Conduct of monetary policy

Monetary targeting
Friedman (1963)

Inflation targeting
Taylor (1993)
- Inapplicability of monetary multiplier and the resurgence of EMSH
- Progressive break of the empirical relation between money supply, real economic activity and inflation
- Institutional changes of banking practices

Post-Keynesian

New Consensus
How to conduct monetary policy in endogenous money framework

New Consensus Approach
(Romer, 2000; Taylor, 2000; Woodford, 2002)

- Interest rate
- Taylor Rule or reaction function
- Anticipated inflation
- Curbing inflation

Instrument

Post-Keynesian Approach
(Le Héron, 1991; Palley, 2006; Parguez, 2006; Smithin, 2007)

- Interest rate
- Kansas City Rule
- Smithin rule
- Fair rate Rule

Intermediate objective

Ultimate objectives

Curbing inflation and economic growth
Do Taylor Rules provide a reasonable approximation of interest rate setting in Tunisia?
Outline

1. Theoretical foundations of the New Consensus Approach
2. Post-Keynesian contribution in the modern theory of monetary policy
3. Empirical literature review
4. Data
5. Methodological procedures
6. Results
7. Conclusion
New Consensus

A  \[ i_t = (1-c_3)\left[r^* + E_t(\pi_{t+1}) + c_1y_{t-1}^g + c_2(\pi_{t-1} - \pi^*)\right] + c_3i_{t-1} \]

Taylor rule

B  \[ y_t^g = a_0 + a_1y_{t-1}^g + a_2E(y_{t+1}^g) - a_3[i_t - E_t(\pi_{t+1})] + \epsilon_t \]

IS relationship

C  \[ \pi_t = b_1y_t^g + b_2\pi_{t-1} + b_3E_t(\pi_{t+1}) + \nu_t, \text{ with } (b_2 + b_3 = 1) \]

NKPC

\( y_t^g \)  Output gap,
\( i_t \)  Nominal interest rate,
\( \pi_t \)  Inflation rate,
\( \pi^* \)  Inflation target rate,
\( r^* \)  Natural rate of interest,
\( a_0 \)  Autonomous components of aggregate demand,
\( \epsilon_t \)  and \( \nu_t \)  Non-recurrent shocks.
Post-Keynesian approach

Exogenous interest rate

- Interest rate
  - Monetary base
  - Credit
  - Monetary stock
  - Growth

Endogenous interest rate

\[ i_t = r^* + \alpha_1 (\pi_t - \bar{\pi}) + \alpha_2 (y_t - y^*) + \varepsilon_t \]

- \( r^* = 0 \)  Kansas City rule (Wray, 2007)
- \( r^* = \Pi_t \)  Smithin rule (Smithin, 2004)
- \( r^* = \Pi_t + q \)  Fair Rate (Pasinetti) rule (Lavoie, 1999)
Empirical literature review

- Traditional Taylor rule

\[ i_t = r^* + \pi_t + \alpha(\pi_t - \pi^*) + \beta(y_t - y^*) + \varepsilon_t \]

- Dynamic reaction function

\[ i_t = \rho i_{t-1} + (1-\rho)[r^* + \pi_t + \alpha(\pi_t - \pi^*) + \beta(y_t - y^*)] + \varepsilon_t \]

- Forward-Looking reaction function

\[ i_t = \rho i_{t-1} + (1-\rho)[r^* + E_t \pi_{t+1} + \alpha(\pi_t - \pi^*) + \beta(y_t - y^*)] + \varepsilon_t \]

- Reaction function with exchange rate effect

\[ i_t = \rho i_{t-1} + (1-\rho)[r^* + E_t \pi_{t+1} + \alpha(\pi_t - \pi^*) + \beta(y_t - y^*) + \sigma(e_t - e_{t-1})] + \varepsilon_t \]
<table>
<thead>
<tr>
<th>Variables</th>
<th>Denotation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMR</td>
<td>$i_t$</td>
<td>The monthly average money market rate (MMR) published by the CBT is the sum of day rates of the money market reported on the exact number of days of the month, the result being rounded to 1%.</td>
</tr>
<tr>
<td>Industrial Production Index</td>
<td>$y_t$</td>
<td>Variable used as proxy for GDP.</td>
</tr>
<tr>
<td>(base 100 = 2005)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential Industrial Production Index</td>
<td>$y^*$</td>
<td>Potential IPI is unobservable variable determined by HP filter (1997).</td>
</tr>
<tr>
<td>Real Effective Exchange Rate</td>
<td>$e_t$</td>
<td>Real Effective Exchange Rate is adjusted by appropriate foreign price level and deflates by the home country price level.</td>
</tr>
<tr>
<td>Consumer Price Index</td>
<td>$IPC_t$</td>
<td>Consumer Price Index is an instrument used in Tunisia to measure within two period’s variation in the general level of price.</td>
</tr>
<tr>
<td>(base 100 = 2005)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation rate</td>
<td>$\pi_t$</td>
<td></td>
</tr>
<tr>
<td>Target inflation rate</td>
<td>$\pi^*$</td>
<td>The inflation rate that the Central Bank of Tunisia believes appropriate for the economy.</td>
</tr>
<tr>
<td>Anticipated rate of inflation</td>
<td>$\pi^a$</td>
<td>Value awaited or envisaged for the rate of inflation in a given period.</td>
</tr>
<tr>
<td>Real natural rate of interest</td>
<td>$r^*$</td>
<td></td>
</tr>
</tbody>
</table>
Methodology

- Unit root tests
- Estimations (OLS, GMM)
- Results
### Results

<table>
<thead>
<tr>
<th>Variables</th>
<th>R1</th>
<th>R2</th>
<th>R3</th>
<th>R4</th>
<th>R5</th>
<th>R6</th>
<th>R7</th>
</tr>
</thead>
<tbody>
<tr>
<td>α</td>
<td>0.20421 (1.34412)</td>
<td>0.08860 (1.29028)</td>
<td>0.09904 (1.74263)</td>
<td>1.0869 (16.1374)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>β</td>
<td>0.00678 (0.08698)</td>
<td>0.02758 (0.69462)</td>
<td>0.87597 (11.3595)</td>
<td>0.02721 (0.69884)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1-ρ) α</td>
<td></td>
<td></td>
<td></td>
<td>0.00471 (1.61906)</td>
<td>0.00096 (0.43172)</td>
<td>0.00355 (1.26363)</td>
<td></td>
</tr>
<tr>
<td>(1-ρ) β</td>
<td></td>
<td></td>
<td></td>
<td>0.00029 (0.40969)</td>
<td>0.00085 (1.45254)</td>
<td>0.00128 (1.76430)</td>
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</tr>
<tr>
<td>(1-ρ) σ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.01369 (2.28519)</td>
</tr>
<tr>
<td>(1-ρ) r*</td>
<td></td>
<td></td>
<td></td>
<td>0.14718 (1.77786)</td>
<td>0.00977 (0.08899)</td>
<td>0.02563 (0.20864)</td>
<td></td>
</tr>
<tr>
<td>ρ</td>
<td></td>
<td></td>
<td></td>
<td>1.02518 (67.8122)</td>
<td>1.00822 (70.0048)</td>
<td>1.01495 (57.7759)</td>
<td></td>
</tr>
<tr>
<td>(1-ρ)</td>
<td></td>
<td></td>
<td></td>
<td>0.00515 (2.05712)</td>
<td>0.01747 (1.15576)</td>
<td>0.01799 (1.18143)</td>
<td></td>
</tr>
<tr>
<td>R-squared</td>
<td>0.73557</td>
<td>0.33359</td>
<td>0.79061</td>
<td>0.52484</td>
<td>0.9185</td>
<td>0.89748</td>
<td>0.89252</td>
</tr>
<tr>
<td>DW</td>
<td>0.0232</td>
<td>0.05750</td>
<td>1.83158</td>
<td>0.05870</td>
<td>1.9333</td>
<td>1.91852</td>
<td>1.83599</td>
</tr>
<tr>
<td>J-statistic</td>
<td></td>
<td></td>
<td></td>
<td>0.0917</td>
<td>0.13999</td>
<td>0.13663</td>
<td></td>
</tr>
</tbody>
</table>
Conclusion

Econometric results have shown that the Taylor rule, in its traditional specification (equation 4), or in its enhanced form with the inclusion of the lagged interest rate (equation 5) cannot be supported empirically for the period under investigation, in terms of descriptive, explanatory and predictive power and cannot be in accordance with the conduct of monetary policy in Tunisia. Indeed, the inclusion of the lagged interest rate in these models improved the explanatory power of the models, measured by the adjusted, but, on the other hand, it left no room in the gaps to function as a significant explanatory set of variables. Hence, the estimated parameters for this specification do not support the logic of the Taylor rule, since 100% of the explanatory power of the model is ascribed to the lagged interest rate term.

Thus, we extend the traditional Taylor rule with the inclusion of expectations scheme of inflation (equation 6). We estimated a Typical Taylor rule under the Forward-Looking version. Results shows that the behavior of the Central Bank of Tunisia is directed more towards the future.

The above approaches to Taylor rule are extended in another direction that of the enrichment of the initial Taylor equation with the real exchange rate (equation 7) to capture another effect of inflation. The coefficient granted to this variable is significant at 5% level. According to these results, the exchange rate channel may have a direct effect on the conduct of monetary policy. But there is an indirect effect. Thus, the inclusion of exchange rate in the Taylor rule may provide additional information on the future path of inflation and the output which is not captured by inflation and the current output.
Thank You