Comments on
“Introducing Financial Friction, Unemployment and Non-wasteful Government Spending into a Small Open Economy Model: The Role of Fiscal Policy” by Matsumae, Tatsuyoshi and Rho Hasumi

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Summary & Contribution

• This paper extends the baseline DSGE model with various frictions, such as Christiano et al (2005) and Smets and Wouters (2003, 2005), by following 4 papers below.

  ➢ Financial friction (Gertler and Karadi, 2011)
  ➢ Wage New Keynesian Phillips Curve (Gali, 2011)
  ➢ Public capital accumulated by government investment and “Edgeworth Complementarity(EC)” (Iwata, 2013)
  ➢ Incomplete exchange rate pass-through (Adolfson, 2007)
Summary & Contribution

• This paper examines 5 impulse responses and evaluates the effects of financial friction, EC, and public capital.

I. “Neutral” technology shock (w and w/o financial friction)
II. Monetary policy shock (w and w/o financial friction)
III. Capital quality shock (w and w/o financial friction)
IV. Government consumption shock (w and w/o EC)
V. Government investment shock (w and w/o productivity of public capital)

• The contribution of this paper is providing useful assessments of interactions among various ingredients.
Comment 1: Edgeworth Complementarity

- How does EC work in the model?
- The EC could incorporate the interaction between private and government consumption in the model.

Households’ maximization problem

$$\max E_t \sum_{i=0}^{\infty} \beta^i \left( \zeta_{s+t} \ln \left( \tilde{C}_{j,t+i} - h \tilde{C}_{t+i-1} \right) - \zeta_{t+i} \lambda_{t+i} A_{H} \left( \tilde{H}_{j,t+i} \right)^{1+\sigma_h} \right)$$

where $\tilde{C}_{j,t} = C_{j,t} + \nu_g G_t$

$\nu_g = -0.415$
Comment 1: Edgeworth Complementarity

- The responses of consumption look exactly the same across the cases, with- and without- the EC. But, other variables move differently.

Impulse response to government consumption shock (fig. 4 in the paper)
Comment 1: Edgeworth Complementarity

- What would happen if a CES or Cobb-Douglas specification is employed instead of the linear specification for EC?

\[
\max_{E_t} \sum_{i=0}^{\infty} \beta^i \left( \zeta^{c}_{t+i} \ln \left( \tilde{C}_{j,t+i} - h\tilde{C}_{t+i-1} \right) - \zeta^{h}_{t+i} \chi^{h}_{t+i} A_H \left( \frac{\tilde{H}_{j,t+i}}{1 + \sigma_h} \right)^{1+\sigma_h} \right)
\]

where \( \tilde{C}_{j,t} = C_{j,t} + \nu_g G^C_t \) \( V_g = -0.415 \)
Comment 2: Crowd-out or Crowd-in?

• Consumption in figure 4 illustrates negative response to the positive government consumption shock, which means “Crowd out”.

With EC

Without EC

Impulse response to government consumption shock (fig.4 in the paper)

Model response to government consumption shock (Iwata, 2013)
Comment 2: Crowd-out or Crowd-in?

• Iwata(2013) argues the puzzle;
  “A structural VAR analysis tends to find a *crowding-in* of consumption .... However, standard DSGE models predict *crowding-out* of consumption....”

• Iwata solves it with the DSGE model by applying EC and public capital.

• Why not “Crowd in” observed in this model with EC, as opposed to Iwata(2013)?
Comment 2: Crowd-out or Crowd-in?

- (My guess) An increase in government consumption gives rise to a lower transfer from government to household resulting in lower private consumption.

**Household budget constraint**

Eq.(77) in the paper

\[(1 + \tau_c) P_t^c C_{j,t} + \ldots = \ldots + (1 - \tau^V_t) V_{j,t} + \Xi_{j,t} + T_t\]

Eq.(10) in Iwata (2013)

\[(1 + \tau_c) P_t^c C_{j,t} + P_t^i \bar{I}_{j,t} + B_{j,t} + S_t B_{j,t}^* = \left(1 - \tau^l_t\right) W_{j,t} L_{j,t} + \left(1 - \tau^k_t\right) R^k_{t} u_{j,t} K_{j,t-1} + \tau^k P_t^i a(u_{j,t}) K_{j,t-1}\]

\[+ \left(1 - \tau^k_t\right) D_{j,t} + R_{t-1} B_{j,t-1} + \Phi(a_{t-1}, \phi_{t-1}) R^*_{t-1} S_t B_{j,t-1}^*,\]
Comment 3: Public capital and the size of multiplier

- By introducing public capital accumulated by government investment, the response of output is amplified to the positive government investment shock.

Production function of intermediate goods firms

\[ y_{j,t} = \epsilon_t \left( \epsilon_t^{k_j} \tilde{k}_{j,t} \right)^\alpha H_{j,t}^{1-\alpha} (k_t^g)^{\alpha_g} - \Theta^d \]

**Impulse response to government investment shock** (fig. 5 in the paper)

Red = with public capital, Black = without public capital
Comment 3: Public capital and the size of multiplier

- Owing to the effect of the public capital, fiscal multiplier is 2.1 on impact.
- How can we evaluate this value? For example, another ESRI model shows fiscal multiplier is 1.07. Shioji et al (2011) points out the multiplier is less than 1.

<table>
<thead>
<tr>
<th>Year</th>
<th>Effect of Government Investments (1% of Real GDP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Year</td>
<td>1.07</td>
</tr>
<tr>
<td>2nd Year</td>
<td>1.14</td>
</tr>
<tr>
<td>3rd Year</td>
<td>0.95</td>
</tr>
</tbody>
</table>

ESRI Short-Run Macroeconomic Model of the Japanese Economy (2011 version)
Comment 4: Response of investment to a monetary policy shock

• This paper concludes that a positive monetary shock reduces financial friction and increases investment.

• However, up until period 5, investment goes down as shown in Figure 2. How can we interpret this movement?

Impulse response to **POSITIVE** monetary policy shock (fig.2 in the paper)
Red = with financial friction, Blue= without

Impulse response to **NEGATIVE** monetary policy shock (Christiano, 2011)
Reference


