Mandate Banks to Use the Discount Window

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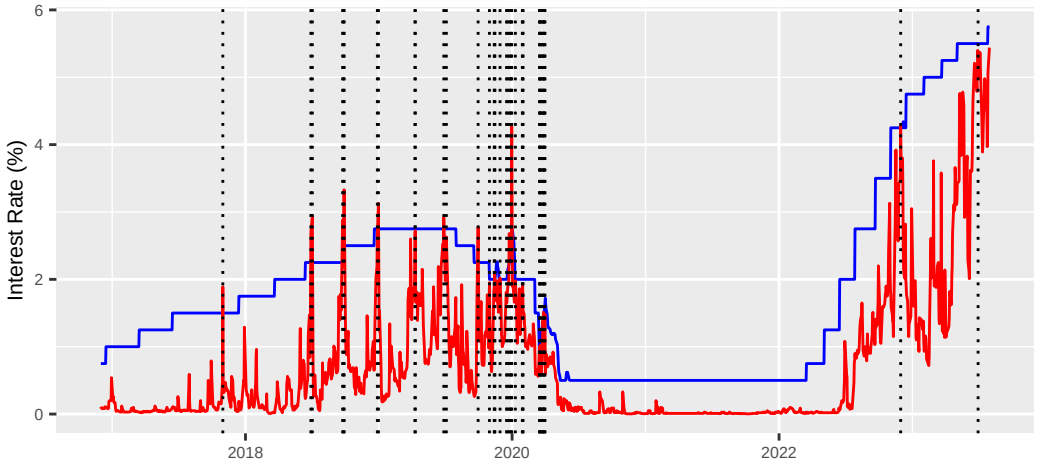
The Hong Kong Monetary Authority (HKMA), which is Hong Kong's de-facto central bank, should institute randomized mandatory borrowing, i.e., regularly mandate random banks to use the discount window.[1]

The rationale is as follows: the Hong Kong Interbank Offering Rate (HIBOR), the city's benchmark rate, often breaches the Base Rate, which is the interest rate at which the HKMA lends. This should not happen, as the Base Rate theoretically sets a ceiling on the HIBOR.[2] A bank seeking HKD would have no reason to borrow from a lender that charges more than the HKMA.

Fig. 1 HIBOR, Base Rate, and Dates of Spikes



The Hong Kong Dollar Overnight Index Average (HONIA, an effective HKD rate of borrowing derived from volume−weighted overnight borrowing data) is plotted in red against the HKMA...s base rate (blue), which is referred to as the ceiling rate in this memo. Black dotted lines underscore days where HONIA exceeded the ceiling rate. Though HIBOR is till common parlance in local markets, financial markets have begun a transition away from HIBOR to HONIA since 2020. HIBOR and HONIA data published by the HKMA.

It's stigma, not IPOs

The common explanation offered for HIBOR spikes is initial public offerings (IPOs). Hong Kong is a common destination for companies to list their shares to raise funds. When an

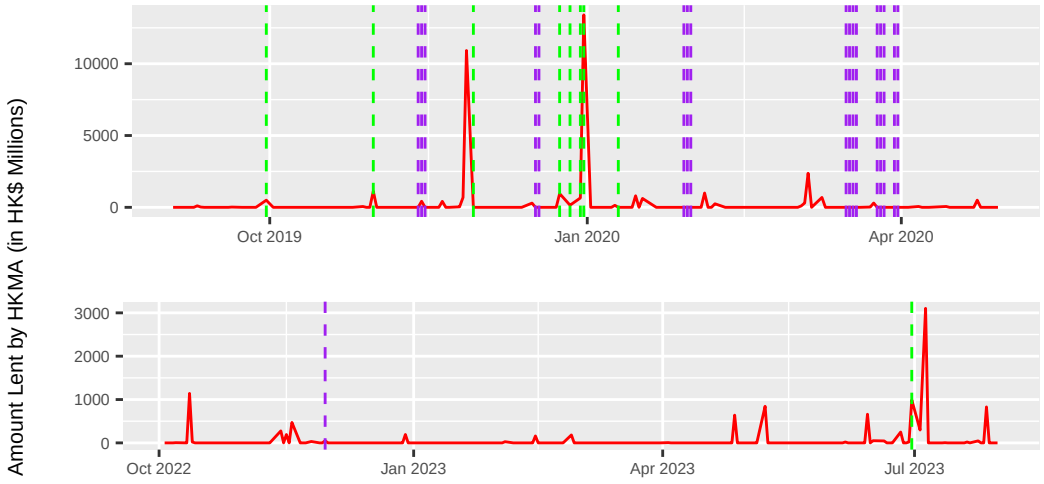
[1]This has previously been proposed in Olivier Armantier and Charles A. Holt, "Overcoming Discount Window Stigma: An Experimental Investigation', The Review of Financial Studies 33 (2020), pp. 5630-59; and Mehdi Beyhaghi and Jeffrey R. Gerlach, "How Banking Supervision Hinders the Federal Reserve's Mission as the Lender of Last Resort', SSRN (26 Aug 2022).

[2]Yes, the interest rate ceiling is called the Base Rate. Economists are not good at names.

IPO closes, investors who successfully purchase shares must collectively make transfers to the fundraiser on the same day, during which the city's banks may borrow cash in large quantities to make payments.[3]

But I found that breaches occur even during days when there were no IPOs. This is confirmed by further analysis: IPOs usually cause short-term rates to rise above long-term ones (leading to an "inverted yield curve"). But no inversion occurred during 18 of the 39 HIBOR spikes observed between 2019-23, i.e., borrowing costs for different maturities increased in tandem (Figure 2, purple dashed lines), which suggests IPOs were not the cause.

Fig. 2 Amount Borrowed From Discount Window and Dates of Spikes



The daily HKMA discount window borrowing is plotted in red in this selected time period. Green dashed lines mark days with HIBOR spikes with yield inversion (one−day rate higher than one−month rate). Purple dashed lines mark spikes without yield inversion. HIBOR spikes without yield inversion were not observed in any time period between 2015 to 2019, or between 2021 to late 2022. Discount window and HIBOR data are published by the HKMA.

The most damning evidence is as follows: IPO activity is supposed to highly correlate with amounts borrowed from the HKMA. But as Figure 2 shows, HIBOR spikes which did not lead to inversion also happened to coincide with dampened borrowing (note how borrowing ticks up around green dashed lines but not purple). This means that, for the half the sample, not only do we *not* see the positive correlation that we would expect between observed HIBOR spikes and borrowing (as the IPO hypothesis would suggest), we in fact see negative correlation.

Table 1 confirms this point: Column 1 shows that deviations of HIBOR from the Base Rate is highly predictive of the amount borrowed from the HKMA. (The dataset includes 26 days, which are those during which the Base Rate was breached.) Column 2 considers whether that day also saw an inverted yield curve (a binary variable) and the interaction between these two predictors. As suspected, banks only use the discount window if (i) HIBOR deviates from the Base Rate and (ii) there is yield inversion, which for our purposes signify the presence of an IPO. When only (i) is true, there is less willingness to borrow from the central bank.

[3]Frank Leung and Philip Ng, "Impact of IPO activities on the Hong Kong-dollar interbank market', Hong Kong Monetary Authority Quarterly Bulletin, Sep 2008, pp. 1-9.

All observations point to discount window stigma as the cause for interest rate spikes. Stigma exists because utilizing the HKMA's lending programs might suggest to investors that the borrowing bank is unable to convince other banks to lend. Investors could in turn assume that the bank is financially distressed and divest. In the US interbank lending market, stigma exists despite that access of the Fed's lending program is kept confidential, leading scholars to speculate that the interconnectedness of interbank markets allows participants to infer the borrower's identity.[4]

Table 1: Discount Window Borrowing on HIBOR Spikes and Yield Inversion

	Millions HKD Borrowed from Discount Window	
	(1)	(2)
Deviation from Base Rate	6,122.0***	386.6
	(463.4)	(1,225.8)
Yield Inversion		−2,106.0***
		(367.2)
Deviation from Base Rate*Yield Inversion		6,859.2***
		(1,277.4)
Constant	−1,010.8***	−26.4
	(222.7)	(216.5)
Observations	26	26
R^2	0.9	1.0
Adjusted R^2	0.9	1.0
Residual Std. Error	928.7 (df = 24)	583.9 (df = 22)
F Statistic	174.5*** (df = 1; 24)	160.1*** (df = 3; 22)
Note:		*p<0.1; **p<0.05; ***p<0.01

The only solution to discount window stigma

Under the policy of randomized mandatory borrowing, the HKMA would unilaterally make short-term deposits of sufficiently large amounts, with regular frequency but at randomly varying times, to randomized recipients each time. The objective of the policy is to regularize usage of the HKMA's lending program, while making it no longer possible for the market to connect the program's usage with insolvency, as borrowing could be involuntarily initiated.

Randomized mandatory borrowing would be more effective than two alternatives. The first is increasing discount window opacity. The Fed currently does not disclose borrower identity for two years, yet discount window stigma still exists among US banks. The second

[4] Olivier Armantier, Eric Ghysels, Asani Sarkar, and Jeffrey Shrader, "Discount window stigma during the 2007–2008 financial crisis', Journal of Financial Economics 118 (2015), pp. 317-35. Beyhaghi and Gerlach, "How Banking Supervision Hinders the Federal Reserve's Mission as the Lender of Last Resort', p. 28.

is lowering the Base Rate: similar cuts by the Fed failed to stimulate discount window usage in the wake of the '08 Financial Crisis.[5]

Less breaches, less mortgage overpayment

The foremost benefit to a destigmatized discount window would be to save homeowners money. Overnight yield spikes can drive a parallel shift in the yield curve. Given that most mortgages in Hong Kong reference the one-month HIBOR, homeowners would overpay. There were 18 days between 2019-23 with upward-sloping yield curves and HIBOR breaches simultaneously. I estimated that mortgage borrowers overpaid US$15.8 million in interest in total over 18 days alone.[6]

More productive investing

There are potential costs and benefits to financial actors as well. Experimental evidence shows that although such a policy would cost liquid banks due to additional interest paid, it would also benefit solvent banks undergoing illiquidity through lower borrowing costs and also equity holders, who could no longer unproductively discriminate against solvent banks using the discount window.[7] A destigmatized discount window would create net welfare gain; stable interest rates would do more good than harm.

[5] Olivier Armantier, Eric Ghysels, Asani Sarkar, and Jeffrey Shrader, "Discount window stigma during the 2007–2008 financial crisis', Journal of Financial Economics 118 (2015), pp. 317-35.

[6] Spikes are defined as 'mortgage-affecting' if yields did not invert on the day of the spike. The low-end estimation is made by multiplying the volume of mortgages outstanding on the day by the percentage of new mortgages which refer to the HIBOR (this operation gives an approximation of total HIBOR-referencing mortgages outstanding), which is then multiplied by the deviation between one-day HIBOR (measured by HONIA) and the HKMA's ceiling rate. The ceiling rate of the HKMA is for one-day borrowing only, so we can only approximate how this ceiling on one-day borrowing would restrict the one-month borrowing cost. This method assumes that deviations for daily and monthly rates are identical. The high-end estimation substitutes the one-day HIBOR-ceiling rate deviation with the deviation from one-month HIBOR and one-month LIBOR. The limitation of this method is that counterfactual monthly HIBOR borrowing costs can itself deviate from LIBOR due to various factors, such as overall banking system liquidity and terms of trade. I also assume that outstanding mortgages whose repayment is due on each working day of the month is equal. HKD figures are converted to USD at a rate of 7.8 HKD per USD. Monthly mortgage data is published by the HKMA on https://www.hkma.gov.hk/eng/data-publications-and-research/data-and-statistics/monthly-statistical-bulletin/.

[7] Olivier Armantier and Charles A. Holt, "Overcoming Discount Window Stigma: An Experimental Investigation', The Review of Financial Studies 33 (2020), pp. 5630-59.