Global Imbalances and Currency Wars at the ZLB

by

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This paper extends the model by the same authors (AER, 2008) that was used to explain global imbalances and “asset shortages”.

This paper addresses the difficult questions of transmission at the ZLB, how liquidity traps spread from one country to another, the role of fiscal policy, currency wars, demand for safe assets and several other important issues.

The basic model is deliberately simplified so as to be able to deal with many difficult problems.

My comments are entirely on the model. There is not enough time to discuss the many important conclusions of the paper.

The Model and Its Intuition

While I like models that are simple and intuitive, in this case, I either find the many channels in the model unintuitive, or else I don't agree with the intuition given in the paper.

If the model is not delivering an intuitive story, it is hard to know how to interpret its conclusions.

Caveats

It's entirely possible, and likely in some cases, that I am just not getting some of the metaphors in the model.

There is not enough time here for me to explain things carefully.

I will speak almost exclusively about the closed-economy version of the model, because it makes my points clearer.

Many of the implications for the symmetric two-country model are clear from the closed-economy setting.

For example, if the autarky interest rate is low, then the country will be a lender if capital markets open – it will run a current account surplus.

1. Does the Ability to "Capitalize" Income Matter?

The model structure is a two-generation OLG model.

The young are endowed with income from trees that they save. The tree pays dividends, that the young save. Trees die with probability ρ and are replaced with new trees.

The old consume wealth that is saved.

All income produced by trees is consumed by old in equilibrium.

Consumption is then given by $C_t = \theta W_t = \xi_t X$

θ - constant probability person dies

W_t - wealth (trees, and government debt)

X - capacity output

ξ_t < 1, represents recession and unemployment

Trees pay a dividend rate of δ. Total dividend payments are δX_t. The young (savers) are endowed with $(1-\delta)X_t$ at birth.

Key point in CFG (2008) – as trees generate fewer dividends, saving is greater, CA in surplus.

CFG Intuition: If the country cannot "capitalize" much of its income, its saving must flow abroad, CA in surplus.

My intuition: As δ is lower, there is a redistribution from the old (consumers) to the young (savers.)

The current account depends on total saving (CA = S), and not on which country can "capitalize income" or "generate assets".

Saving effect comes here through intergenerational distribution.

Capitalizability Does Not Matter without OLG

Take a standard infinite horizon (one-generation) model with output produced by labor and trees, with Cobb-Douglas technology. Let productivity grow at a rate *g*, and let β be the utility discount factor.

Assume trees account for a share δ of income. That is, a share δ of income is "capitalizable".

Calculate the autarky interest rate (countries with low autarky interest rates run CA surpluses.)

$1+r^{aut}=\frac{1+g}{\beta}$ -- does not depend on δ!

Current Account and Capitalizability

If the economy has few trees and not much income is capitalizable, why doesn't this lower the autarky interest rate?

Because if not much income is generated by trees, the value of trees will be lower, so the dividend yield is unaffected by the share of output coming from trees:

$$V_t = \delta A_t \left(\frac{T_t}{L_t} \right)^{\delta} \frac{\beta}{(1-\beta)(1+g)}$$

To reiterate, then, it is total saving that matters. Not which country is better able to capitalize income.

Current Account and Demand for Safe Assets

The more recent focus has been on the ability of economies to produce safe assets. Does a shortage of safe assets lead to current account surpluses?

Maybe yes, maybe no.

The important point is that there is not necessarily a link. The demand for safe assets is a portfolio choice (now to allocate assets), which is not necessarily linked to saving (the desired additions to the stock of assets.)

Demand for Safe Assets and Precautionary Saving

There are reasonable channels through which the two could be linked. It is plausible that a demand for safe assets (risk aversion) could be paired with precautionary saving.

1. Those are not necessarily linked. In a Wicksellian model, risk aversion is caused by $U'' < 0$, but precautionary saving occurs only if $U''' > 0$.

2. But in many models, a borrowing constraint induces precautionary saving, so it is plausible that risk averse people with borrowing constraints are also high savers.

Demand for Safe Assets and the Gourinchas-Rey Effect

Another channel comes through the idea that if a country like the U.S. is willing to take on more risk than other countries, it will buy foreign assets that are risky, but the rest of the world will buy safer assets from the U.S.

This is just a portfolio choice, but then in expected value, or on average in the long run, the U.S. will earn more income from abroad than it pays on foreign investments in the U.S. This will allow the U.S. to spend more, save less, and run current account deficits even in the long run.

This is the intuition of the model in section 5 of this paper. (Btw, I don't think any of my litany of complaints apply to the model of that section.)

Indeterminacy of the Exchange Rate

In the model of the liquidity trap, the exchange rate is indeterminate. The paper then allows the policymakers to choose an exchange rate, and explores the consequences.

I don't think the indeterminacy is a feature of the ZLB economy, per se. Rather it arises from two special features of the model:

1. Nominal prices never adjust
2. We never leave the ZLB.

The latter feature makes the model one with an exogenous interest rate policy. This isn't Kareken & Wallace (1981) indeterminacy. It's Sargent & Wallace (1975) indeterminacy. In modern lingo, the "Taylor principle" is not satisfied.

Implications of Indeterminacy

The indeterminacy could be eliminated by fully specifying the model – price adjustment, and an inflation-targeting rule for monetary policy once we leave the ZLB.

It is not the ZLB that leads to the indeterminacy – it is the absence of price adjustment, and an exogenous interest rate policy. Other models with these features also lead to indeterminacy.

In any case, I don't think indeterminacy gives us a channel for using exchange rate policy. There is no instrument available to policymakers in this world to choose the exchange rate. The paper talks about currency market intervention, but there is no money in the model.

Effects of Fiscal Policy (full employment case)

The paper seems to say that more government debt reduces the current account because it offers households an asset to save, so they don't have to borrow from abroad.

But in this model, the current account equals saving: CA = S. It is only by affecting total saving that government debt can influence the current account.

An increase in government debt does reduce saving, but the channel is unconventional.

Note here that the economy can be either dynamically efficient or not. The ZLB model is a dynamically inefficient one.

In the dynamically efficient economy, taxes imposed on savers are increased, so saving falls.

But in the dynamically inefficient economy, the government subsidizes savers, and more debt increases the subsidy!

So how does more debt lower saving? In both cases, more government debt lowers the value of trees, so it reduces the value of the endowment of new trees.

It is sort of mechanical. The value of all wealth is pinned down by the death rate and the output rate: $\theta W = X$ and X is fixed.

But $W = V + D$, where V is the value of trees, and D is govt debt. With W fixed, if D rises, V must fall. When V falls, the value of the endowment of new trees falls, so saving falls.

What Keeps the Real Interest Rate at Zero?

$$r = -\rho + \delta X / V$$

in the full employment economy, where X is income from trees.

Suppose there were no government. Since $\theta W = X$, and $W = V$ when there is no government, we have simply:

$$r = -\rho + \delta\theta .$$

The real interest rate is pinned down by parameters. Monetary authorities cannot somehow drive the interest rate to zero!

But What About when Output is Not at Capacity?

The same problem arises! There is no way for output to adjust to arrive at the ZLB:

$r = -\rho + \delta\xi X / V$, where $\xi < 1$

$\theta W = \xi X$

We still have:

$r = -\rho + \delta\theta$

So what gets us to the ZLB? You have to introduce government debt.

ZLB in Full-Employment Economy

Government chooses debt/output ratio, $d = D / X$.

Then we find: $r = -\rho + \dfrac{\delta\theta}{1 - d\theta}$

Then, $r = 0$ if and only if the government chooses

$$d^* = \frac{\rho - \delta\theta}{\rho\theta}$$

Fiscal policy, not monetary policy, puts us at the ZLB.

Higher debt lowers saving and raises the interest rate up to zero (because it would be negative without fiscal policy.)

ZLB in Less-than-Full-Employment Economy

Government choose debt/output ratio $\tilde{d} = D / \xi X$

Then we find: $r = -\rho + \dfrac{\delta\theta}{1 - \tilde{d}\theta}$

Then, $r = 0$ if and only if the government chooses

$$\tilde{d}^* = \frac{\rho - \delta\theta}{\rho\theta}$$

What is My Point?

In the absence of fiscal policy, the real interest rate would be negative under the assumption on parameters. There is no inequality constraint on the interest rate in this paper.

We can think of the government as setting a debt/output ratio to raise the real interest rate up to zero.

But wait!!!!
Didn't the paper tell us that fiscal policy can be expansionary?

Didn't the paper say government could increase debt/output ratio and raise output, ξX ?

Why Fiscal Policy Raises Output

The fiscal rule that I described sets the debt/output ratio, $D / \xi X$, to make the real interest rate zero.

But that doesn't pin down the debt level per se.

By raising the debt level, while keeping the debt/output ratio fixed at $\tilde{d}^* = \dfrac{\rho - \delta\theta}{\rho\theta}$, they can increase output by making ξ rise.

This channel of fiscal policy is not one that is intuitive in an obvious way.

Concluding Thoughts

The paper addresses important issues.

I believe that much of the intuition that they want to convey is contained in the model of section 5. Also, the models of the appendix appear to deal with some (but not all) of the issues I have raised.

The basic model, to me, is simplified so much that it is confusing. There are too many odd things going on (dynamic inefficiency, indeterminacy, linearity where convexity is needed, …) for me to get the intuition.