



**ASSESSING THE LINKAGES BETWEEN HEDGE FUNDS AND PRIME BROKERS  
IN SOVEREIGN BOND MARKETS: EVIDENCE FROM COMMERCIAL DATA**

***Key points:***

- *In recent years, hedge funds have increasingly sought leverage from prime brokers for arbitrage trading in sovereign bond markets. While this may enhance market efficiency and liquidity during normal periods, a shock could trigger hedge funds' rapid unwinding of their leveraged positions, potentially amplifying market stress in sovereign bond markets. Hedge funds' losses could also lead to large counterparty losses for their prime brokers, propagating the risks to the broader financial system.*
- *Importantly, these hedge funds often source their leverage abroad. However, the extent of the cross-border linkages between hedge funds and prime brokers is difficult to monitor for various reasons, including differences in regulatory regimes for hedge funds and difficulty in sharing regulatory information among jurisdictions. This regulatory blind spot hinders effective monitoring of the global contagion risk associated with these cross-border linkages.*
- *To examine these opaque cross-border linkages, we leverage commercial data to identify 2,024 hedge funds globally that are likely to engage in leveraged arbitrage trading in the US sovereign bond markets. While the amount of funding each hedge fund obtained from individual prime brokers is not disclosed in our data source, these data enable us to identify a total of 134 prime brokers serving these hedge funds. This important information allows us to conduct network analysis to reveal the cross-border linkages between the funds and brokers. Our analysis identifies three key risk areas:*
  - 1) *Prevalent use of foreign prime brokerage services by hedge funds: An estimated 60% of hedge funds rely entirely on prime brokerage services from abroad, suggesting a significant contagion risk across jurisdictions.*

- 2) Relatively high risk of contagion between North America and Europe: Most hedge funds and prime brokers connected abroad are domiciled in these two regions. The strongest cross-regional connections are observed between hedge funds in North America and prime brokers in Europe, suggesting that this specific linkage warrants close scrutiny.
  - 3) Dominance of global systemically important banks (G-SIBs) as prime brokers of hedge funds: Importantly, these G-SIBs also have significant common exposure to the same hedge funds. This suggests that risks arising from the hedge funds could be transmitted significantly through and amplified across G-SIBs, potentially leading to systemic instability.
- *Our analysis has two key policy implications:*
    - 1) *First, the strong cross-border connections between hedge funds and prime brokers call for stronger international cooperation to address the regulatory blind spot. While legal and operational constraints may preclude full-scale regulatory data sharing among jurisdictions, a mechanism to facilitate the sharing of ‘red flags’ should be developed to help monitor this global contagion risk.*
    - 2) *Given the dominant role of G-SIBs in providing leverage for hedge funds, regulators could consider collecting frequent and granular information from G-SIBs on individual hedge funds to which they have a high level of exposure. In this regard, the International Data Hub may be leveraged as a platform to facilitate effective global monitoring of such exposure.*

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<p>The views and analysis expressed in this paper are those of the authors, and do not necessarily represent the views of the Hong Kong Monetary Authority.</p>
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## 1. INTRODUCTION

In recent years, hedge funds have increased their exposure to the United States Treasury (UST) markets (Chart 1). This exposure generally involves arbitrage strategies with significant leverage from prime brokers. Similar developments are also observed in sovereign bond markets outside the US.<sup>1</sup> While these leveraged strategies may enhance market efficiency and liquidity in normal periods, they have also raised financial stability concerns. A key concern is that these strategies can exacerbate investment losses for hedge funds amidst market stress, and potentially lead to large counterparty losses for the prime brokers that provide leverage (Chart 2). If realised on a large scale, such counterparty losses could cause severe propagation to the broader financial system.<sup>2,3</sup>

Hedge funds often obtain leverage from prime brokers both locally and abroad. The latter results in significant cross-border linkages that fall outside the regulatory scope of individual jurisdictions. From the perspective of financial stability surveillance, it calls for stronger international cooperation, specifically sharing regulatory data across jurisdictions to facilitate the monitoring of these linkages. In practice, however, such sharing is often neither legally nor operationally feasible, creating a blind spot for monitoring the underlying contagion risks at a global level.<sup>4</sup>

In an attempt to address these data issues, we utilise commercial data with extensive geographical coverage to assess the contagion risks associated with the linkages between hedge funds and prime brokers. While these commercial data have significant limitations (for example, they provide limited information on the level of exposure of prime brokers to individual hedge funds), they allow us to identify the prime brokers serving individual hedge funds. With this important information, we can conduct network analysis to examine the implications of these linkages for financial stability.

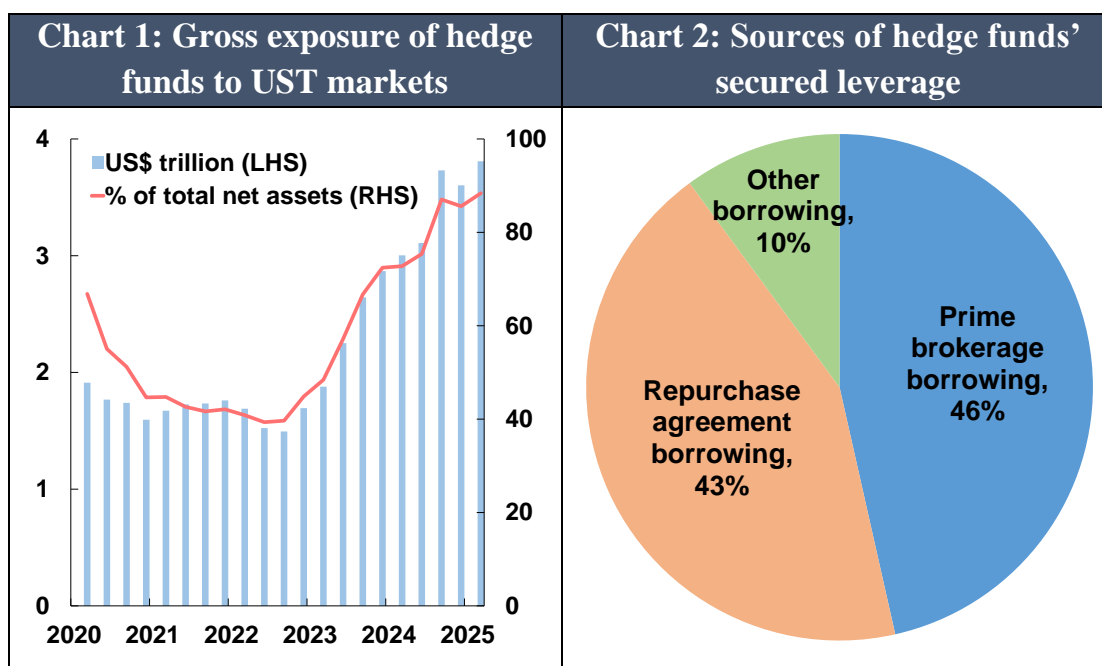
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<sup>1</sup> In addition to the US (Berg et al., 2025), the euro area, Canada and Japan have experienced increasing hedge fund exposure to sovereign bonds in recent years, as reported by the respective authorities (Bassi et al., 2024; Uthemann and Vala, 2024; Ide et al., 2025).

<sup>2</sup> Apart from the propagation of systemic risks through this channel, the rapid unwinding of leveraged positions in sovereign bonds by hedge funds could increase the volatility of sovereign bond yields, which could also be a channel for the propagation of systemic risks.

<sup>3</sup> For instance, the default of Archegos Capital Management, while not a hedge fund focused on the UST markets, illustrates how the aggressive use of leverage could lead to severe contagion for G-SIBs providing that leverage. Reports indicate that the default resulted in significant counterparty losses for several prime brokers, including Credit Suisse, Morgan Stanley, UBS Group AG, Mitsubishi UFJ Financial Group, and Nomura Holdings (Ong and Sun, 2021).

<sup>4</sup> For details, please refer to the Financial Stability Board (2025) and Cheng, Liu, Pezzini and Yu (2023).



Notes:

- The LHS chart illustrates the gross exposure of US-registered hedge funds to the UST markets, expressed in trillions of US\$ (blue bars) and as a percentage of net asset values of these hedge funds (red curve).
- The RHS chart depicts the proportion of US-registered hedge funds' secured leverage at the end of 2024 by sources, where prime brokerage borrowing includes cash margin and securities borrowing under prime broker agreements; and repurchase agreement borrowing covers secured loans under global master repurchase agreements (US Securities and Exchange Commission, 2025), which may be intermediated by prime brokers (Bonelli, 2022). The sum of all these figures does not equal 1 due to rounding. In the event of a hedge fund's default on its repurchase agreement borrowing, the prime broker that intermediates this borrowing may incur the counterparty loss associated with this default. For details, please refer to Adrian et al. (2013).

Sources: US Office of Financial Research and HKMA staff estimates.

Our network analysis identifies three risk areas. First, the use of foreign prime brokerage services is prevalent among hedge funds, leading to a significant contagion risk across jurisdictions. Second, the contagion risk between North America and Europe is particularly high, as most of the hedge funds and prime brokers connected abroad are domiciled in these two regions. This risk warrants close scrutiny. Third, G-SIBs are dominant brokers of these hedge funds and are commonly exposed to the same hedge funds, potentially leading to systemic instability. These findings carry two key policy implications. First, the strong cross-border connections between hedge funds and prime brokers call for stronger international cooperation, specifically sharing 'red flags' to help monitor the underlying global contagion risk. Second, regulators could consider collecting frequent and granular information from G-SIBs on individual hedge funds, given their dominant role in providing leverage for these funds. In this regard, the International Data Hub may be leveraged as a platform to facilitate the effective monitoring of such exposure.

This study is organised as follows: Section 2 describes our data and methodology used for the network analysis. Section 3 reports the results of the network analysis. Section 4 discusses the caveats and robustness tests. Section 5 concludes this study.

## **2. OVERVIEW OF COMMERCIAL DATABASES**

### **2a. Hedge funds**

Our data on hedge funds are compiled from three primary commercial databases: (1) Preqin Pro, (2) Morningstar Direct<sup>5</sup> and (3) Bloomberg. As these databases do not use a common identifier for each fund, we manually review whether a fund is included in more than one of these databases by cross-referencing the fund name, manager, and domicile to identify any overlap. We then assign a unique identifier to each fund and remove any duplicates from the aggregated dataset.

Our dataset includes information on the primary investment strategy employed by each hedge fund. As we focus on hedge funds that employ leveraged trading strategies in sovereign bond markets, we narrow down our sample to those with primary investment strategies classified as either (i) relative value or (ii) fixed income.<sup>6</sup> After applying this criterion, our sample consists of a total of 2,024 hedge funds.

Beyond fund strategies, our dataset includes information on the domicile of each fund. The hedge funds in our sample have diverse domiciles (Chart 3), suggesting that a cross-border contagion risk assessment of hedge funds at a global level would provide important insights. That said, the remaining fund-level information such as fund assets and performance is not uniformly available for every fund.<sup>7</sup> These data gaps make it challenging to directly compare the size of our dataset with those of regulatory sources.

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<sup>5</sup> Morningstar Direct's data providers do not guarantee the accuracy, completeness or timeliness of any information provided by them and shall have no liability for their use.

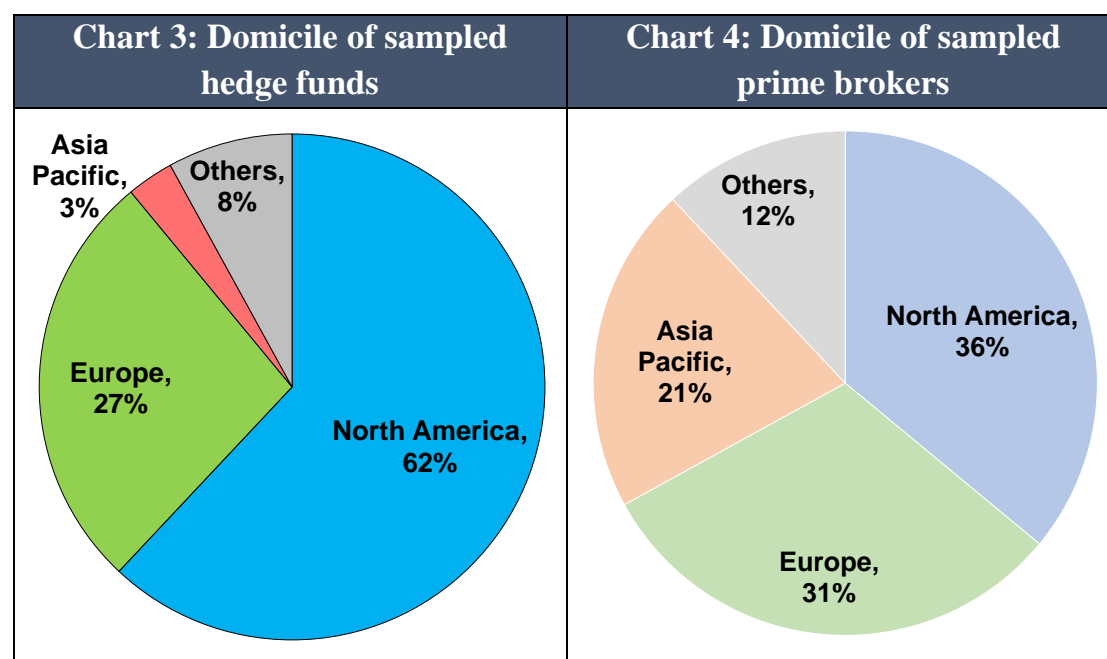
<sup>6</sup> This is part of the sampling criteria used by Kruttli et al. (2021) to identify hedge funds that are likely to trade in the UST markets.

<sup>7</sup> Data on total net assets and performance are unavailable for 47% and 58% of our sampled funds, respectively, in terms of the number of funds.

## 2b. Prime brokers

From the commercial databases, we also compile a list of prime brokers for each sampled fund. These prime brokers provide leverage for the funds, facilitating the financing of the funds' leveraged trading strategies. Consequently, these brokers are susceptible to underlying credit and counterparty risks.

In total, our dataset comprises 2,024 hedge funds that are connected with 204 prime brokers. We retrieve detailed information on the parent company and domicile of each prime broker from S&P Capital IQ. As some brokers are subsidiaries of the same parent company, we consolidate the sampled brokers into 134 parent companies. Hereafter, 'prime broker' refers to the parent company of a prime broker. Geographically, most of these prime brokers are domiciled in North America and Europe (Chart 4).



Note: The LHS (RHS) chart shows the number of sampled hedge funds (sampled prime brokers) by hedge fund (prime broker) domicile at the end of 2024, expressed as a percentage of the total number of hedge funds (prime brokers) in our sample.

Sources: Preqin Inc., Morningstar Direct, Bloomberg and HKMA staff estimates.

While the commercial databases track the linkages between hedge funds and prime brokers, they do not provide information on the amount of funding that each hedge fund obtains from its prime brokers or the total amount of funding that each broker provides. Therefore, we cannot reveal the leverage employed by individual hedge funds or the total exposure of prime brokers to a particular hedge fund. Our network analysis is conducted based on the number of prime brokers used by individual hedge funds rather than the level of prime

brokers' exposure to hedge funds. Given these data gaps, readers should exercise caution when interpreting the results of our network analysis, which are presented in the next section.

### **3. NETWORK ANALYSIS OF LINKAGES BETWEEN HEDGE FUNDS AND PRIME BROKERS**

Using the abovementioned novel dataset, our network analysis identifies three risk areas associated with the linkages between hedge funds and prime brokers that may warrant closer monitoring.

#### **3a. Prevalent use of foreign prime brokerage services by hedge funds**

First, our analysis reveals that hedge funds commonly make use of foreign prime brokers. To examine this issue, we construct a network of connections between the hedge funds and their prime brokers in our sample. In Chart 5, red bands indicate cross-border linkages, where the domiciles of the hedge fund and prime broker differ; green bands represent domestic linkages, where both share the same domicile.<sup>8</sup>

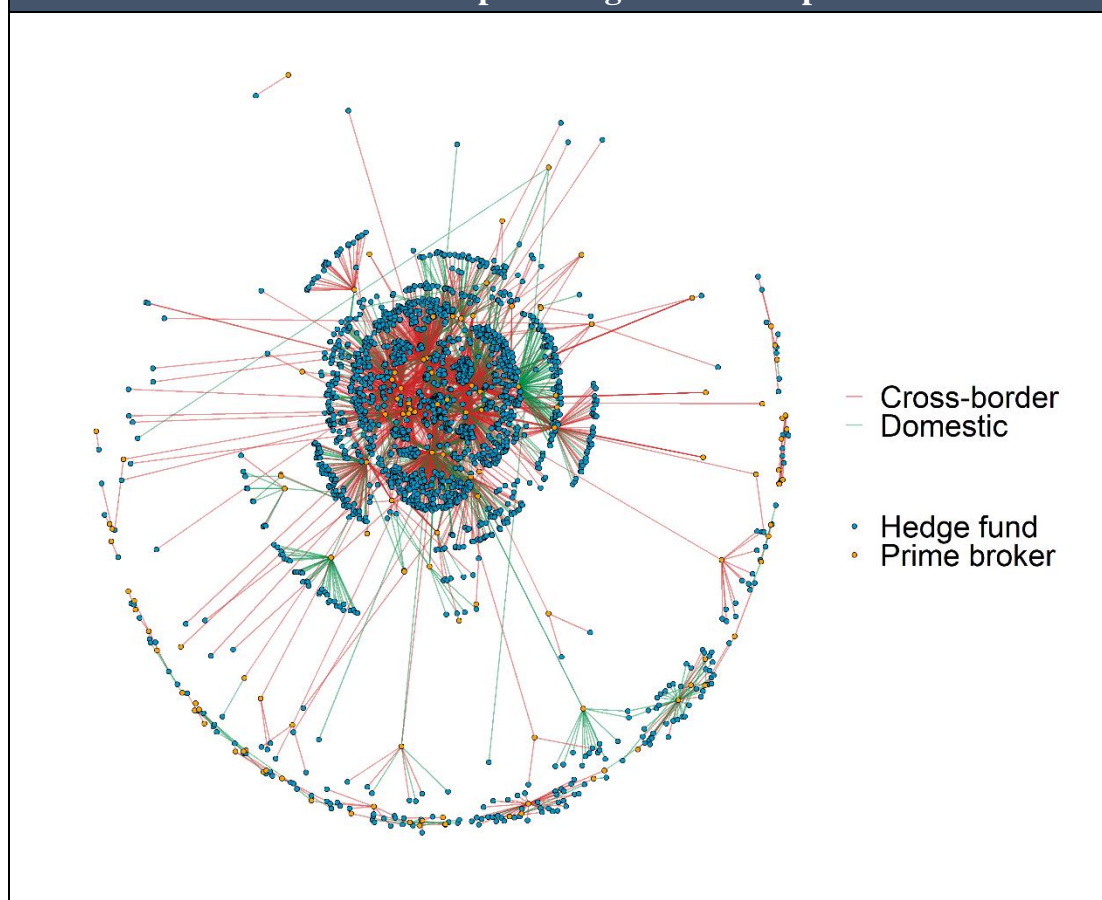
As illustrated in Chart 5, the concentration of red bands at the centre of the cluster and along the edges of the network highlights the widespread use of foreign prime brokerage services by the hedge funds in our sample. Chart 6 further confirms this finding by aggregating these connections into three categories: an estimated 60% of the sampled hedge funds rely entirely on foreign prime brokerage services; 7% use both local and foreign services; and the remaining 33% solely use local prime brokerage services. This indicates that the majority of the hedge funds in our sample use prime brokerage services provided abroad.

Prime brokers often serve as a significant source of leverage for hedge funds. If prime brokers provide substantial leverage to offshore hedge funds, their cross-border linkages may significantly contribute to the build-up of contagion risks across jurisdictions. These cross-border spillover risks warrant stronger international cooperation to monitor financial stability risks of hedge funds at the global level.

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<sup>8</sup> The results are based on our domicile-based classification approach, which has certain limitations. To address these limitations, we conduct robustness tests, whose findings largely align with the baseline results reported in Section 3. Further details are provided in Section 4.

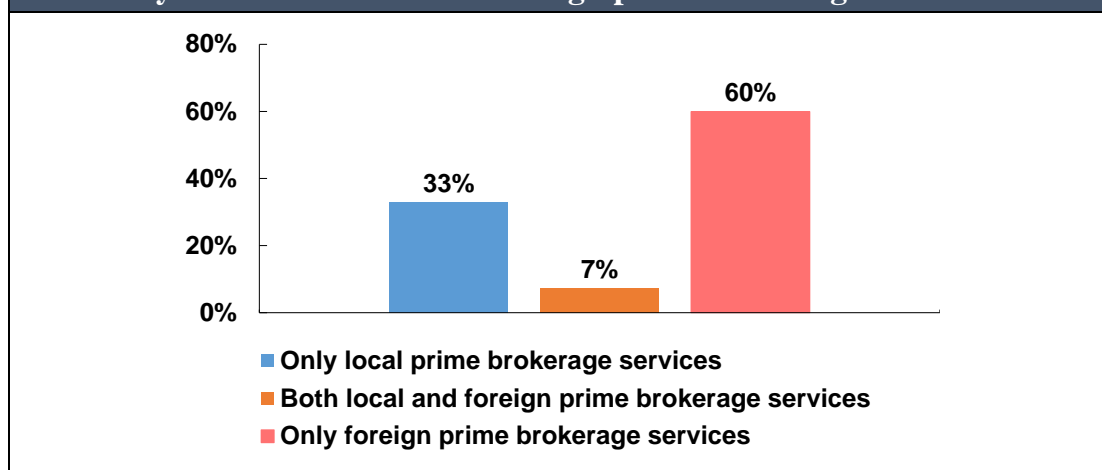
**Chart 5: Network of sampled hedge funds and prime brokers**



Note: This chart illustrates the linkages between the sampled hedge funds and prime brokers at the end of 2024. Each blue (orange) dot denotes a hedge fund (prime broker). Each red (green) band represents a cross-border (domestic) linkage between a fund and broker.

Sources: Preqin Inc., Morningstar Direct, Bloomberg and HKMA staff estimates.

**Chart 6: Sampled hedge funds  
by their use of local and foreign prime brokerage services**



Note: This chart illustrates the number of sampled hedge funds that only use local prime brokerage services (blue bar), those that use both local and foreign prime brokerage services (orange bar), and those that only use foreign prime brokerage services (red bar) at the end of 2024, expressed as a percentage of the total number of hedge funds in our sample.

Sources: Preqin Inc., Morningstar Direct, Bloomberg and HKMA staff estimates.



### 3b. Relatively high contagion risks between North America and Europe

Second, our analysis reveals that the majority of hedge funds and prime brokers with foreign connections are domiciled in North America or Europe, particularly in major fund domiciles and financial hubs such as the Cayman Islands, France, Ireland, Luxembourg, Switzerland, the UK, and the US. Together, these jurisdictions account for more than 80% of the cross-border linkages in our sample. Table 1 presents a matrix of these cross-border connections, with hedge fund domiciles listed in rows and prime broker domiciles listed in columns. Notably, an estimated 93.3% (i.e. 41.6% + 27.2% + 11.8% + 12.7%) of these connections involve hedge funds and prime brokers domiciled in North America or Europe. The remaining 6.7% of the connections involve hedge funds or prime brokers domiciled outside these regions.<sup>9</sup>

Table 1: Cross-border connections between the sampled hedge funds and prime brokers, by fund and broker domiciles					
		<u>Prime brokers</u>			
		North America	Europe	Asia Pacific	Others
<u>Hedge funds</u>	North America	41.6%	27.2%	2.1%	0.8%
	Europe	11.8%	12.7%	0%	0.4%
	Asia Pacific	1.3%	0.5%	0.05%	0%
	Others	0.9%	0.6%	0.2%	0%

Note: Each figure is calculated by dividing the number of connections between sampled hedge funds domiciled in one region and sampled prime brokers domiciled in another at the end of 2024, by the total number of cross-border connections. Each connection represents a distinct pair between a sampled hedge fund and a sampled prime broker. The sum of all these figures does not equal 1 due to rounding.

Sources: Preqin Inc., Morningstar Direct, Bloomberg and HKMA staff estimates.

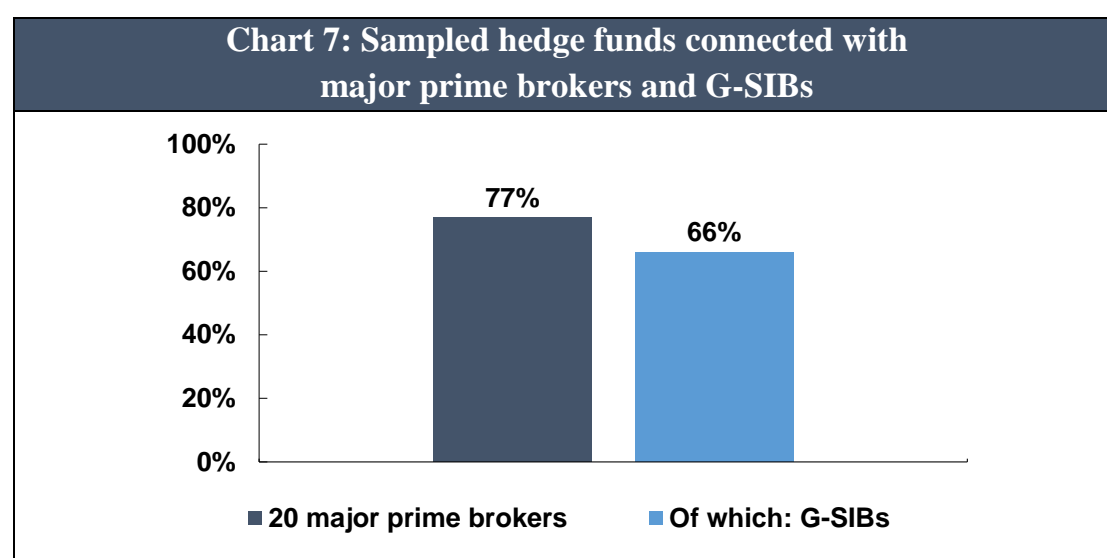
The concentration of cross-border connections in North America and Europe indicates a relatively high risk of contagion from hedge funds to prime brokers in these regions. This pattern suggests that these two regions are

<sup>9</sup> The results are based on our domicile-based classification approach, which has certain limitations. To address these limitations, we conduct robustness tests, whose findings largely align with the baseline results reported in Section 3. Further details are provided in Section 4.

particularly subject to spillover risks arising from hedge funds' leveraged investment in sovereign bonds, while the potential direct impact on Asia Pacific may be relatively low.

### 3c. Dominance of G-SIBs as prime brokers of hedge funds

Third, our analysis reveals that the sampled hedge funds are typically served by a small number of prime brokers. Specifically, we estimate that 77% of the hedge funds in our sample are linked to 20 major prime brokers (Chart 7, LHS). Importantly, 13 of these brokers are G-SIBs, linked with an estimated 66% of the sampled funds (Chart 7, RHS).<sup>10</sup>



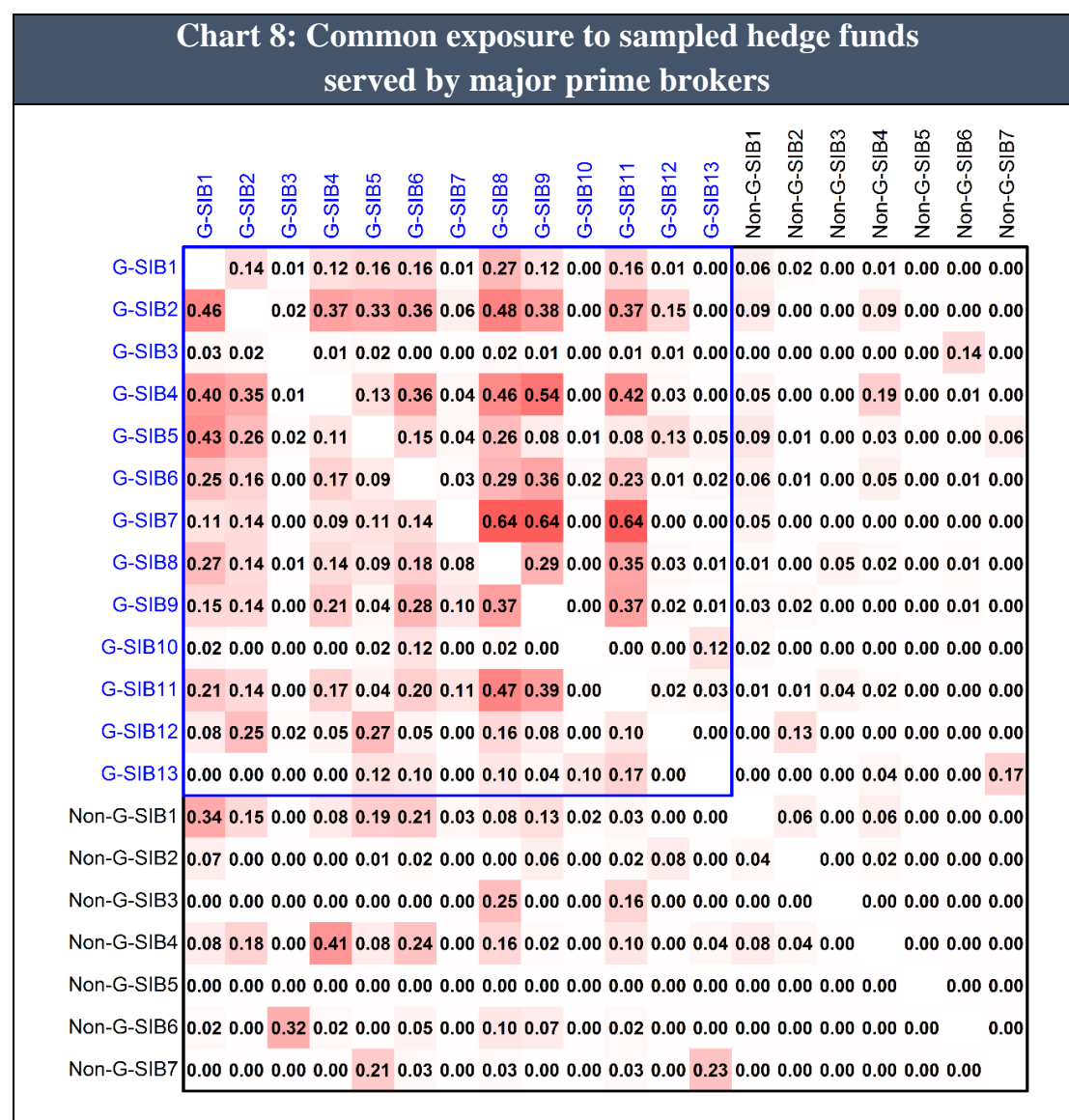
Note: This chart illustrates the number of sampled hedge funds connected with major prime brokers (LHS) and G-SIBs (RHS) at the end of 2024, expressed as a percentage of the total number of hedge funds in our sample.

Sources: Preqin Inc., Morningstar Direct, Bloomberg and HKMA staff estimates.

More detailed analysis of these G-SIBs reveals that compared with non-G-SIBs, they are likely to have greater common exposure to the same hedge funds. To quantify this common exposure, we calculate the number of hedge funds that are simultaneously served by a pair of major brokers, which is then divided by the total number of funds served by either broker. A higher ratio indicates a greater degree of common exposure to the hedge funds served by the two brokers. Chart 8 presents a matrix of the ratio for each pair of major prime brokers, where the first 13 columns (from top to bottom) and rows (from left to right) marked in blue represent the G-SIBs, while the remaining columns and rows denote the non-G-SIBs. For illustration, the figure in the row for G-SIB4

<sup>10</sup> In our sample, there are 3,301 pairs of hedge funds and their prime brokers, within which 2,334 pairs or 71% involve a G-SIB prime broker.

and the column for G-SIB9 shows a value of 0.54, meaning that 54% of the hedge funds served by G-SIB4 are also served by G-SIB9.



Note: This chart presents the number of sampled hedge funds simultaneously served by each pair of major prime brokers listed in each row and column, divided by the total number of sampled hedge funds served by the prime broker listed in the same row. Diagonal values are equal to 1 and hidden for brevity. Sources: Preqin Inc., Morningstar Direct, Bloomberg and HKMA staff estimates.

As shown in Chart 8, these ratios are generally higher within the pairs (i.e. redder boxes) among the G-SIBs than among the non-G-SIBs, suggesting that G-SIBs have significantly greater common exposure to the same hedge funds. This suggests that losses at those hedge funds could simultaneously affect many of these G-SIBs. These indirect linkages may increase contagion risks across the G-SIB prime brokers.

#### 4. CAVEATS AND ROBUSTNESS TESTS

Before concluding, we wish to remind our readers to exercise caution when interpreting our results due to the following five data and methodological limitations.

First, as noted in Section 2, our commercial databases do not contain information on the amount of funding that each hedge fund obtains from its prime brokers or the total amount of funding that each broker provides. As a result, our network analysis implicitly assumes that each prime broker bears the same counterparty risk from each of its hedge fund clients. In reality, however, this assumption is unlikely to hold.

Second, our sample is still smaller than the population of hedge funds, even after combining three commercial data sources. This is largely because many hedge funds do not disclose information to the public. For instance, prior research (Joenväärä et al., 2021) has revealed that two of our commercial databases – Preqin Pro and Morningstar Direct – together capture only an estimated 39% of the total number of hedge funds recorded across all major commercial databases.<sup>11</sup>

Third, our classification of cross-border and domestic linkages is solely determined by the domiciles of hedge funds and prime brokers. However, a hedge fund domiciled in one jurisdiction may primarily operate elsewhere. For example, some hedge funds domiciled in the Cayman Islands, Bermuda, or the British Virgin Islands are registered and have their main office in the US (US Securities and Exchange Commission, 2025). To address this classification issue, we conduct a robustness test by re-classifying the connections between hedge funds domiciled in the Cayman Islands, Bermuda, or the British Virgin Islands and US-domiciled prime brokers from cross-border to domestic, based on the assumption that these funds have their main offices in the US.<sup>12</sup> The results of this test largely align with the baseline results presented in Section 3.

Fourth, another classification issue arises when a hedge fund is served by a local prime broker whose parent company is domiciled abroad. In our

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<sup>11</sup> These databases comprise BarclayHedge, EurekaHedge, Hedge Fund Research, Lipper TASS, Morningstar Direct, eVestment, and Preqin Pro (Joenväärä et al., 2021).

<sup>12</sup> In our aggregated dataset, information on hedge fund managers' locations is available only for the sample obtained from Preqin Pro. Within this sample, an estimated 76% of hedge funds domiciled in the Cayman Islands, Bermuda, or the British Virgin Islands have managers located in the US. This suggests that the assumption of the robustness test is largely consistent with actual patterns.

classification, these are treated as cross-border linkages rather than domestic ones, because our analysis of prime brokers is conducted at the parent-company level, and the domicile we assign to each prime broker refers to that of its parent company. Such cases are particularly common for G-SIBs, which are domiciled in one jurisdiction but have subsidiaries domiciled across multiple jurisdictions. To address this issue, we conduct a further robustness test using subsidiary domiciles instead. The results remain largely consistent with the baseline results reported in Section 3.

Lastly, our sampling criteria for hedge funds do not necessarily capture funds actively trading in sovereign bond markets. Instead, some may focus on non-arbitrage strategies or corporate bond markets, which fall outside the scope of this study. To address this sampling issue, we refine our sample as follows. We first conduct linear regression analysis for each hedge fund to estimate the correlations between its monthly returns and the returns from two primary arbitrage strategies in sovereign bond markets: (i) basis trades and (ii) swap spread trades.<sup>13</sup> We then use this analysis to determine which funds to include in our robustness test, selecting only funds whose returns are positively correlated with either basis trade returns or swap spread trade returns. The rationale is that if a hedge fund is actively conducting either of these arbitrage strategies in the UST markets, its returns should be positively correlated with the corresponding trade returns. By adopting this refined sampling approach, we obtain a sub-sample of 546 hedge funds. Our findings from this sub-sample remain largely consistent with the baseline results, further demonstrating the robustness of our analysis.

## 5. CONCLUSION

To conclude, our network analysis draws on three commercial data sources with extensive geographical coverage to assess the contagion risks arising from the linkages between hedge funds and prime brokers. This analysis is based on the number of hedge funds and prime brokers, rather than the amount of funding each broker provides to each fund, which is not disclosed in our data sources.

Nonetheless, our data sources enable us to identify the prime brokers serving individual hedge funds. With this important information, our analysis

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<sup>13</sup> We retrieve (i) option-adjusted UST cash-future bases net of carry and (ii) swap spreads from J. P. Morgan Markets. Following Glicoes et al. (2024) and Boyarchenko et al. (2018), we proxy basis trade returns and swap spread returns with (i) and (ii), respectively. In the regression analysis, we control for other factors affecting fund returns largely following Packer et al. (2024).

provides initial insights into the linkages between hedge funds and prime brokers at a global level. Such insights are particularly important given that the cross-border linkages often remain opaque in many jurisdictions, where regulatory oversight may not extend to hedge funds or prime brokers operating abroad. The limited sharing of regulatory data across borders due to legal or operational challenges also adds to the obscurity of these cross-border connections, making them difficult to discern.

Our network analysis identifies three key risk areas. First, the use of foreign prime brokerage services is prevalent amongst hedge funds. If prime brokers extend substantial leverage to offshore hedge funds, their cross-border linkages may lead to a significant risk of contagion across jurisdictions. Second, the risk of contagion is particularly high between North America and Europe, as most of the cross-border connections involve hedge funds or prime brokers domiciled in both regions. This risk warrants close scrutiny. Lastly, G-SIBs are dominant prime brokers of these hedge funds and are commonly exposed to the same hedge funds. This suggests that risks arising from the hedge funds could be transmitted significantly through and amplified across G-SIBs, potentially leading to systemic instability.

Based on these findings, this study carries two key policy implications. First, the strong cross-border connections between hedge funds and prime brokers call for stronger international cooperation to address the regulatory blind spot. While legal and operational constraints may preclude comprehensive regulatory data sharing among jurisdictions, a mechanism to facilitate the sharing of ‘red flags’ should be developed to help monitor this global contagion risk. Second, given the dominant role of G-SIBs in providing leverage for hedge funds, regulators could consider collecting frequent and granular information from G-SIBs on individual hedge funds to which they have a high level of exposure.<sup>14</sup> In this regard, the International Data Hub could be leveraged as a platform to facilitate the effective global monitoring of such exposure.<sup>15</sup>

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<sup>14</sup> For instance, the US Securities and Exchange Commission (2025)’s Form PF is designed to collect quarterly information from US-registered hedge funds regarding their prime brokerage leverage. Some G-SIB prime brokers compile similar information even daily (Snider et al., 2025).

<sup>15</sup> The BIS International Data Hub is tasked with compiling, storing and analysing confidential credit funding and balance sheet data of a set of large global financial institutions. Its expertise may help facilitate the collection of data from G-SIBs to monitor their lending to hedge funds.

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