

New Economic School

Macroeconomics 2

Problem set 5

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Due on December 8th before sections

1. Consider a developing country. Suppose that *all* consumption goods in an economy are imported from the US and sold at a constant world dollar price, therefore CPI inflation is equal to the depreciation of the currency: $\pi_t = \frac{e_{t-1}}{e_t} - 1$. Exchange rate is fully flexible. Proportion $1 - \lambda$ of the workers in the economy are producing exportables (aluminum and copper). Their wages are fixed in dollars, hence whenever depreciation increases domestic currency prices, their income in domestic currency increases as well. The Phillips curve is given by

$$\pi_t - (\lambda\pi_t^e + (1 - \lambda)\pi_t) = \alpha(u_N - u_t),$$

and the price expectation are formed as follows: $\pi_t^e = \pi_{t-1}$. (notice that workers who are employed in the export sectors are perfectly insulated from domestic inflation, because their)

- (a) Simplify the Phillips curve.
 - (b) What happens to depreciation, inflation, and unemployment rates, if authorities increase the rate of growth of money stock in the short run? Long run?
 - (c) Analyze the effects of the dollarization of the economy. Suppose that more workers are paid in dollars (λ goes down). What happens to the long run unemployment? What happens to the short-run policy trade-off between money growth and unemployment? Will authorities become more likely to use money growth as a policy tool?
2. Suppose the output is given by the “surprise” supply function $y_t = \alpha(p_t - E_{t-1}p_t)$ and that the price level follows random walk with drift:

$$p_t = \pi + p_{t-1} + \varepsilon_t, \tag{1}$$

where π (determined by monetary authorities) is constant over the past. You are a friendly econometrician looking for an inflation-output trade-off by estimating the equation:

$$y_t = \beta_0 + \beta_1(p_t - p_{t-1})$$

What would your estimates of β_0 and β_1 be? Can the trade-off be systematically exploited by the authorities? What would you find if (1) were replaced by (2)

$$p_t = \pi + (1 + \gamma)p_{t-1} - \gamma p_{t-2} + \varepsilon_t \tag{2}$$

and you were to estimate an equation of the form

$$y_t = \beta_0 + \beta_1(p_t - p_{t-1}) + \beta_2(p_{t-1} - p_{t-2})$$

What would your estimates of β_0 , β_1 and β_2 be? Can the trade-off be systematically exploited by the authorities?