Discussion of
"Exchange Rate Policies at the Zero Lower Bound"
by Amador, Bianchi, Bocola, Perri

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SNB-IMF Conference on "Exchange Rates and External Adjustment"
Zurich, Switzerland; June 2016

How Timely!

- Definitely a timely paper – especially after yesterday's events – and very appropriately presented at this conference!

- Alternative titles: "On the unpleasant consequences of Brexit for the Swiss National Bank" or "The analytics of the SNB predicament"

The Paper

- This (very nice) theoretical paper discusses the predicament in which a central bank finds itself when trying to **manage the exchange rate** in an environment featuring *limits to arbitrage* in international capital markets

    - If nominal interest rates are above the ZLB the central bank should not intervene in the FX market: It is **either bad or irrelevant** (the latter case when limits to arbitrage are small)

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    - If nominal interest rates are <u>above the ZLB</u> the central bank should not intervene in the FX market: It is **either bad or irrelevant** (the latter case when limits to arbitrage are small)

    - If nominal interest rates are <u>at the ZLB</u> the central bank is **forced to intervene** in the FX market

    - $\rightarrow$ it's in trouble: 1) it suffers **balance sheet losses**, and 2) it harms the domestic economy

Monetary Policy and the Central Bank's Balance Sheet

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- Central banks have their own balance sheet and if capital losses are such that it needs recapitalization from the fiscal authority, their independence may be at risk

- Hall and Reis (2013), Carpenter et al. (2013), Greenlaw et al. (2013) ... study the Fed's balance sheet under various *exogenous* scenarios for interest rates

- Del Negro and Sims (2015) consider the *endogenous* response of monetary policy in a simple closed economy model (see Benigno and Nisticó, 2016):

Mkt value of assets - reserves $+$

PDV seigniorage $=$ PDV remittances

The Model

- Two period model, in which **domestic agents** want to consume today, but can only borrow in domestic bonds

- **Foreign agents** can invest in domestic bonds, and are happy to do so as long as these pay at least as much as foreign bonds, but only up to some amount (limits to arbitrage)

- **Central bank** sets the exchange rate (a given) and can intervene (buy foreign bonds)

- **Fiscal authority**: Ricardian equivalence (separation of budget constraints btw CB and FA is a bit of a side show in the current draft)

- LOP

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- Not monetary in the New Keynesian sense – meaning deflation has real effects

- This is fine as it keeps the model very clean and simple, and is not necessary to understand the mechanism – but some nominal rigidities must be at work in the background

- … Why would the central bank try to manage the exchange rate otherwise?

Non Monetary Economy
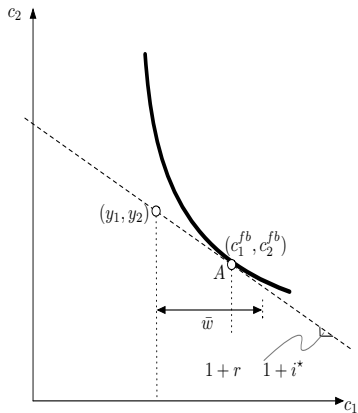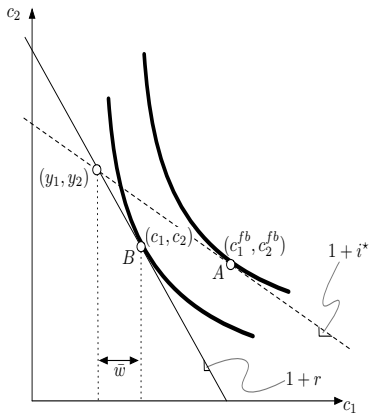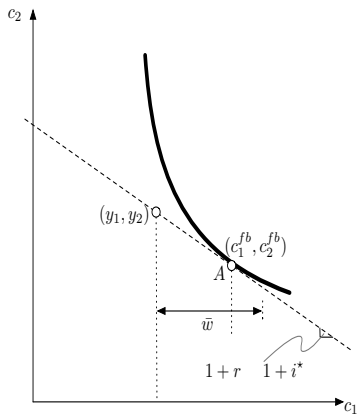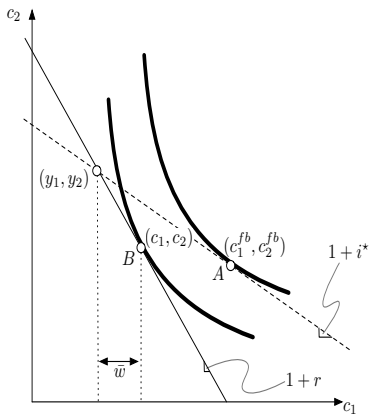

(a)   (b)

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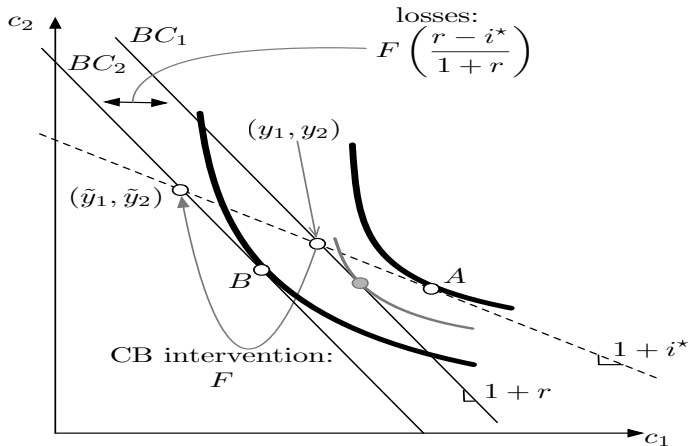

(a)   (b)

- $i = -.75\%$ (1 year, CHF) and $i^* = -.62\%$ (1 year, Germany), but $\pi \sim 0\%$ while $\pi^* \sim 1.3\%$

- LOP does not quite hold ...

Monetary Economy – No ZLB

- Intervention is bad (borrow at r to invest at i^*) or irrelevant

- If $(1 + r)\frac{s_2}{s_1} > 1 \rightarrow$ Exchange rate policy is (almost) neutral

SNB Assets

SNB Liabilities

| Other assets [M] | Total [M] | Liabilities | | | | | | | | | | | |
		Banknotes in circulation [M]	Sight deposits of domestic banks [M]	Amounts due to the Confederat... [M]	Sight deposits of foreign banks and institutions [M]	Other sight liabilities [M]	Liabilities from CHF repo transactions [M]	SNB debt certificates [M]	Other time liabilities [M]	Foreign currency liabilities [M]	Counterpart of special drawing rights allocated by the IMF [M]	Other liabilities [M]	Provisions and equity capital [M 3]
2015-04	584,212.2	67,227.3	382,580.4	17,389.6	16,098.0	34,786.1	0.0	0.0	0.0	13,286.2	4,355.7	56.2	48,432.7
2015-05	573,294.0	67,170.4	379,542.4	20,852.0	18,684.9	35,838.6	0.0	0.0	0.0	6,965.5	4,275.8	46.4	39,918.1
2015-06	577,025.2	67,436.7	385,354.8	16,163.5	21,158.1	34,911.0	0.0	0.0	0.0	13,381.0	4,302.7	65.3	34,251.9
2015-07	596,703.3	67,284.2	397,307.7	11,858.1	18,906.1	34,932.1	0.0	0.0	0.0	18,846.9	4,385.9	33.3	43,148.9
2015-08	605,550.6	67,666.5	394,312.0	11,803.1	21,879.5	36,843.3	0.0	0.0	0.0	16,555.3	4,471.1	35.7	51,984.3
2015-09	613,933.0	68,182.0	396,263.7	12,192.4	25,701.9	31,981.8	0.0	0.0	0.0	24,575.5	4,501.7	114.2	50,419.9
2015-10	620,824.9	68,790.5	400,706.2	9,718.0	24,461.3	33,244.0	0.0	0.0	0.0	21,235.5	4,529.6	77.6	58,062.3
2015-11	634,877.3	69,385.2	396,424.3	9,327.0	29,260.8	33,674.1	0.0	0.0	0.0	23,162.0	4,644.7	60.4	68,938.7
2015-12	640,151.8	72,881.9	402,316.5	10,930.9	25,621.4	30,165.5	0.0	0.0	0.0	32,521.4	4,547.7	113.9	61,052.5
2016-01	649,287.2	71,264.1	405,585.9	11,031.9	25,123.5	31,756.2	0.0	0.0	0.0	25,242.7	4,649.0	82.5	74,551.6
2016-02	642,152.4	70,969.5	415,017.6	7,629.1	26,068.5	31,473.6	0.0	0.0	0.0	17,375.1	4,538.5	81.5	68,999.0
2016-03	646,378.6	71,491.8	421,409.8	6,980.4	21,962.7	34,383.4	0.0	0.0	0.0	18,785.9	4,439.5	179.4	66,745.6
2016-04	**668,578.1**	**71,720.9**	**419,493.1**	**12,386.3**	**29,241.7**	**30,687.0**	**0.0**	**0.0**	**0.0**	**25,580.8**	**4,480.0**	**1,094.7**	**73,893.7**

- Intervention financed via **interest bearing** reserves!

Monetary Economy – At ZLB

- If $(1 + r)\frac{s_2}{s_1} < 1$, if the CB keeps the same $\frac{s_2}{s_1}$ objective it **has to intervene in order to raise the real rate** r

- CB forced to take **balance sheet losses** $F(1 - (1 + i^*)\frac{s_2}{s_1})$

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- Naive question: How about $\frac{s_2}{s_1} \uparrow$?

Conclusions

- Nice paper!