

Dear Sir/Madam,

We really appreciate your deliberate comments and general approval of our work. Thanks to these helpful insights, we have made some small revisions to the manuscript in order to be clearer about our arguments. Next, we will respond to specific suggestions point by point.

1. “in this chapter I would suggest a first specific amendment: Equation (23) should built on (5) to (8) and maybe that should be stated as it often is for other equations.”
2. “Also in favour of the easy-to-read-and-follow approach the sections on the model as well as the (theoretical) impacts of the regulations, it sometimes would be helpful to remind the reader of the model’s interpretation of monetary base, broad money supply and similar state variables whose definition may differ in other models on the same topic.”

You are right that due to the no-cash assumption in the model, the concepts of the broad money supply, monetary base and money multiplier are slightly different from their conventional definitions. In our paper, the monetary base is equal to the amount of reserves, the broad money supply is equal to the amount of deposits and the money multiplier is calculated as the ratio of deposits and reserves. Also, the expression for the money multiplier in Equation (23) is indeed built on Equations (5-8) and this point is modified accordingly in the manuscript.

The corresponding revised paragraph in the manuscript is shown as follows:

We assume there is no cash in our model, thus the monetary base MB is then equal to the amount of reserves, and the broad money supply M is hereafter the amount of deposits. Combining Equations 5,18, the broad money supply can be rewritten as a function of the maximum loan stock under the concerned prudential regulation as follows:⁷

$$M = R + G - C + L_{max}. \quad (20)$$

Correspondingly, based on Eqs. 6,7 and 8, the money multiplier m , defined as the ratio of the broad money supply and monetary base, is then given by

$$m = \frac{M}{MB} = 1 + g - c + \frac{L_{max}}{R}. \quad (21)$$

3. It was not always that easy to collect the underlying assumptions in mathematical form and a critical reader will be thankful, if they are given for such crucial mathematical statements – e.g. equation (37), or equation (28) where I was not even able to reconstruct the “0.25”.

The coefficient of “0.25” in Equations 26–28 comes from the specific requirement of the LCR regulation. In fact, when the total expected inflow is no less than the 75% of the total expected outflow, the net cash outflow is given by $NCOF(t) = OF(t) - 0.75 \cdot OF(t) = 0.25OF(t)$.

Corresponding revisions in the manuscript are given as follows:

According to the definition of net cash outflow in the LCR regulation (Equation 2), when the total expected inflow is not less than 75% of the total expected outflow, we have $NCOF(t) = OF(t) - 0.75OF(t) = 0.25OF(t)$; otherwise, the net cash outflow is the difference of outflow and inflow, that is, $NCOF(t) = OF(t) - IF(t)$. Putting these two conditions together with Equations 24 and 25, the following expression for the net cash outflow can be obtained:

$$NCOF(t) = \begin{cases} 0.25\mu D(t), & IF(t) \geq 0.75OF(t); \\ \mu D(t) - 0.5RP(t), & IF(t) < 0.75OF(t). \end{cases} \quad (26)$$

Moreover, in order to help the readers to derive at the mathematical statements in Equations (37), we added the following description:

Similarly, when $L(t) = L_{max}$, the above inequality takes equality. Based on Equations 17, 19 and 18, we know that $\forall t \geq t^*, RP(t) = \frac{2}{1+\theta}L_{max}$. Also, from Equation 5, 16 and 18, we can have $\forall t \geq t^*, D(t) = R + G - C - L_{max}$. By substituting the expressions of $RP(t)$ and $D(t)$ in terms of L_{max} into Equation 34 with a few manipulations, we can obtain the expression for the maximum loan stock as follows:

$$L_{max} = \frac{(1 + \theta) [(R + G)(1 - \mu r_{LCR}) + \mu r_{LCR} C]}{r_{LCR} [\mu(1 + \theta) - 1]}. \quad (35)$$

4. If there is not enough scope for such additions yet, I suggest to think about the necessity of the passage on the exemplary 100% minimum LCR. I do not see that much value added by those equations (44) and (45).

We thank you for carefully pointing out that we actually have not passed the exemplary 100% minimum LCR to the corresponding equations. We delete the statement of “under the 100% minimum LCR” in the original manuscript. Considering the actual minimum LCR requirement is set at 60% in 2015 and should rise in equal annual step to reach 100% in 2019 according to the Basel III accord, we use r_{LCR} to denote the minimum policy requirement, which constitutes part of the expressions for the broad money supply and money multiplier in Equations (44–45). For the sake of smooth reading, we would like to keep these two equations as a summary for the analysis on the impact of the LCR regulation on the money creation process. Corresponding revisions in the manuscript are given as follows (the number sequence of equations in the revised manuscript are a little bit different from the original ones):

In summary, the full expressions for the equilibrium money supply and money multiplier are respectively given by

$$M_{LCR} = \begin{cases} \frac{4(R+G)}{\mu r_{LCR}}, & \mu \leq \frac{4(1+g)}{(3\theta+3+r_{LCR})(1+g)-cr_{LCR}}; \\ \frac{(R+G)(1+\theta-r_{LCR})+r_{LCR}C}{r_{LCR}[\mu(1+\theta)-1]}, & \mu > \frac{4(1+g)}{(3\theta+3+r_{LCR})(1+g)-cr_{LCR}}, \end{cases} \quad (42)$$

$$m_{LCR} = \begin{cases} \frac{4(1+g)}{\mu r_{LCR}}, & \mu \leq \frac{4(1+g)}{(3\theta+3+r_{LCR})(1+g)-cr_{LCR}}; \\ \frac{(1+g)(1+\theta-r_{LCR})+r_{LCR}C}{r_{LCR}[\mu(1+\theta)-1]}, & \mu > \frac{4(1+g)}{(3\theta+3+r_{LCR})(1+g)-cr_{LCR}}. \end{cases} \quad (43)$$

5. To conclude with a minor remark: I am not sure, whether the title could be misleading – the prominent name of Basel III could raise expectations for an empirical analysis or at least a model applied on empirical data.

Thank you for you pointing out that our analysis about the Basel III accord is purely theoretical. Although we did make preliminary attempts to calibrate the value of capital-to-reserve ratio and bond-to-reserve ratio with the empirical data of US banks, it is different from what should be done with models applied on empirical data. Therefore, in order to avoid misconception as you suggest, we revise our title to be “The impact of Basel III on money creation: a synthetic theoretical analysis”.

Thank you very much for your time and efforts.

Best regards

Yours sincerely

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