

(Taylor) Rules versus Discretion in U.S. Monetary Policy. A Lesson for Ukraine

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Rules & Discretion

- There are two different ways to conduct monetary policy:
 1. Policy rules (e.g. Taylor, 1993 rule)
 - Guidelines of how policy will respond to particular data such as unemployment and inflation
 - Not necessarily a linear formula, but does have to include a strict set of instructions
 2. Policy discretion (generally used by the Fed and NBU today)
 - No commitment to future actions, policymakers do what they believe in that moment to be best for the economy



Is Inflation Targeting a “Rule”?

- ❑ No. An inflation target is just the final goal, the destination. A rule is a specific path there
- ❑ Inflation targeting alone doesn't answer many important monetary policy questions
 - The instrument or instruments are not specified
 - How policy instruments should be changed is unclear
 - Different policies can lead to different variance of inflation & output, so which one to use?
 - For the NBU, different policies can result in faster or slower disinflation. Which one to choose?



Pros & Cons of Rules & Discretion

- ❑ Pros of using Policy rules
 - Increase transparency (PWC already use in reports), solve time-inconsistency (political business cycles), etc
 - Set long-run expectations (through term structure) – affect the economy immediately; better than any single change
- ❑ Pros of using Policy discretion
 - Can incorporate a much wider array of information
 - No one knows the “true” model of the economy
 - Immune to structural changes (Lucas critique)
- ❑ So, which one is preferable?



Qualitative Evidence

- While most central banks still exercise discretion, there's a general move towards employing rules (just as there was a move towards using inflation targeting two decades ago)
 - The Fed, the Bank of England, the Bank of Canada regularly refer to a Taylor-type rule
 - The US Congress is considering a legislation that would ask the Fed to pick a rule & then follow it (The FRA&TA of 2014)
 - Emerging and developing countries seem to use rules as well (e.g. Brazil, Chile, and Mexico)



Analytical Evidence (Case of the U.S.)

- ❑ Hard to model “discretion.” Need another approach -- Nikolsko-Rzhevskyy, Papell, & Prodan (2015)

- ❑ Assume a rule, i.e. the Taylor (1993) rule :

$$i_t = \pi_t + \phi(\pi_t - \bar{\pi}) + \gamma y_t + R$$

$$i_t = 1.0 + 1.5\pi_t + 0.5y_t$$

- ❑ Construct deviations between the actual funds rate & the rule
- ❑ (Endogenously) identify eras when the Fed was implicitly following a rule – deviations from the rule are low
- ❑ Assume a reasonable loss function & compare economic performance during “rules” and “discretion” eras

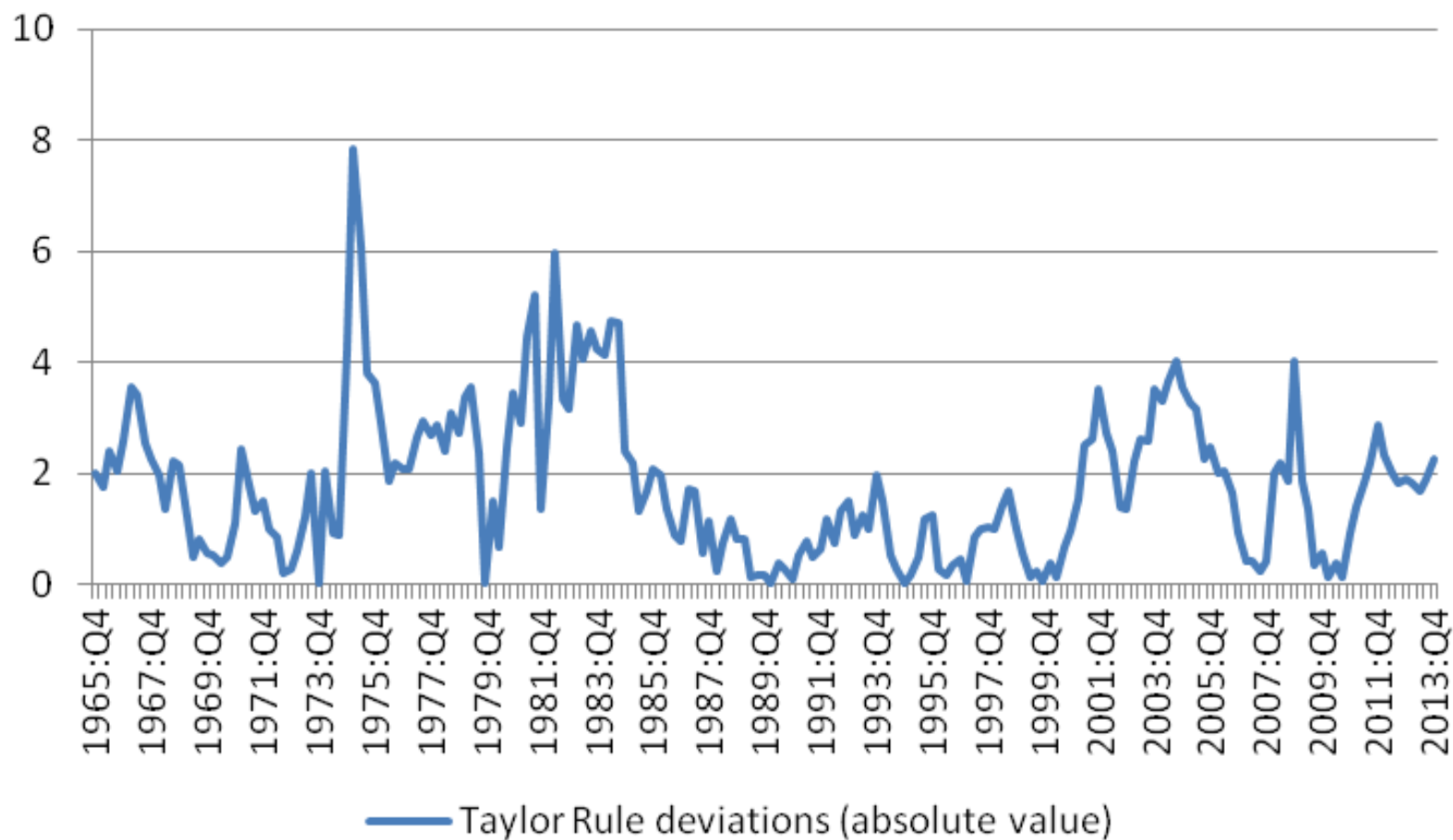


Data

- ❑ Both the model and data require careful treatment, hence:
 - Use “shadow rate” of Wu & Xia as the policy rate after 2008
 - Assume a lag (4-8 quarters) between policy changes and economics performance to account for endogeneity
 - Use “real-time” RTDME data (“snapshots”) that policymakers had access to to estimate the model and date the eras
 - Allow the equilibrium interest rate to vary in time (Laubach and William, 2016)
 - Multiple measures of the output gap (Q, L, HP, Un)
 - Use revised data for policy evaluation



Taylor Rule Deviations



Markov Switching Model

- ❑ Recall, our first goal is to identify periods of large (“discretion”) and small (“rules”) deviations
- ❑ Two-state Markov Switching (Hamilton, 1989) model estimated over 1965-2015 (all available real-time data sample)

$$d_t = \mu_{St} + \varepsilon_{St}$$

- ❑ Mean and variance follow two separate MS processes with their own state distributions & transition probabilities
- ❑ Rules-based eras - low mean, discretionary eras - high mean

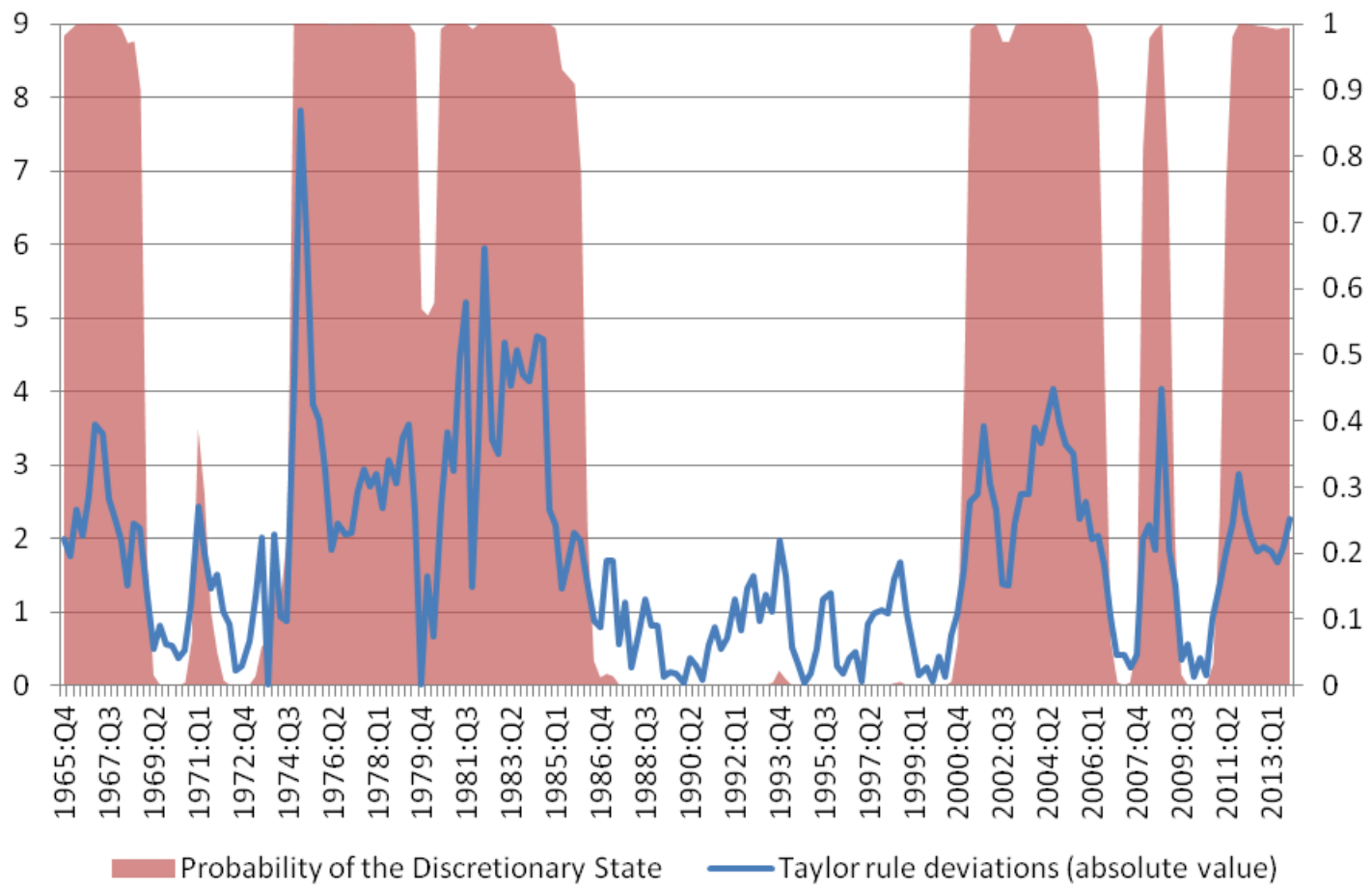


Markov Switching Model: Independently Switching Mean and Switching Variance

	State s=1 (Rule-based policy)	State s=2 (Discretion)
μ_s	0.786 (0.069)	2.492 (0.089)
σ_s	0.598 (0.039)	2.089 (0.350)
p_{ss}^{mean}	0.985 (0.203)	0.906 (0.303)
p_{ss}^{var}	0.946 (0.161)	0.942 (0.155)



Markov Switching: State Distribution for the Switching Mean



Proposed Loss Functions

- ❑ We have endogenously divided the sample into eras. Now we need to come up with a metric to compare them
- ❑ Calculate loss functions for rules-based and discretionary eras
 1. Okun's Misery Index
 - (Inflation + Unemployment)
 2. Linear absolute loss function
 - $|\text{inflation} - 2\%| + |\text{unemployment rate} - \text{natural rate}|$
 3. Quadratic loss function
 - $(\text{inflation} - 2\%)^2 + (\text{unemployment rate} - \text{natural rate})^2$



Loss Functions

Main Conclusion: Rules do Better than Discretion

	Average Loss During Taylor-Rule Eras	Average Loss During Discretionary Eras
Panel A: Misery Index $L = \text{Inflation} + \text{Unemployment}$		
Markov Switching	8.74	10.83
Structural Change	8.52	11.11
Panel B: Linear Loss Function $L = \text{Inflation} - 2\% + \text{Unemployment} - \text{Natural Rate} $		
Markov Switching	2.37	3.87
Structural Change	2.32	3.95
Panel C: Quadratic Loss Function $L = (\text{Inflation} - 2\%)^2 + (\text{Unemployment} - \text{Natural Rate})^2$		
Markov Switching	5.91	14.86
Structural Change	5.10	15.91

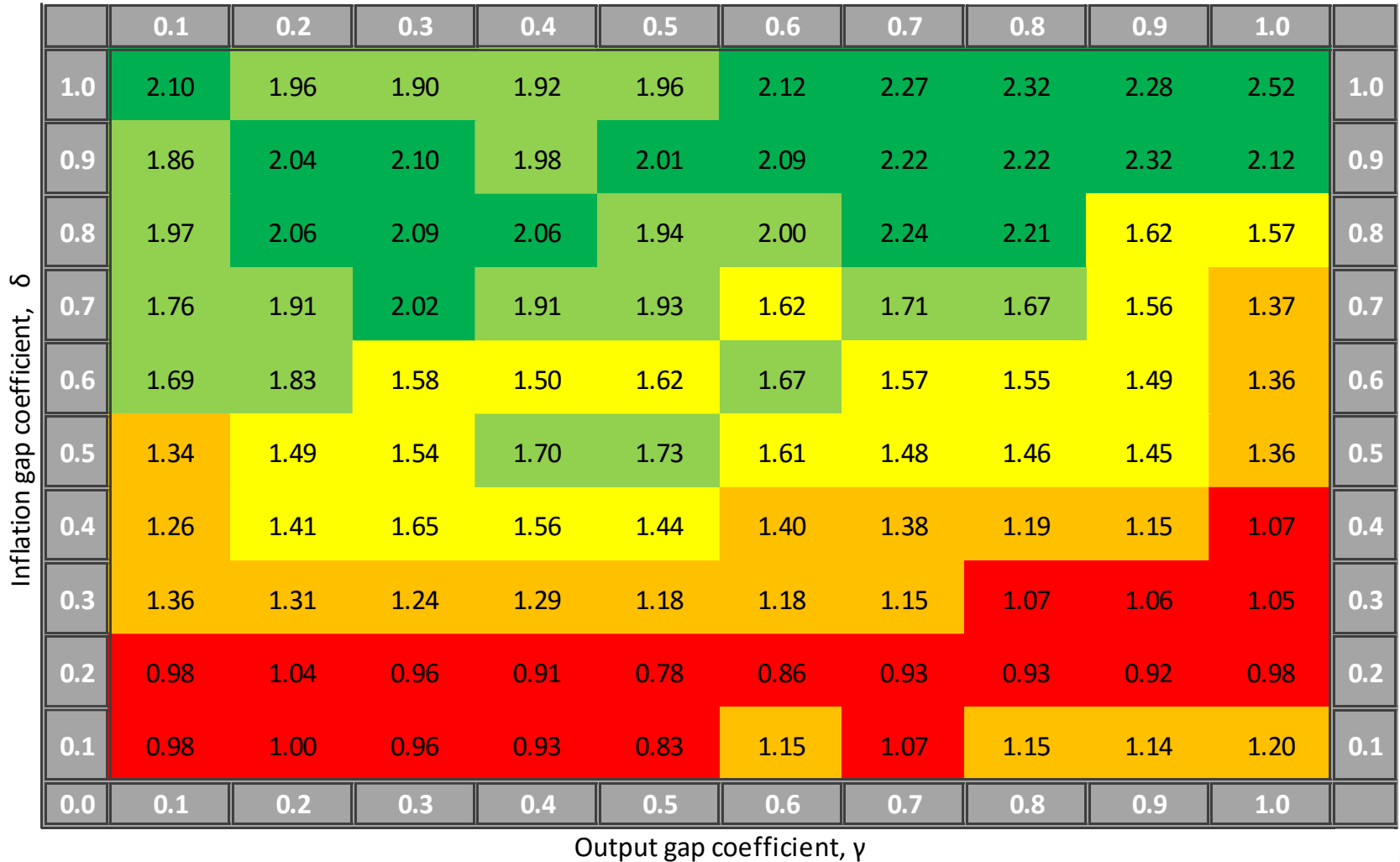


Results for the US

- ❑ For the U.S., economic performance was stronger when the Fed was (implicitly) using the Taylor rule
- ❑ This result does not depend on the loss function, measure of the output/unemployment gap, assumed policy lag, etc
- ❑ Does that mean the 1993 rule with $\frac{1}{2}$ & $\frac{1}{2}$ inflation gap & output gap coefficients is the best? No.
- ❑ Rules that favor the inflation response coefficient over the output gap response coefficient are most successful (Nikolsko-Rzhevskyy, Papell, Prodan, 2016)



Alternative Taylor Rules, $Loss_{discretion}/Loss_{rules}$



Lessons for Ukraine

- ❑ The banking system is being reformed, cleaned, & revitalized
- ❑ Inflation targeting is in place with clear long-term goals; seems to already be bearing fruit (43% -> 12%)
- ❑ Monetary policy was updated, simplified (2-week CDs), & more transparent than ever (press conferences, conferences, etc.)
- ❑ But some challenges remain that make the NBU's job harder:
 - Inflation expectations remain relatively high; UAH/USD
 - Huge heterogeneity b/w regions & apparent lack of trust for the NBU (Coibion & Gorodnichenko, 2015)
 - Investors and general public (sometimes) misjudge the policy



A room for a rule? Yes!

- ❑ In the past, there was no need for a rule, the UAH/\$ exchange rate was de facto fixed. How about the current situation?
- ❑ Today, Ukraine & the NBU can benefit from adopting a rule:
 - Increase credibility & transparency of monetary policy
 - Reduce political pressure on the NBU
 - Set forward expectations & simplify investment decisions
- ❑ Does not mean that it should be used mechanically – no, it should only be referred to (& even deviated from when needed)
 - But each “large” deviation would have to be explained



Which rule would work for Ukraine?

- ❑ Performing an empirical analysis, similar to that for the US, is impossible due to a very short sample – not enough datapoints to estimate a model & pick an optimal rule
- ❑ However, any reasonable rule that obeys basic monetary policy principles will help establishing credibility for the NBU
- ❑ Hence, the NBU can rely on past research, decide on a rule, and occasionally make (infrequent) adjustments if needed
- ❑ What do we know about the mechanics of the rules for developing countries/small open economies?



What to use as the LHS policy variable

- ❑ The choice is dictated by the economy (Taylor, 2012):
 1. Monetary aggregates (more volatile economy, 2014-2015):
 - When inflation is high and volatile
 - There's uncertainty about real & equilibrium interest rates
 - Large shocks to NX and I
 2. Short term lending rate (more stable, developed economy):
 - Should be used if the velocity of money V is unstable
- ❑ If we assume that the worst is behind Ukraine now, the NBU is doing the right thing by using the policy rate



How to choose independent RHS variables

- ❑ Floating hryvnya – might need to add the UAH/\$ exchange rate to the standard two-variable rule (CGG, 1998)
- ❑ Alternatively, can include a response to the Funds Rate – account for policy spillover – as the majority of central banks appear to be doing (Edwards, 2016)
- ❑ However, Ball (1999), Svensson (1999) – no need to react to exchange rate, performance will deteriorate (in terms of variance of inflation and output)
- ❑ Hence, simple two-factor rules are still applicable for SOE



Conclusions

- ❑ There's a general trend toward using policy rules
- ❑ Using a rule has many positive implications, especially for developing countries such as Ukraine, such as increase credibility, anchor inflation expectations, encourage investments
- ❑ The NBU shouldn't mechanically follow a rule, but could use it as a reference and explain any deviations if needed
- ❑ A simple two-variable rule is expected to perform well for the case of Ukraine



Thank you!

