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 θ^*

- 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

The movement of government money between the Bank of England and the Treasury has been included in forecasts for the public finances from the Office for Budget Responsibility © Charlie Bibby/FT

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

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

- 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

$$\bar{\gamma}, y, \alpha$$

Numerical illustration

- Fundamental mean: $y = 1$
- Inverse of fundamental variance, $\alpha = 1$

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

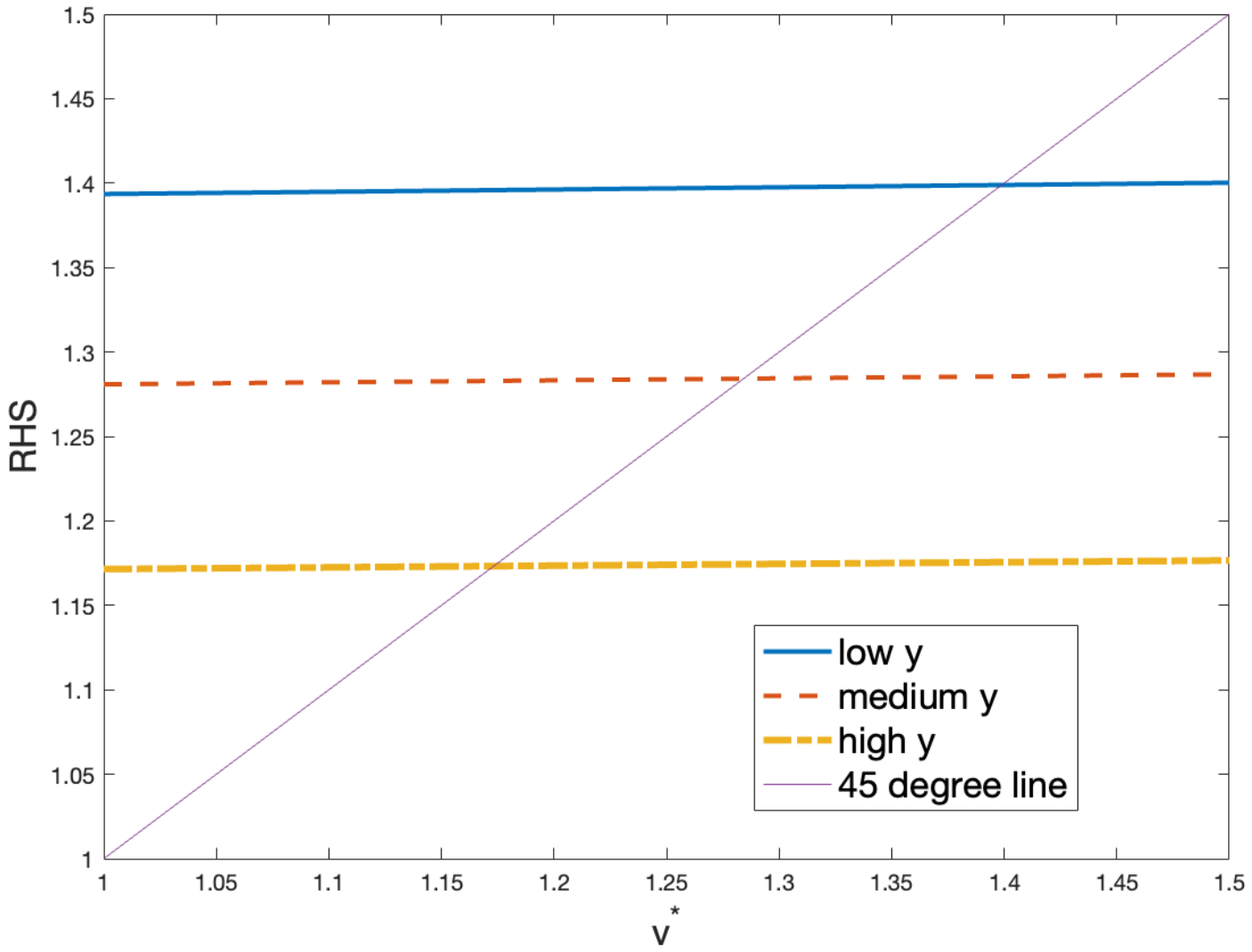
- Real premium price of fiat money: $\gamma = 0.02$

- 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 v^*

A higher y


RHS
v*
low y
medium y
high y
45 degree line
1.5
1.45
1.4
1.35
1.3
1.25
1.2
1.15
1.1
1.05
1
1
1.05
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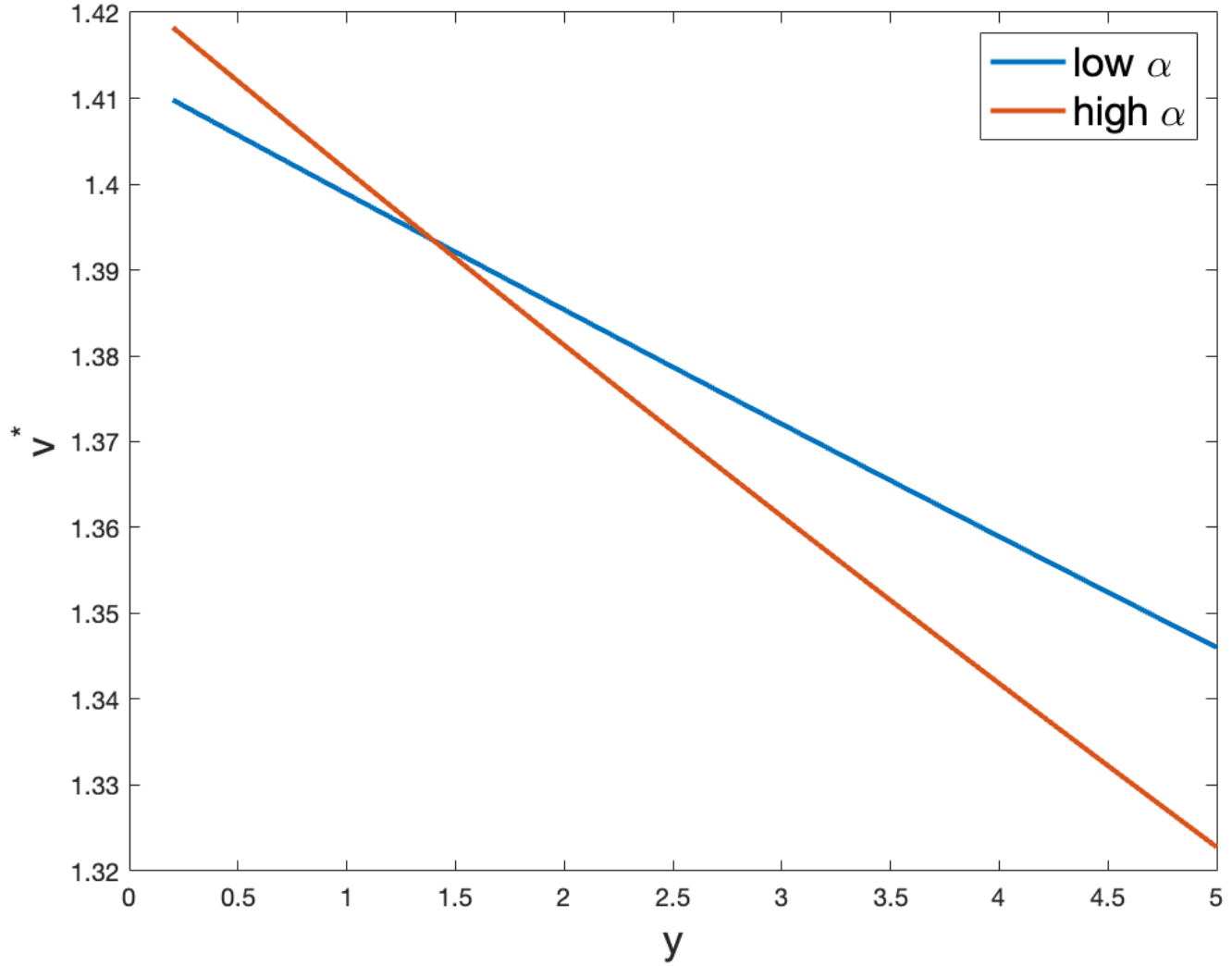
1.45
1.5

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 α) generates a higher v^*

- When y is large, people care less about coordination
- If α 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

$$M(\theta) = D(\theta) = \Phi\left(\sqrt{\beta}(\theta - v^*)\right)$$

and the central bank balance sheet

$$C + L = M + E$$
$$C \geq 0$$

- We have a threshold below which no one demands money

$$\theta^* = v^* + \frac{\Phi^{-1}(L - E)}{\sqrt{\beta}}$$

- But the motivation about the exposure of BoA to VOC suggests that L should also be a function of y and v^*; moreover, not 100% of L should be illiquid

- In this case, even if $\beta \to +\infty$, θ^* may be above or below v^* ;

- The relationship might depend on α or really $\frac{\sqrt{\beta}}{\alpha}$ as illustrated before; I wonder when θ^* is below v^*.

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!