly useful when accounting for LM dynamics, but maybe LM search models are not easily amenable to macroanalysis
- Anyway: very interesting exercise and the paper is surely worth reading

THANKS