What Is the Cause of Interest Rate Volatility in Interbank Markets?

John T.H. Wong

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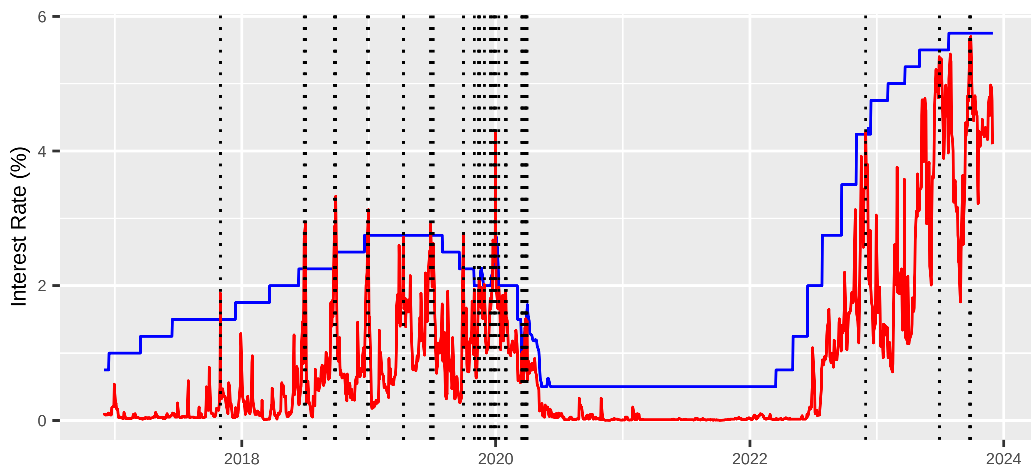
The Hong Kong Interbank Offering Rate (HIBOR), the city's benchmark rate, often spikes above the Base Rate, which is the interest rate at which the Hong Kong Monetary Authority (HKMA) lends–see Figure 1.[1] (The Base Rate can be understood as Hong Kong's Discount Rate.) This should not happen, as the Base Rate theoretically sets a ceiling on the HIBOR. A bank seeking HKD should have no reason to borrow from a lender that charges more than the HKMA. This memo investigates why we observe a porous interest rate ceiling.



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 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.

Figure 1: HIBOR, Base Rate, and Dates of Spikes

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 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;[2] accessing the discount window may be insufficient either in terms of amount or timeliness.[3] Purchasers must

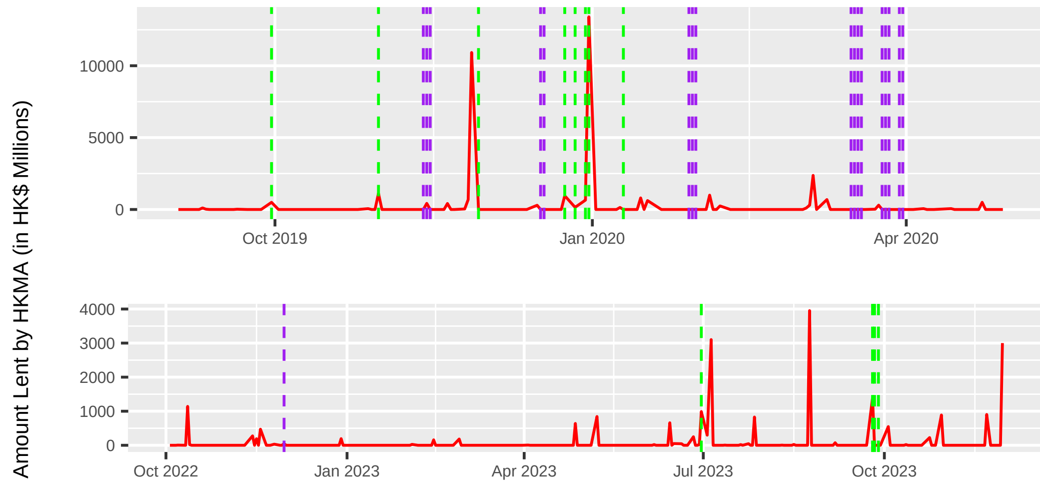
[1] The HKMA is Hong Kong's de-facto central bank.

[2] 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.

[3] Arranging a discount window loan requires, among things, making a call to the HKMA's dealing room.

therefore make borrowing arrangements in the interbank market, pushing up interbank interest rates.[4]

But I found that spikes occur even during days when there were no IPOs.[5] This is confirmed by further analysis: IPOs usually cause short-term rates to rise above long-term ones (leading to an "inverted yield curve").[6] But no inversion occurred during 18 of the 29 HIBOR spikes observed from 2019 to present, i.e., borrowing costs for different maturities increased in tandem (Figure 2, purple dashed lines), which suggests IPOs were not the cause.



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 present. Discount window and HIBOR data are published by the HKMA.

Figure 2: Amount Borrowed From Discount Window and Dates of Spikes (Sep 2019-May 2020; Oct 2022-Present)

The strongest 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 half the sample, we do **not** see the positive correlation that we would expect between observed HIBOR spikes and borrowing (as the IPO hypothesis would suggest).

Table 1 confirms this point: Column 1 shows that HIBOR's deviation from the Base Rate is highly predictive of the amount borrowed from the HKMA. Column 2 further considers whether that day also saw an inverted yield curve (a dummy variable) and the interaction between these two predictors. When yield inversion is added as a predictor, deviation from the Base Rate loses significance. As suspected, banks only use the discount window if it is simultaneously true that (i) HIBOR rises above the Base Rate and that (ii) there is yield inversion, which for our purposes signify the presence of an IPO. When only (i) is true, spikes above the Base Rate does not imply willingness to borrow from the central bank, contrary to the IPO hypothesis.

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

https://www.hkma.gov.hk/media/eng/doc/key-functions/monetary-stability/liquidity-facilities/Operational_Note_(English)_Liquidity_Facilities_Framework(final).pdf

[4] Leung and Ng, "Impact of IPO activities', pp. 1-2.

[5] HKEX, New Listing Report: Main Board and GEM, https://www2.hkexnews.hk/new-listings/new-listing-information/main-board?sc_lang=en.

[6] Leung and Ng, "Impact of IPO activities', p. 6.

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.[7] Insofar as a inverted yield curve serves as a proxy for IPOs, these findings suggest that banks are willing to use the discount window only under the cover of IPOs.

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

	Billions HKD Borrowed from Discount Window	
	(1)	(2)
Deviation From Base Rate	3.462***	0.054
	(0.146)	(0.814)
Yield Inversion		−0.148*
		(0.078)
Deviation From Base Rate*Yield Inversion		3.638***
		(0.830)
Constant	0.040***	0.050***
	(0.015)	(0.015)
Observations	1,669	1,669
R^2	0.253	0.262
Adjusted R^2	0.252	0.261
Residual Std. Error	0.612 (df = 1667)	0.608 (df = 1665)
F Statistic	564.270*** (df = 1; 1667)	197.440*** (df = 3; 1665)
Note:		*p<0.1; **p<0.05; ***p<0.01

[7] 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.