A Discussion of "The Bank of Amsterdam and the limits of fiat money"

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Summary of the paper

• A fascinating history of Bank of Amsterdam (BoA), which works like a proto-central bank with open market operation but without fiscal backing

• The downfall of BoA due to its heavy exposure to VOC (Dutch East India Company), which suffer heavily from trade losses because of the wars with England (the 4th Anglo-Dutch war, 1780-84 in particular), as well as little fiscal support
The model

• Via the global game approach, agents receive idiosyncratic signal around uncertain fundamentals

\[ \theta \sim N\left(y, \frac{1}{\alpha}\right) \]

\[ v_i = \theta + \epsilon_i \text{ where } \epsilon_i \sim N\left(0, \frac{1}{\beta}\right) \]

• As \( \beta \to \infty \), together with illiquidity of loans and no fiscal support, one pins down uniquely monetary and non-monetary equilibrium, which depends on a break point \( \theta^* \)

• Unlike classic search-monetary models, Kiyotaki – Wright (1993), Shi (1996), Lagos – Wright (2005),... where both monetary and non-monetary equilibria are possible for the same parameters, we can select an interesting unique equilibrium

• Illustrate the importance of fiscal support
Fiscal backing: something really happening in practice?

Bank of England forecasts £100bn payment from Treasury by 2033 over QE losses

Central bank stresses figures relating to bond-buying programme are estimates
Key equation and insight

- Global game approach: agents receive idiosyncratic signal around uncertain fundamentals
- There is a threshold agent, who is indifferent between the money and coin

\[ \frac{v^*}{1 + \bar{y}} F(v^*, y) = 1 \rightarrow v^* = \frac{1 + \bar{y}}{F(v^*; y, \alpha, \beta)} \]

- \( F \) denotes “expected aggregate Bank money holding, conditional on \( y \) and the merchant being the marginal type \( v^* \)”
- RHS is monotone in \( v^* \) and thus proving uniqueness; The problem is how to understand the RHS, with 3 parameters

\( \bar{y}, y, \alpha \)
Numerical illustration

• Fundamental mean: $\gamma = 1$
• Inverse of fundamental variance, $\alpha = 1$

• Inverse of variance, private signal: $\beta = 10000$ (what is important is $\sqrt{\beta / \alpha}$)

• Real premium price of fiat money: $\gamma = 0.02$

• The net-work benefit of using money: $f(m) = 2(m + 0.1)^3$
A higher $\bar{\gamma}$

- Straightforward
- More expensive to acquire central-bank money
- The marginal agent should have a higher value $\nu^*$
A higher $y$
A higher $y$ when uncertainty decreases
Comment 1: uncertainty about fundamentals

- The relationship shown above is robust; It would be great to understand the effects of the two better

- Perhaps, when the mean of fundamental $y$ is small, the coordination issue is particularly important and sensitive
  - Given a small $y$, lower uncertainty (i.e., high $\alpha$) generates a higher $v^*$

- When $y$ is large, people care less about coordination
  - If $\alpha$ is higher (again, lower uncertainty), the fall of $v^*$ when $y \uparrow$ is more significant

- A related point is idiosyncratic uncertainty/precautionary savings for money demand can be important for the result
Comment 2

• A nice framework to pin down the money demand that is a function of signals of the fundamentals

• Given that the central bank knows better the information, should it reveal the information to private agents or not? After all, as shown before, a bit of uncertainty when $y$ is small can reduce $v^*$

• Imagine the private agents receive also a public signal $\eta \sim N(0, 1/\delta)$ with some precision $\sqrt{\delta}$

\[ v_i = \theta + \eta + \epsilon_i \]

• Forward guidance may have impacts on money demand
  - Karadi – Jarocinski (2020) found that central bank information on keeping interest rate low could have important negative effect on stock price
  - Money demand should also be affected too
Comment 3: the threshold fundamental

- From money demand and money supply
  \[ M(\theta) = D(\theta) = \Phi(\sqrt{\beta}(\theta - \nu^*)) \]
  and the central bank balance sheet
  \[ C + L = M + E \]
  \[ C \geq 0 \]

- We have a threshold below which no one demands money
  \[ \theta^* = \nu^* + \frac{\Phi^{-1}(L - E)}{\sqrt{\beta}} \]

- But the motivation about the exposure of BoA to VOC suggests that \( L \) should also be a function of \( y \) and \( \nu^* \); moreover, not 100\% of \( L \) should be illiquid
  - In this case, even if \( \beta \to +\infty \), \( \theta^* \) may be above or below \( \nu^* \);
  - The relationship might depend on \( \alpha \) or really \( \frac{\sqrt{\beta}}{\alpha} \) as illustrated before; I wonder when \( \theta^* \) is below \( \nu^* \).
Comment 4: Even if we have fiscal backing...(more like another paper suggestion)

- Fiscal backing reduces the problem of $L - E$ being too large; But it needs funding also to do the backing

- The consolidated monetary-fiscal budget constraint, instead of just the central bank’s, could be more informative

- Given that so many advanced economies have deficits in most of the times; there is the debt Laffer curve and again multiple equilibria issue
  - Bassetto and Cui (2018), Brunnermeier et. al. (2020), Reis (2020), Miao and Su (2021)...
  - deficit and low interest rate go hand in hand
  - bond holders are taxpayers if $r < g$; a debt Laffer curve can emerge
  - a deficit level can be sustained by two levels of low interest rate

- Should the final goal be selecting a low interest rate equilibrium to sustain fiat money?
Taking stock

• A really interesting history of BoA; the collapse led to the shift of European finance center to London

• A simple but useful model to think about money demand and its relationship with uncertain fundamentals (aggregate or idiosyncratic)

• I look forward to the future development on the fiscal side!