Politica Monetaria bajo la presencia de Mercados Laborales Informales[1]

Encuentro de Economistas BCRP 2008

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[1] Los puntos de vista expresados aqui son aquelllas de los autores y no reflejan necesariamente las del BCRP.

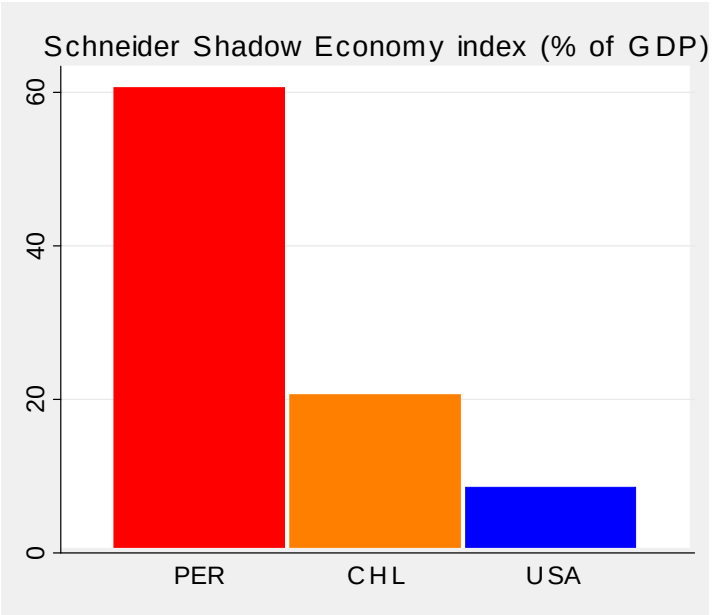
MOTIVATION

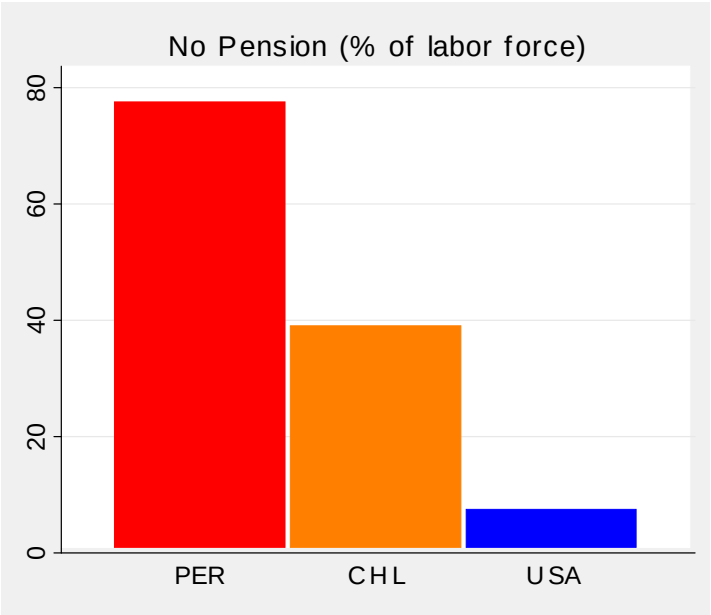
What is the informal economy?

- The informal sector is the collection of firms, workers, and activities that operate outside the legal and regulatory frameworks (De Soto - 1989).
- Informal sector escapes from the burden of taxation and regulation, at the expense of loosing protection and services that the state can provide.
- As a consequence, informal sector produces at a sub-optimal scale.

MOTIVATION

Informal Economy is Important in Developing Economies





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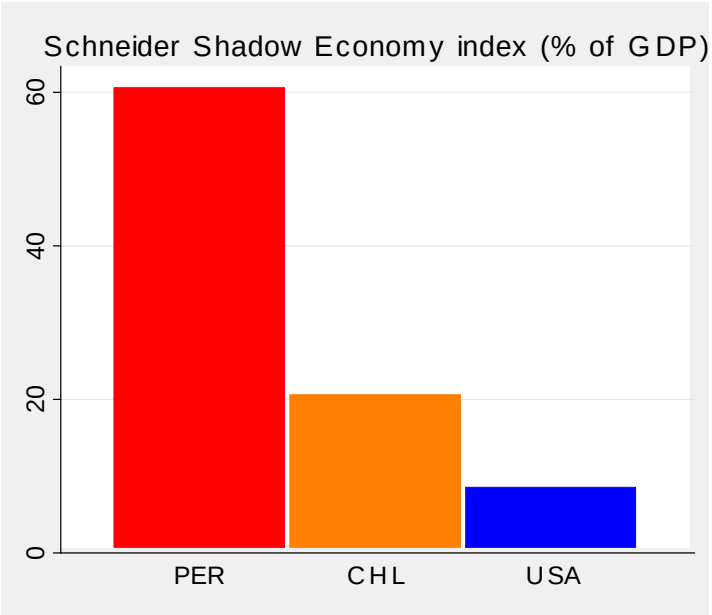

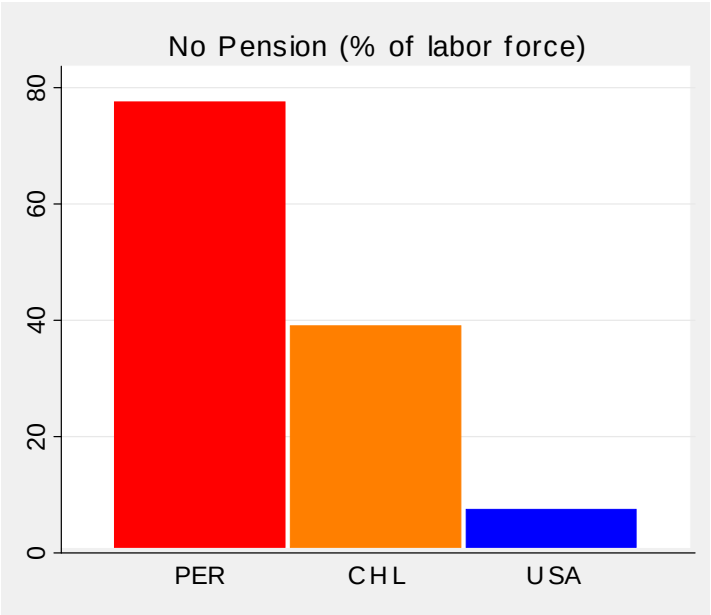

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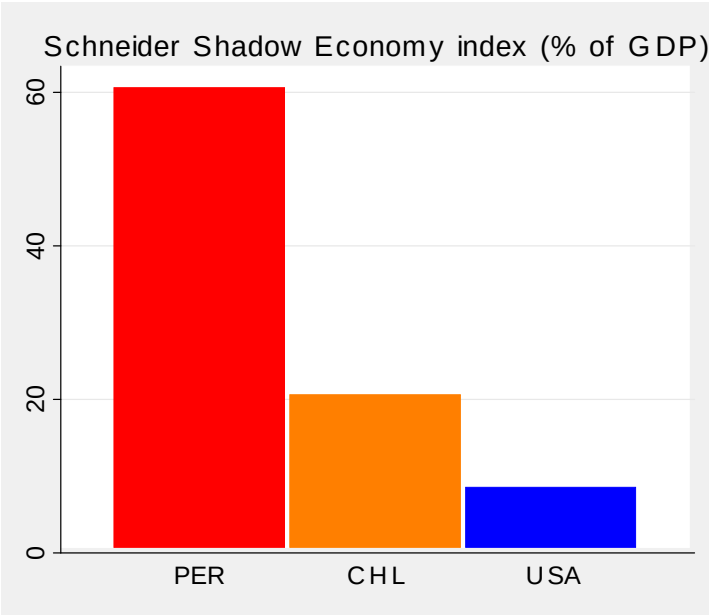

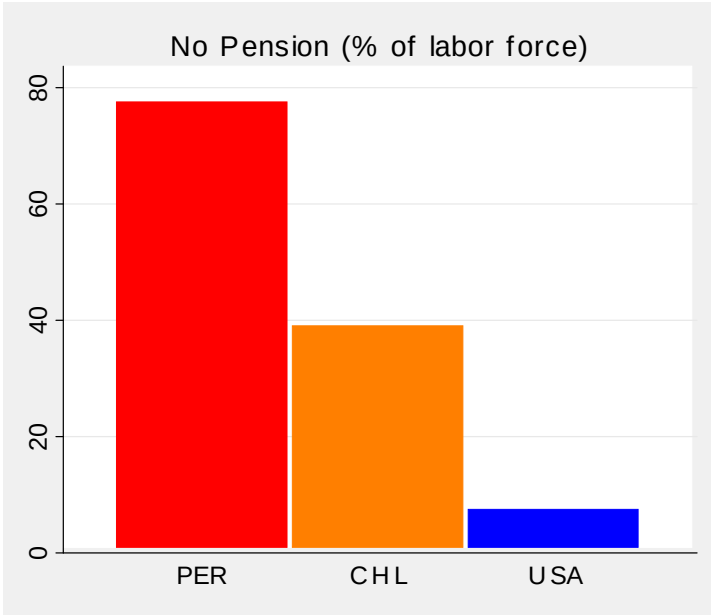

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- Between 40% to 80% of the labor force is employed in informal jobs.
- The flows between the formal and informal employment are important (Bosch and Maloney 2006, Word Bank 2008).

Questions that need to be answered:

- How does the presence of the Informal sector affects the transmission mechanism of monetary policy?

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- What is the optimal design of monetary policy?
- What determines the flows between formal and informal employment?
- Are those flows symmetric?

What other authors have done?

Two strands of literature:

1) New Keynesian Model:
GE models with nominal rigidities**.**
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Bosch (2006): includes informal labor markets in the DMP model

New strand of the literature:

Include labor market frictions into a standard closed-economy New Keynesian model.

Walsh (2003,2005), Blanchard and Galí (2006), Thomas (2006), Ravenna and Walsh (2007).

Main result: unemployement affects (again) inflation!

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- Labor market frictions in line with the DMP model.
- Modelling explicitly the Labor market of the Informal sector.

What do we find?

- Informal Economy generates a **"buffer"** on the effects of aggregate demand pressures on inflation. Consistent with the "buffer hypothesis" (Bovi -2007, Ihrig and Moc -2001, Cibes et. al. -2001, Carillo and Pugno -2004, Bowler and Morisi - 2006).

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- Flows between formal and informal employment are affected by the shocks.
- Demand shocks and technology shocks move labor from the formal to the informal sector. Informal labor is procyclical.

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5. Monopolistic competition and price stickiness.

The Economy

3 main equations:

Aggregate Demand:

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Informal Economy affects inflation through **marginal costs**.

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- At each period, a fraction δ of matches is exogenously terminated.

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Technology

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- Production functions:

$$\begin{aligned} Y_t^F &= A_t N_t^F \\ Y_t^I &= \gamma A_t N_t^I \end{aligned}$$

where $\gamma < 1$.

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where: $\alpha_F > \alpha_I$, $B^F > B^I$ and X_t^j measures labor market tightness

$$X_t^j = \frac{H_t^j}{U_t} \qquad \text{for } j = \{F, I\}$$

Some definitions

- Labor of each type evolves as:

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- The unemployment rate (before hiring takes place) is:

$$U_t = 1 - (1-\delta)\, N_{t-1}$$

Labor Markets: Firms

Labor demand

- Real wages equal marginal rater of transformation:

$$
\begin{aligned}
W_t^F &= A_t MC_t - \left[G_t^F - (1-\delta) E_t Q_{t,t+1} G_{t+1}^F \right] \\
W_t^I &= \gamma A_t MC_t - \left[G_t^I - (1-\delta) E_t Q_{t,t+1} G_{t+1}^I \right]
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- Marginal costs depend on real wages, hiring costs and the composition of labor in each sector.

Labor supply

Value functions

- The value of being employed in the formal and the informal sector

$$
\begin{aligned}
V_t^F &= W_t^F - \chi \frac{N_t^{\eta}}{C_t^{-\sigma}} \\
&\quad + \beta E_t \left(Q_{t,t+1} \left[\begin{array}{c} \left(1 - \delta + \delta X_{t+1}^F\right) V_{t+1}^F + \delta X_{t+1}^I V_{t+1}^I \\ + \delta \left(1 - X_{t+1}\right) V_{t+1}^U \end{array} \right] \right)
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V_t^I &= W_t^I - \chi \frac{N_t^{\eta}}{C_t^{-\sigma}} \\
&\quad + \beta E_t \left(Q_{t,t+1} \left[\begin{array}{c} \left(1 - \delta + \delta X_{t+1}^I\right) V_{t+1}^I + \delta X_{t+1}^F V_{t+1}^F \\ + \delta \left(1 - X_{t+1}\right) V_{t+1}^U \end{array} \right] \right)
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\end{aligned}
$$

- The value of being unemployed:

$$
V_t^U = W^U + \beta E_t \left(Q_{t,t+1} \left[\begin{array}{c} X_{t+1}^F V_{t+1}^F + X_{t+1}^I V_{t+1}^I + \\ \left(1 - X_{t+1}\right) V_{t+1}^U \end{array} \right] \right)
$$

Labor supply

Wage determination

- Wages are determined through Nash bargaining: where λ is the relative weight of workers in the Nash bargaining:

$$\begin{aligned} V_t^F - V_t^U &= \lambda G_t^F \\ V_t^I - V_t^U &= \lambda G_t^I \end{aligned}$$

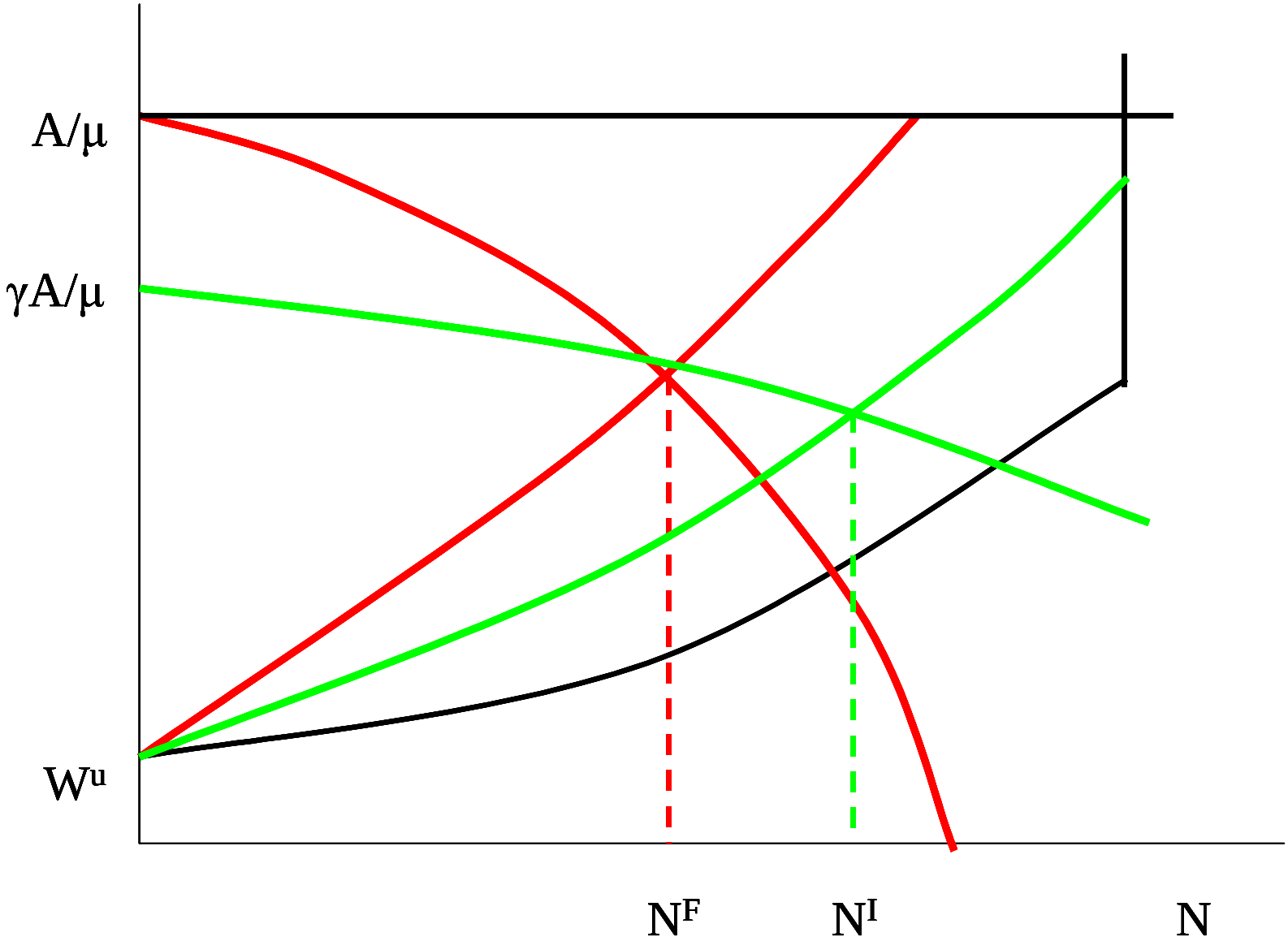
where λ is the relative weight of workers in the Nash bargaining.

- After Nash bargaining, the wage curves are given by:

$$\begin{aligned} W_t^F &= \chi \frac{N_t^\eta}{C_t^{-\sigma}} + W^U \\ &\quad + \lambda \left[G_t^F - (1-\delta) E_t Q_{t,t+1} \left(G_{t+1}^F \left(1 - X_{t+1}^F \right) - G_{t+1}^I X_{t+1}^I \right) \right] \\ W_t^I &= \chi \frac{N_t^\eta}{C_t^{-\sigma}} + W^U \\ &\quad + \lambda \left[G_t^I - (1-\delta) E_t Q_{t,t+1} \left(G_{t+1}^I \left(1 - X_{t+1}^I \right) - G_{t+1}^F X_{t+1}^F \right) \right] \end{aligned}$$

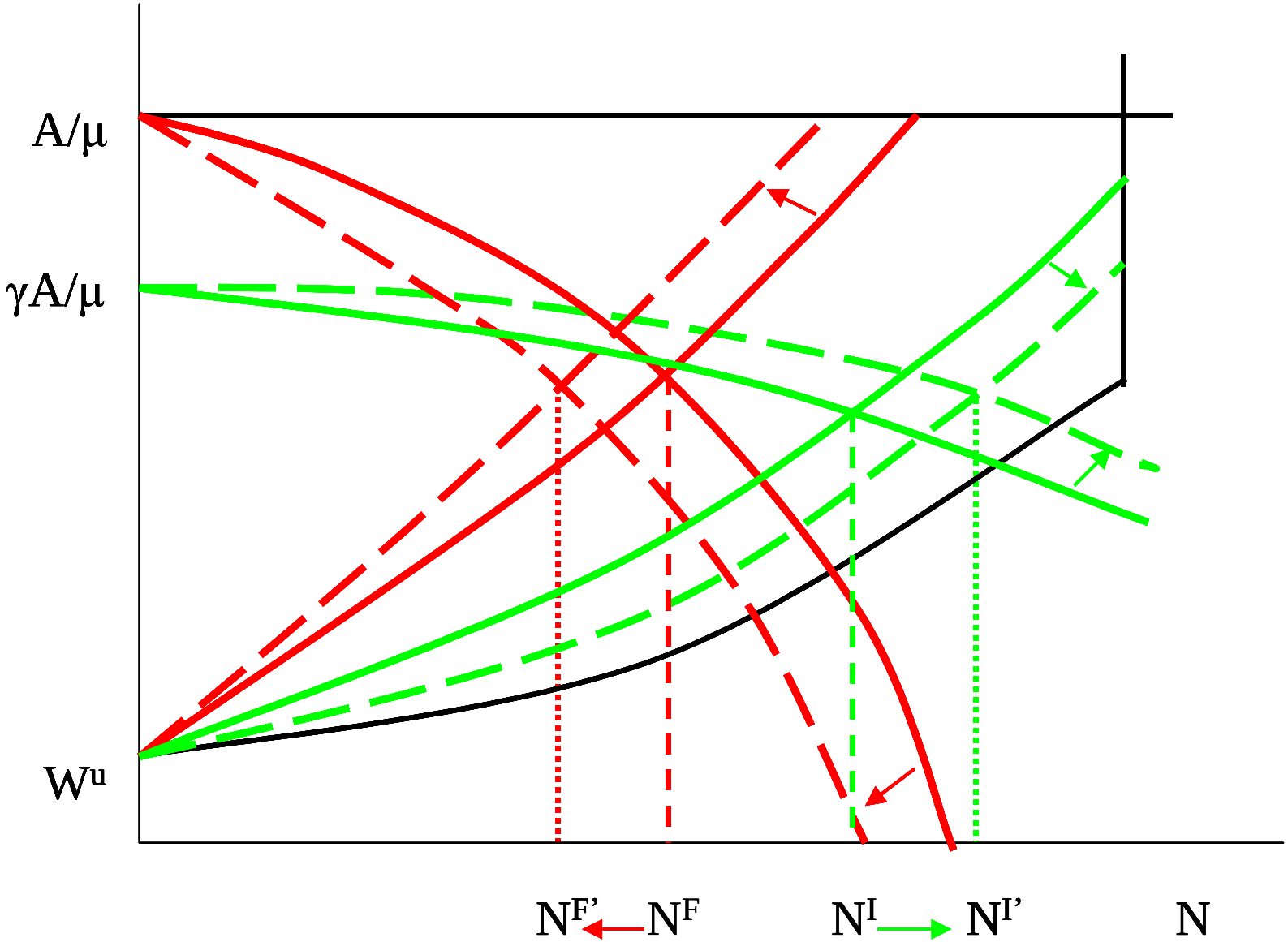
Steady state

Labor market equilibrium



Steady state

Increase of hiring costs in the formal sector affects informal sector



Results:

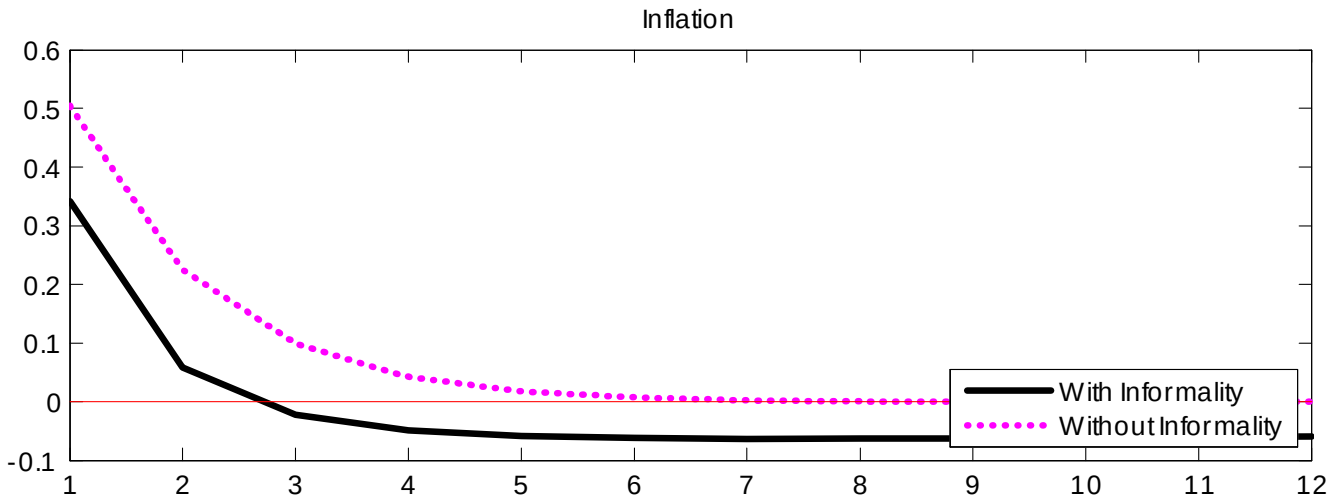
Steady state

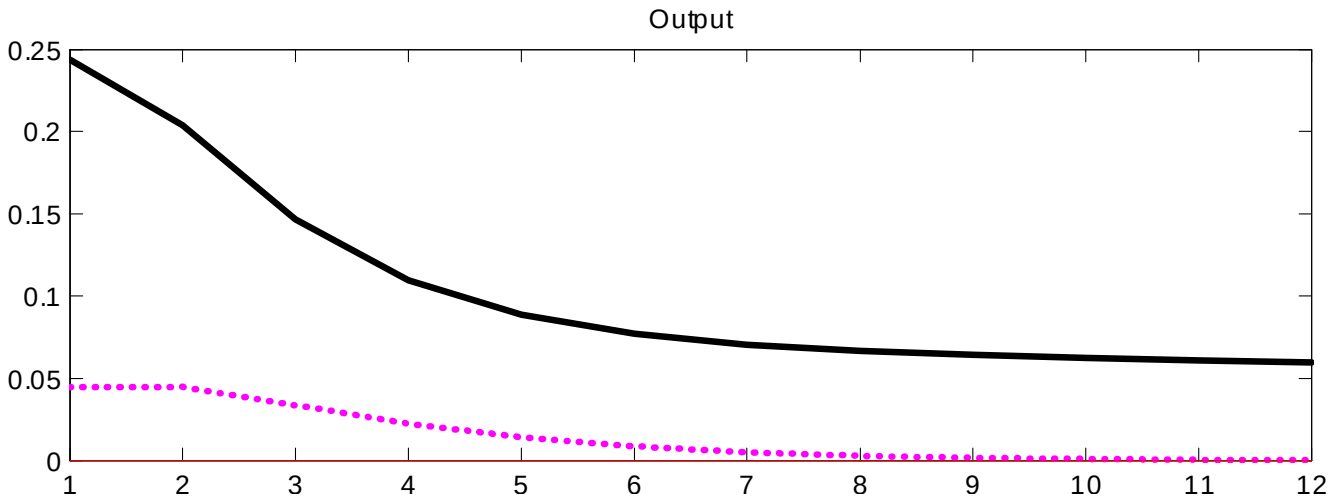
- Hiring costs generate unemployment.
- Informality is a "second best" response.

	Without hiring costs	With hiring costs	
		Informal Economy	No Informal Economy
Y	1	0.86	0.83
N	1	0.88	0.80
N^F / N	1	0.63	1.00
N^I / N	0	0.37	0.00

Results:

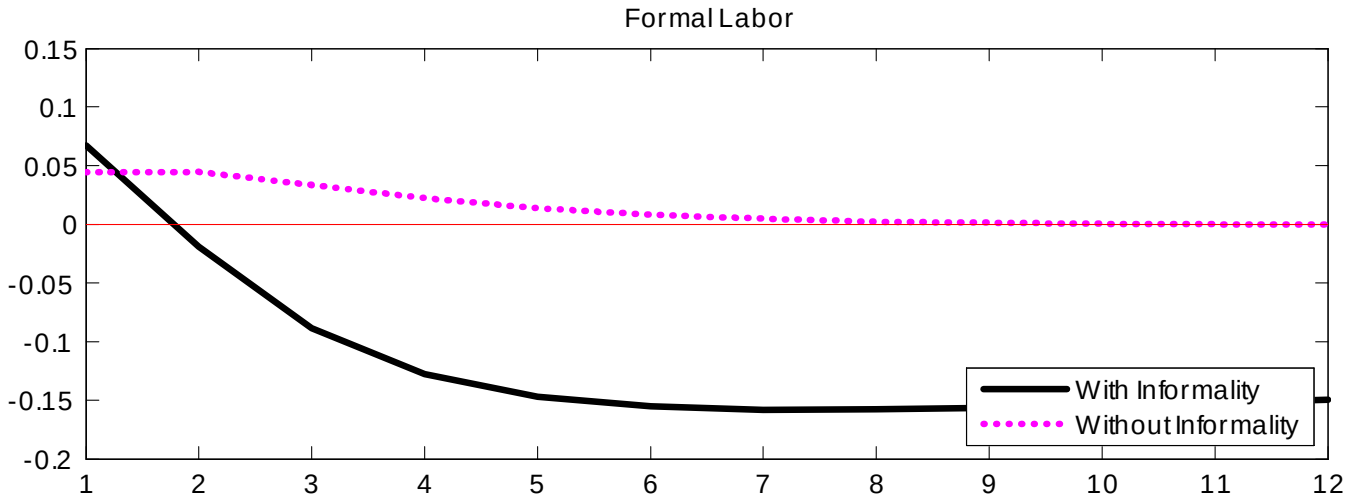
Informality mitigates impact of demand shocks on inflation (buffer effect)

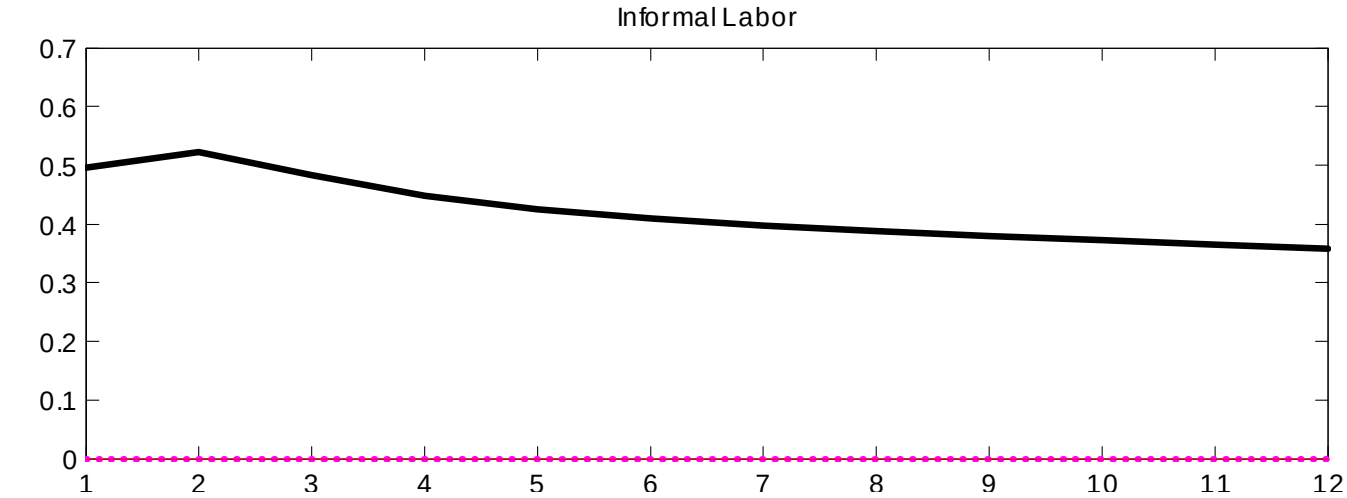




Results:

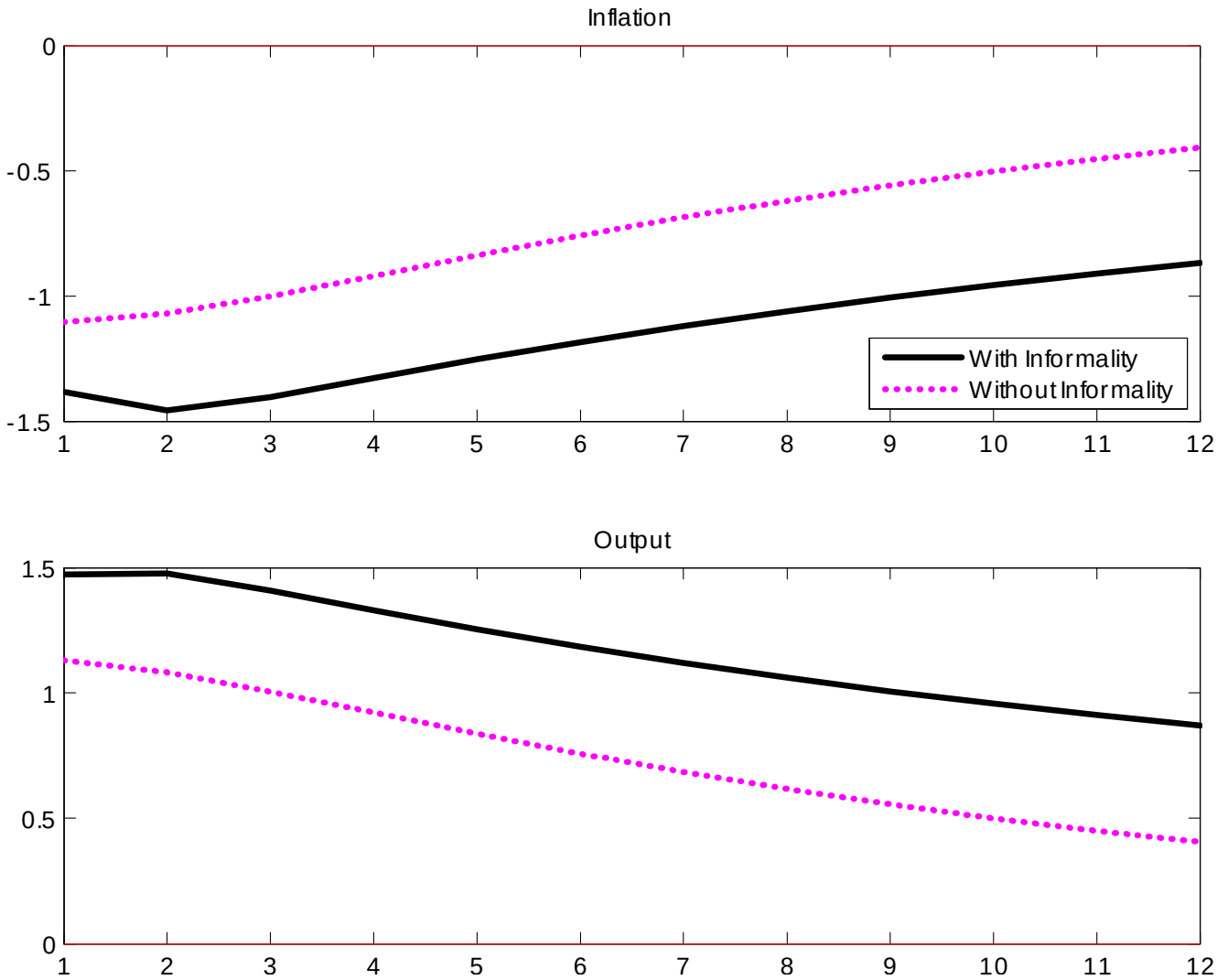
Positive demand shock increase employment in the informal sector and reduce it in the formal sector





Results:

Informality amplifies effects of productivity shocks on inflation and output.



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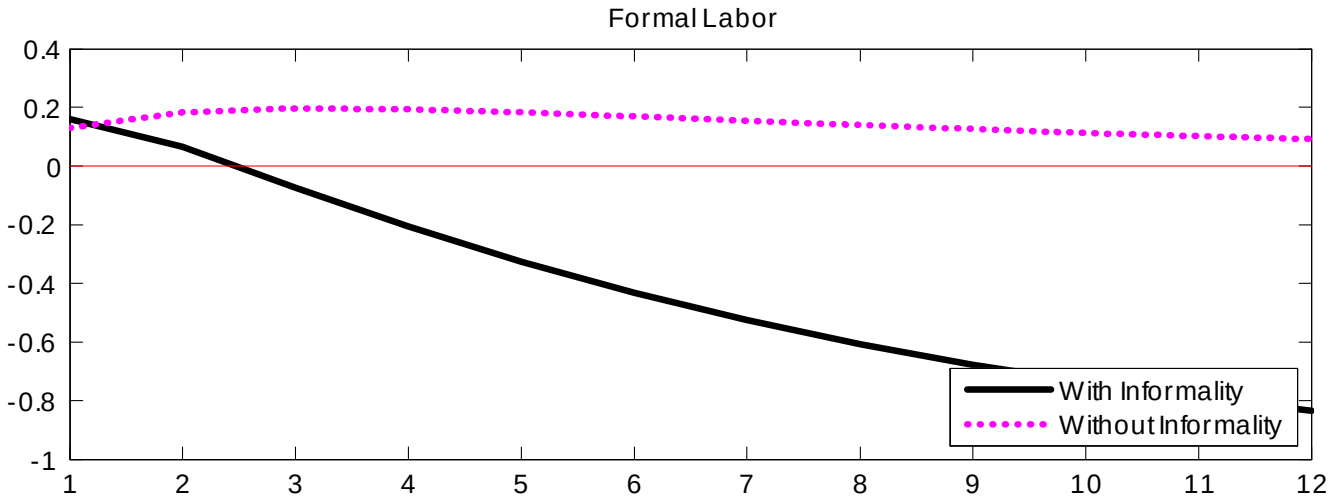

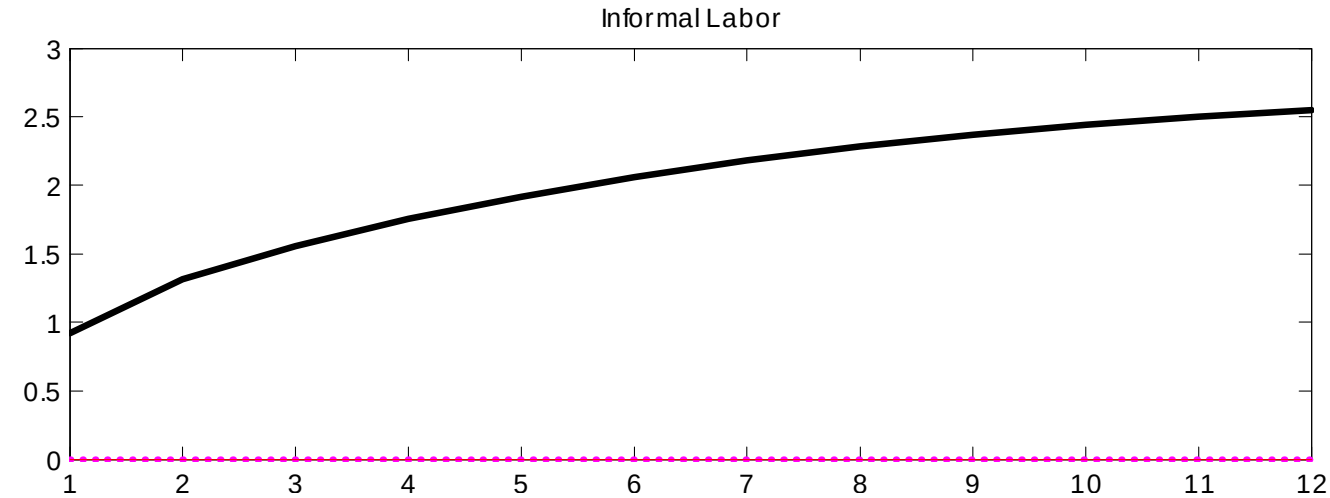

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