Erratum to:

Optimal Monetary Policy in an Economy with Inflation Persistence

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This note discribes errors in my article, Steinsson (2003).

1 Optimal Price Setting by Forward-Looking Households

There are several typos in the published version of equation (17) and the equation before equation (17). The forward-looking households' price setting problem should be as follows. The forward-looking households choose the price that solves:

$$\max_p E_t \sum_{T=t}^{\infty} \alpha^{T-t} \{\Lambda_t R_{t,T} (1-\tau_T) \bar{\pi}^{T-t} p y_T(p) - \beta^{T-t} v(y_T(p); \xi_T)\}. \tag{1}$$

The first order condition of this problem is

$$E_t \sum_{T=t}^{\infty} (\alpha\beta)^{T-t} \left\{ Y_T \left(\frac{\bar{\pi}^{T-t} p_t^f}{P_T} \right)^{-\theta_T} (1-\theta_T) \left[u_C(Y_T; \xi_T)(1-\tau_T) \left(\frac{\bar{\pi}^{T-t} p_t^f}{P_T} \right) - \frac{\theta_T}{\theta_T - 1} v_y \left(Y_T \left(\frac{\bar{\pi}^{T-t} p_t^f}{P_T} \right)^{-\theta_T}; \xi_T \right) \right] \right\} = 0 \tag{2}$$

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2 Log-Linearization of the Supply Block

Equations (A.1) and (A.2.) contain some errors. These errors are actually unrelated to the typos in the published version of equation (17) discussed above. The correct versions of equations (A.1) and (A.2.) are

$$\pi_t = \frac{1-\alpha}{\alpha}((1-\omega)\hat{p}_t^f + \omega\hat{p}_t^b), \tag{3}$$

$$E_t \sum_{T=t}^{\infty}(\alpha\beta)^{T-t}\left\{(\sigma^{-1}+\psi^{-1})x_T + \frac{\bar{\tau}}{1-\bar{\tau}}\hat{\tau}_T - \frac{1}{\bar{\theta}-1}\hat{\theta}_T \right. \\ \left. -(1+\psi^{-1}\bar{\theta})\left(\hat{p}_t^f - \frac{\alpha\beta}{1-\alpha\beta}\pi_{T+1}\right)\right\} = 0 \tag{4}$$

This second log-linearization may seem somewhat puzzling. The key is that in the steady state with zero inflation and $\bar{\tau} = -(\bar{\theta}-1)^{-1}$ all terms outside the square brackets in equation (2) drop out since $u_C(\bar{Y};0) = v_y(\bar{Y};0)$. The inflation terms have also been rearranged in order to avoid having a double sum. These errors affect the rest of the derivation of the Phillips curve. Equation (A.5) becomes

$$\hat{p}_t^f = \alpha\beta E_t\hat{p}_{t+1}^f + \frac{1-\alpha\beta}{1+\psi^{-1}\bar{\theta}}\left((\sigma^{-1}+\psi^{-1})x_t + \frac{\bar{\tau}}{1-\bar{\tau}}\hat{\tau}_t - \frac{1}{\bar{\theta}-1}\hat{\theta}_t\right) + \alpha\beta E_t\pi_{t+1}. \tag{5}$$

Equation (A.6) becomes

$$\left(\omega + \frac{\alpha}{1-\alpha}\right)\pi_t = (1-\omega)\hat{p}_t^f + \frac{\omega}{1-\alpha}\pi_{t-1} + \delta\omega x_{t-1}. \tag{6}$$

And equation (A.8) becomes

$$\eta_t = -\frac{(1-\alpha)(1-\alpha\beta)(1-\omega)}{(\omega(1-\alpha+\alpha\beta)+\alpha)(1+\psi^{-1}\bar{\theta})\bar{\theta}}\hat{\tau}_t - \frac{(1-\alpha)(1-\alpha\beta)(1-\omega)}{(\omega(1-\alpha+\alpha\beta)+\alpha)(1+\psi^{-1}\bar{\theta})(\bar{\theta}-1)}\hat{\theta}_t \tag{7}$$

3 Optimal Policy

There are also typos in equations (29) and (31). These equations should be as follows:

$$E_0\left\{\sum_{t=0}^{\infty}\beta^t\left\{L_t + 2\phi_t(\chi_f\beta\pi_{t+1} - \pi_t + \chi_b\pi_{t-1} + \kappa_1 x_t + \kappa_2 x_{t-1} + \eta_t)\right\}\right\}. \tag{8}$$

$$(\lambda_1 + \beta\lambda_3)x_t + \frac{\beta\lambda_4}{2}E_t\pi_{t+1} - \frac{\beta\lambda_4}{2}\pi_t + \kappa_1\phi_t + \beta\kappa_2 E_t\phi_{t+1} = 0. \tag{9}$$

4 Sign of λ_4

There is a sign errror in the reported value of λ_4. The correct expression for λ_4 is

$$\lambda_4 = -\frac{2(1-\alpha)\omega\delta}{\alpha(1-\omega)}.$$

5 How Do These Errors Affect the Results of the Paper?

New versions of figures 1-9 in the paper are presented below. Most of the main features of the results are unchanged. However, there are some differences. One difference is the behavior from the first to the second period. In the published version of the paper the maximal impact of the shock occurs in the period after the shock first hits the economy. In the new version, the maximal impact is in the initial period. This difference is simply due to the error in equation (A.8) in the paper.

A second difference is that for the theoretical loss function the impulse response of inflation and output decay much more quickly in the new version of the figures than in the published version. This is interesting since it contrasts with the very slow decay that the traditional loss function yields. A third difference is that the price level response for $\omega = 0.7$ is quite a bit smaller than in the published results.

References

STEINSSON, J. (2003): "Optimal Monetary Policy in an Economy with Inflation Persistence," *Journal of Monetary Economics*, 50, 1425–1456.

Figure 1: Inflation when $\omega = 0.01$

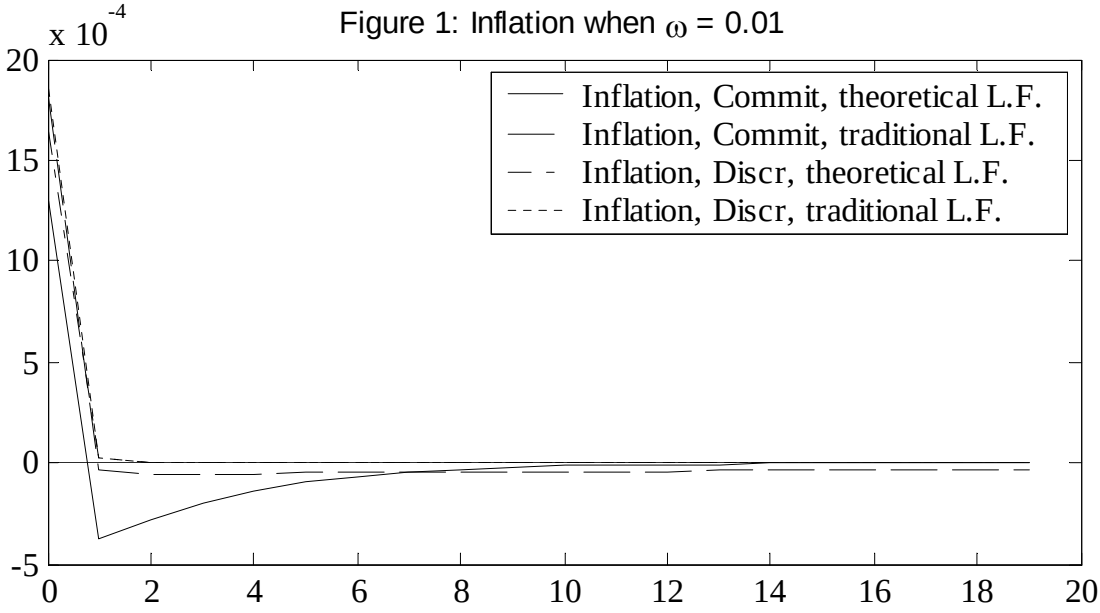

Figure 2: Output when $\omega = 0.01$

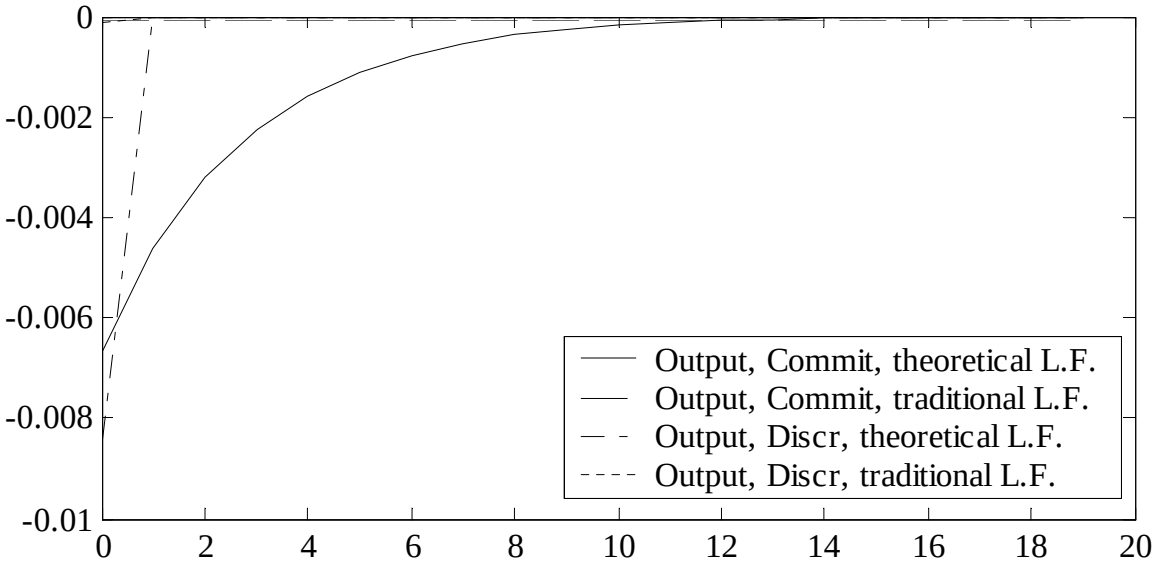

Figure 3: Inflation when $\omega = 0.2$

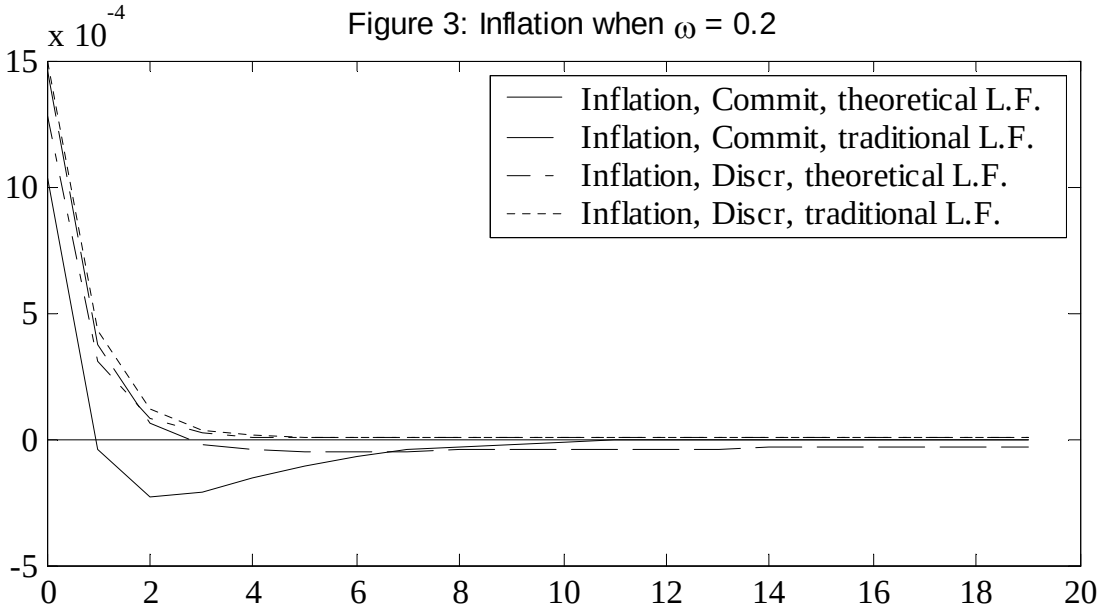

Figure 4: Output when $\omega = 0.2$

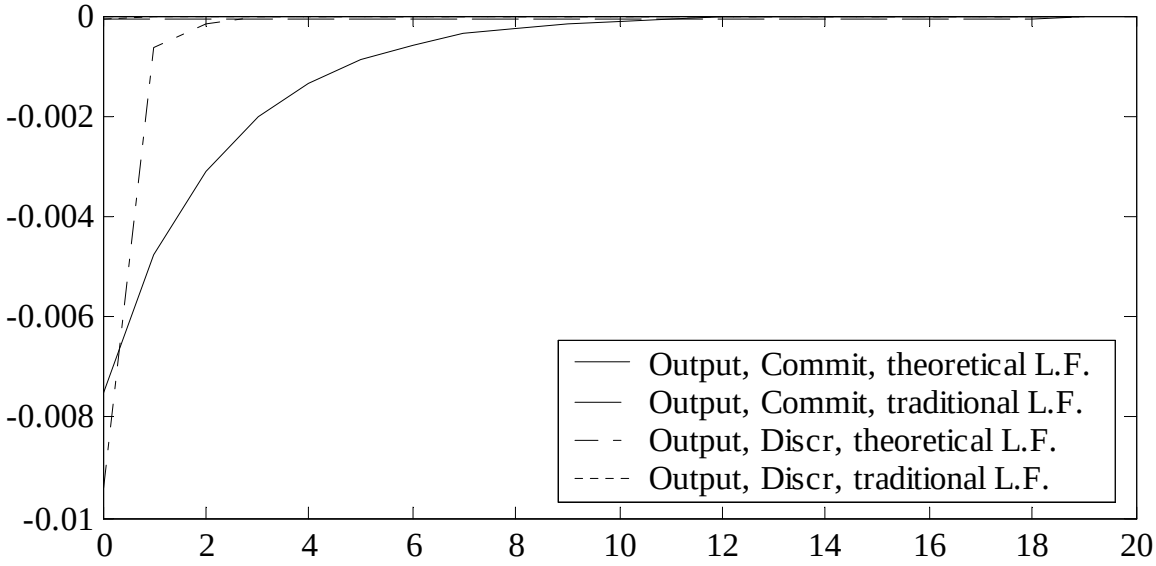

Figure 5: Inflation when $\omega = 0.7$

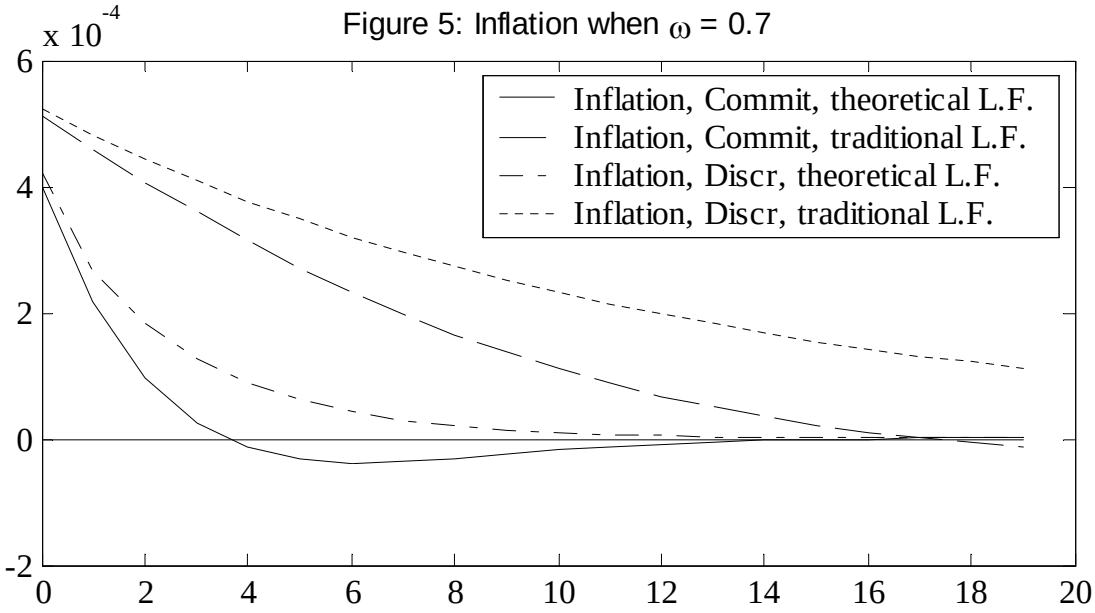

Figure 6: Output when $\omega = 0.7$

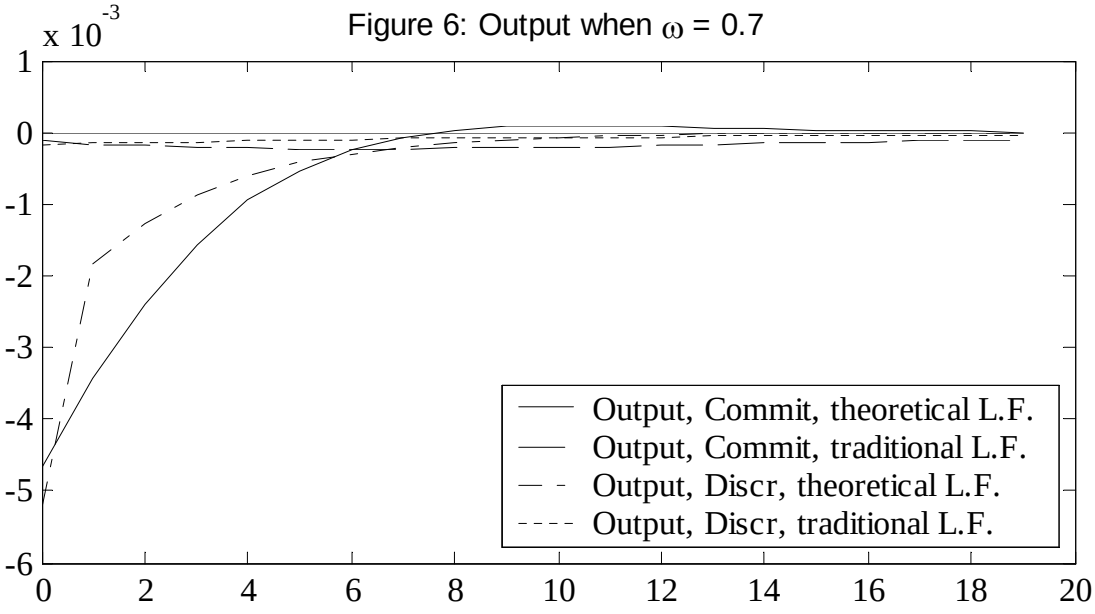

Figure 7: Inflation when $\omega = 0.99$

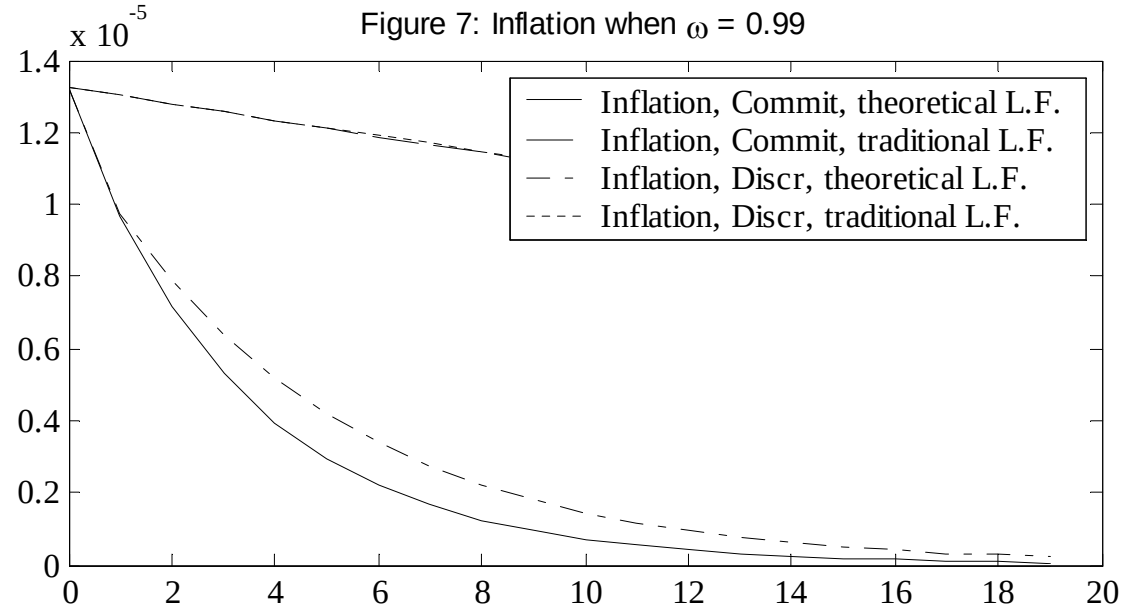

Figure 8: Output when $\omega = 0.99$

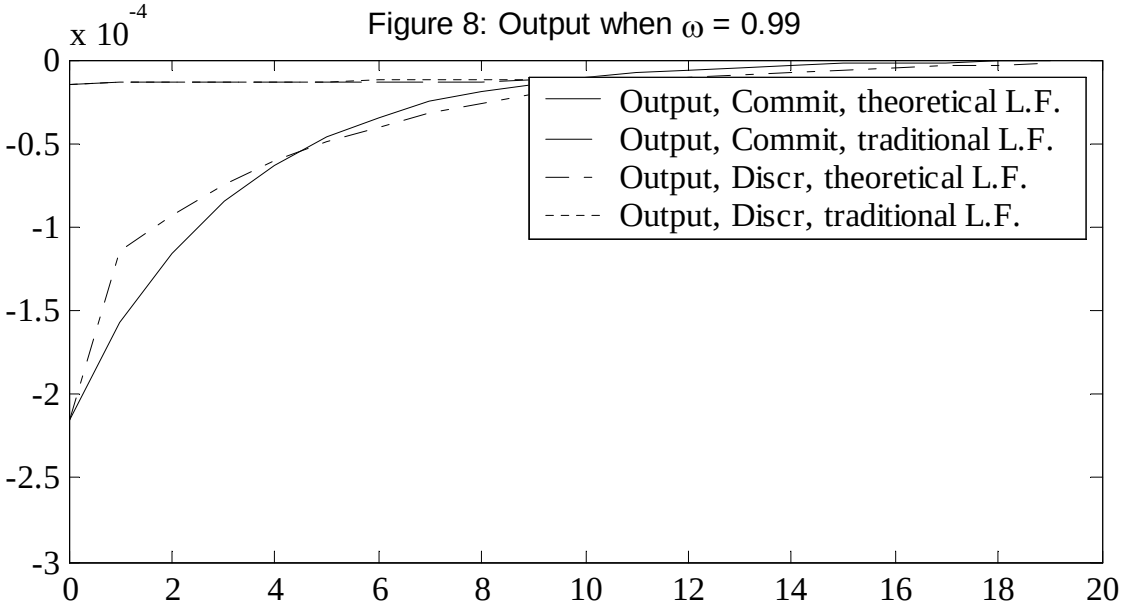

Figure 9: Price level for different ω