Computational Part

Figure 1: IRFs to a Monetary Policy Shock ε_{mt}

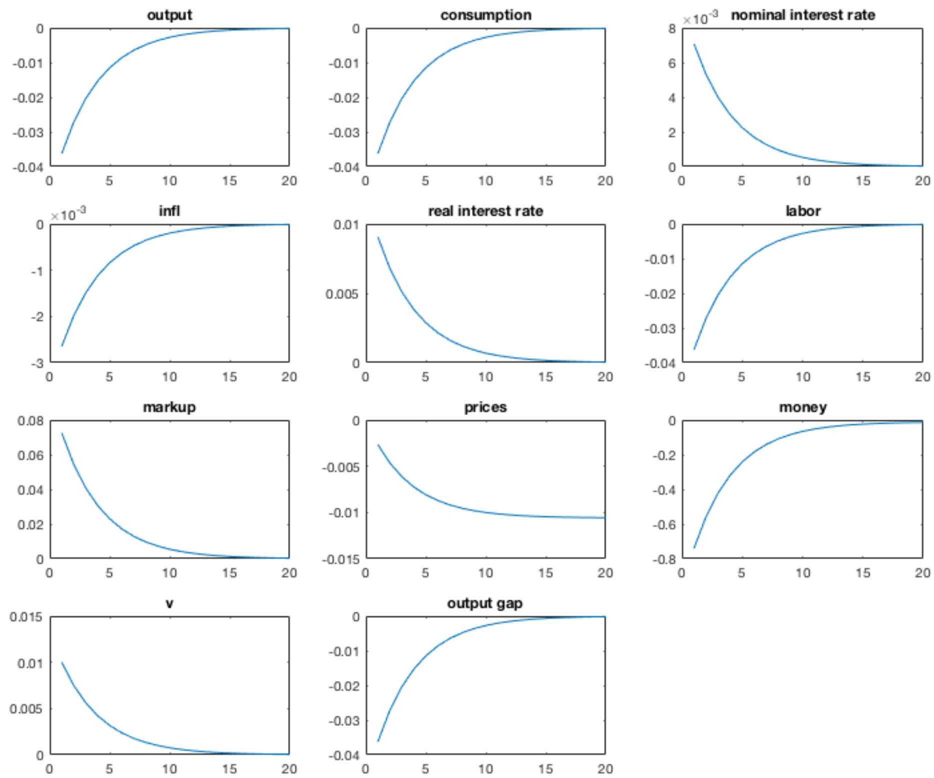

Figure 1 plots the IRFs of the main variables in the model to a 1% contractionary shock in monetary policy. Each period corresponds to a quarter. As a consequence of the tightening, nominal interest rates jump up, money goes down because as nominal interest rates rise the opportunity cost of holding cash increases. Mark-up increases: real wage goes down and consequently also the marginal cost that is inversely related to the mark-up. The opportunity cost of working increases and for this reason labor supply goes down. As labor is directly proportional to output that is equal to consumption in this specification, also the latter two variables decrease by the same amount. As the natural level of output is not affected by the policy shock, output gap is driven by the decrease in output. As inflation is inversely related to mark-up it goes down at the beginning and then recovers: more in detail, as mark-up is above the desired level, firms who have the opportunity to adjust will choose a lower price, in order to return to the desired level. Note that the real interest rate increases more than the nominal rate because of the decline in inflation. After the shock the economy returns towards the steady state: after around 15 quarters the effect of the shock is completely absorbed.

Dynare Code

```
var y c rnom pi a l mu p m v r y_star r_star gap;
varexo em ea;
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parameters phi am theta beta phipi rhoa rhom;
phi = 1; am = 0.001; theta = 0.9; beta = 0.99;
phipi = 1.1; rhoa = 0.95; rhom = 0.75;

model;
y = c;
c = c(+1)-rnom+pi(+1);
phi*l+c = y-l-mu;
y = a+l;
p-p(-1) = pi;
pi = ((theta-1)*(1-theta*beta)*mu/theta)+beta*theta*pi(+1);
rnom = phipi*pi+v;
m-p = c-(rnom/((1/beta)-1)); a = rhoa*a(-1)+ea;
v = rhom*v(-1)+em;
r = rnom-pi(+1);
y_star = a;
r_star = a(+1)-a;
gap = -mu/(1+phi);
end;

initval;
y = 0; c = 0; rnom = 0; pi = 0; l = 0; mu = 0; p = 0;
m = 0; r = 0; a = 0; v = 0; y_star = 0; r_star = 0;
end;
shocks;
var em=0.01^2;
end;
steady;
stoch_simul(irf=20,order=1);
```