Are the Primary Dealers of the New York Fed Really Special?

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ABSTRACT

He, Kelly, and Manela (2017, HKM) offer strong empirical support to innovations in the equity capital ratio of the New York Federal Reserve (NY Fed) primary dealers as a priced risk factor across major asset classes. This leads them to conclude that primary dealers are special marginal investors that differ from the overall broker-dealer sector. Using information that is publicly available on the NY Fed's website, we construct HKM's intermediary capital ratio and risk factors and show that their results are likely driven by some heavy and ad-hoc trimming of the list of primary dealers. Based on our new sample, there is simply no evidence that the NY Fed's primary dealers are special marginal investors across any of the seven asset classes considered by HKM.

Keywords: Primary dealers; Event study; Cross-sectional asset pricing.

JEL classification: G12; G20; C12; C14; C15.

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Intermediary asset pricing provides a novel perspective on the role of financial intermediaries as marginal investors in the major asset markets. The intermediary asset pricing models of He and Krishnamurthy (2012, 2013) and Brunnermeier and Sannikov (2014) provide the foundations and key determinants of the pricing kernel of financial intermediaries. On the empirical side, Adrian, Etula, and Muir (2014) propose an intermediary pricing kernel with broker-dealer leverage shocks as a single risk factor. In a similar vein, He, Kelly, and Manela (2017, HKM) advocate the use of shocks to the equity capital ratio of primary dealers (PDs) in a two-factor model along with the market factor. HKM provide extensive evidence for significant risk premia and explanatory power of this intermediary capital ratio factor across seven asset classes and contrast their findings with those in Adrian, Etula, and Muir (2014). Overall, the paper offers strong empirical support to the capital ratio of PDs as a priced factor across asset classes with no evidence of pricing for the widely used market factor. This leads HKM to conclude that PDs are special marginal investors with very different characteristics relative to the non-primary broker-dealer sector.

This evidence raises two questions. First, can HKM's aggregate capital ratio and intermediary risk factors be replicated? HKM provide the final series that are used in their empirical analysis, but they do not make the generating code publicly available. In fact, it is not clear how HKM manually match the New York Fed's (NY Fed) PDs to their domestic and foreign ultimate (publicly traded) parent companies. Gospodinov and Robotti (2021) show that there is nothing special about NY Fed's PDs when using HKM's data and robust statistical methods. In contrast, in this paper we are interested in understanding whether HKM's capital ratio and intermediary risk factors are correctly computed. The NY Fed's website is of little help here because it provides a list of domestic and foreign PDs but no information on their ultimate parent companies. Since HKM identify PDs with their ultimate parents, it is of crucial importance to get the ultimate parents right in the analysis. Second, are PDs special broker-dealers as argued by HKM and can they be considered the relevant marginal investors in multi-asset markets? In particular, we are interested in determining whether (i) the intermediary factor of HKM is priced in the cross-section of asset returns; (ii) there is an announcement effect in terms of risk and return from becoming active NY Fed's PDs; and (iii) the performance of the NY Fed's PDs deviates substantially from that of the non-primary broker-dealer sector. If the answer to this question is affirmative, this would elevate the status of the intermediary capital factor in enhancing our understanding about the underlying drivers of the cross-section of asset returns. We provide evidence that sheds light on these questions.

Our sample construction delivers aggregate capital ratio and intermediary risk factor series that differ substantially from those in HKM. While it is difficult to attribute the differences in the series

to one particular reason, we suspect that HKM performed a heavy and ad-hoc trimming of the list of ultimate parent companies to obtain their capital ratio and risk factors. When we eliminate the Japanese parent companies (and a few more selected companies) from the sample, we obtain virtually the same results as in HKM. Ultimately, this discrepancy issue could be solved if the NY Fed were to make publicly available the list of ultimate parent companies of its PDs. The rest of the analysis is conducted using our newly built and updated sample. While it may be prestigious for a broker-dealer to become a New York Fed's PD, we find no price reaction around the day in which a broker-dealer becomes a PD. In essence, there is no evidence of substantial changes in risk and return for those dealers that become active PDs. Finally, we examine whether PDs are special relative to non-primary broker-dealers by employing a difference-in difference (diff-in-diff) approach with PDs in the treatment and broker-dealers in the control groups, respectively. Again, we find no meaningful differences between treatment and control groups, which implies that there may be nothing too special about NY Fed's PDs relative to the wider financial sector. NY Fed's PDs are certainly large finance intermediaries but they do not seem to differ substantially in performance from the non-primary sector based on their risk/return profile and several other characteristics.

The rest of the paper is organized as follows. Section I deals with the sample construction and reports some descriptive evidence for the aggregate capital ratio and characteristics of the NY Fed's PDs. Section II describes our empirical strategy with particular emphasis on the cross-sectional asset pricing, event-study, and performance analyses of the domestic and foreign PDs. In Section III, we provide some preliminary insights on PDs and the performance of HKM's intermediary capital model vs. the capital asset pricing model (CAPM). The main results of our analysis can be found in Section IV. Section V summarizes our main conclusions. Additional material is provided in the appendix.

I. Sample Construction and Descriptive Statistics

We obtain the historical list of PDs from 1970 to 2014 as well as all the relevant information to update the list up to 2020 from the NY Fed's website.[1] Consistent with HKM, we construct the aggregate capital ratio and capital risk factors for the intermediary sector by matching the NY Fed's PD list with Center for Research in Security Prices (CRSP)/Compustat (for the domestic sample) and Datastream (for the foreign sample) data on their publicly traded holding companies. Following the authors approach, we manually match the PDs reported by the NY Fed to their ultimate parent

[1]The original list is available at the following website https://www.newyorkfed.org/markets/primarydealers.

companies that are characterized by unique global company keys (GVKEY) and permanent numbers (PERMNO) for the domestic and mnemonics (MNEM) for the foreign samples, respectively. We then categorize each PD according to its ultimate parent's headquarters. Specifically, a PD is classified as foreign if it is controlled by a company outside of the US and domestic if it is controlled by a US company. Furthermore, for each identified publicly-listed company, we track its mergers, acquisitions, and name change over time to ensure that we employ the most relevant and updated information about the ultimate parent company.

In Appendix A, we report the main results of this replication exercise and compare our newly constructed series with those in HKM. Without delving into details, we are able to obtain correlations of around 0.97 between our and HKM's series.[2] However, it should be noted that these high correlations are observed only when some companies are excluded from the sample (i.e., all of the Japanese companies and some other selected firms). Unless specified otherwise, throughout the paper we employ our own series (that do not exclude any companies) and have correlations of around 0.55 with those of HKM. Tables I and II display the full list of domestic and foreign ultimate parent companies for all of the NY Fed's PDs.

Tables I and II about here

From 1970 to 2020 there are 177 PDs, where 74 are foreign and controlled by 33 distinct parent companies and 80 are domestic and controlled by 47 distinct public holding companies. The remaining 23 PDs are privately held. It is worth emphasizing that a few ultimate parents control more than one PD over some particular time periods. To understand the geographic distribution of the parent companies over time, Figure 1 plots the number of PDs that appear at least once in a given quarter.

Figure 1 about here

We group the PDs based on the currency in which the stock of the ultimate parent is traded. In total, there are seven different geographic areas outside of the US: Japan (JPY), Great Britain (GBP), Euro Area (EUR), Switzerland (CHF), Australia (AUD), Canada (CAD), and Hong Kong (HKD). Before 1975 there are only domestic PDs, from 1975 to 1983 British companies also become active PDs, and from 1990 onwards PDs from other regions appear in the sample. The unconditional average number of PDs per quarter is 22.7, where 8.1 are foreign and 14.6 are domestic. The higher number of domestic companies is driven by the first half of the sample, where the only foreign companies are those from Great Britain. Over the 1990 to 2020 sample period, the average number of PDs is 25.6, where 14.3 are foreign and 11.3 are domestic.

[2]HKM's series are available at http://apps.olin.wustl.edu/faculty/manela/data.html.

Moreover, we analyze the standard industry classification (SIC) of the ultimate parent companies over time. Figure 2 shows the distribution of the ultimate parents over time based on SIC codes.

Figure 2 about here

Among the twelve different SIC that appear at least once in the sample, the most frequent ones are by far (i) security brokers, dealers, and flotation companies (6211) and (ii) commercial banks (6020).[3] Except for two companies that are classified as industrial conglomerates (9997) and department stores (5311), the remaining institutions are classified as finance, insurance, and real estate (6000-6799).

To determine wether there is a difference between the domestic and foreign parent companies, we perform some accounting and ratio analyses over the 1970 to 1990, 1990 to 2020, and 1970 to 2020 sample periods. Panel A of Table III displays the asset, debt, equity and market capitalization positions of the domestic and foreign parent companies as well as of the two combined (USD, in millions).

Table III about here

The foreign PDs have more assets and book debt but a smaller market cap compared to the domestic PDs in the first two periods. In terms of book equity, the foreign companies have more equity in the first period and less in the second. Panel B of Table III displays the debt-to-asset, debt-to-equity, and book-to-market ratios. The foreign PDs have higher debt-to-equity and debt-to-asset in the second period, while in the first period the two ratios are nearly identical across foreign and domestic PDs. However, for the entire period, the debt-to-equity of foreign PDs is twice as large, and the debt-to-asset is about 5% higher than the one of the domestic PDs. Overall, foreign PDs are leveraging more their equity and assets. Furthermore, the domestic PDs have a slightly higher book-to-market ratio compared to the foreign counterparts.

We also briefly investigate how special the domestic PDs are compared to the financial sector in the US (i.e., SIC codes 6000 to 6799). Panel C of Table III reports the same statistics as in Panel A of Table III for the financial sector by excluding the parent companies of the NY Fed's PDs. By comparing Panels A and C of Table III, it emerges that on average the domestic PDs are larger than the other financial firms. Finally, Panel D of Table III displays various average characteristic ratios

[3]The SIC codes that appear at least once in the sample are (i) department stores (5311); (ii) commercial banks (6020); (iii) personal credit institutions (6141); (iv) mortgage bankers and loan correspondents (6162); (v) finance services (6199); (vi) security and commodity brokers (6200); (vii) security brokers, dealers, and flotation companies (6211); (viii) investment advice (6282); (ix) life insurance (6311); (x) fire, marine, and casualty insurance (6331); (xi) investors, not elsewhere classified (6799); and (xii) industrial conglomerates (9997).

between the domestic PDs and the financial sector in the US. On average, for all the four statistics that we consider and over the entire period 1970-2020, the domestic PDs have characteristic ratios that are 50 to 65 times larger than those of the average US financial sector.

To summarize, our sample construction delivers vastly different series relative to HKM. We suspect that HKM performed a heavy and ad-hoc trimming of the list of ultimate parent companies to obtain their ratio and risk factor series. Based on our sample construction, foreign PDs are slightly more important than the domestic ones in terms of number and concentration of their ultimate parent companies. Moreover, the foreign PDs seems to be riskier than their domestic counterparts and their stock seems to be slightly more overvalued. Finally, the domestic PDs are much bigger than the average financial institution in the US.

II. Empirical Strategy

Our empirical analysis is divided into three parts. First, given the difference between our series and those proposed by HKM[4], we replicate HKM's main cross-sectional analysis using their empirical methods and the newly proposed methodological insights of Gospodinov and Robotti (2021). Second, we investigate market reactions around the NY Fed's announcement of a new PD. Finally, we analyze the performance of the domestic NY Fed's PDs relative to the US broker-dealer sector.

Following HKM, the aggregate capital ratio is defined as

$$\eta_t = \frac{\sum_{i=1}^{n} MktCap_{i,t}}{\sum_{i=1}^{n} \left(MktCap_{i,t} + BookDebt_{i,t}\right)}, \tag{1}$$

where n is the total number of domestic and foreign ultimate parent companies, t denotes calendar time (end of quarter), $MktCap_{i,t}$ is the closing price in the current calendar quarter multiplied by the most recent number of shares outstanding, and $BookDebt_{i,t}$ are the most recent total assets minus the most recent common equity available at the end of each calendar quarter. Over periods of distress, the market value of a company's stock decreases and its book debt increases, thus leading to a contraction in the capital ratio. Equivalently, a procyclical capital ratio translates into a countercyclical intermediary leverage, which has been widely documented in the literature. Then, HKM's nontraded capital risk factor is computed as

$$\eta_t^{\Delta} = \frac{\epsilon_t}{\eta_{t-1}}, \tag{2}$$

[4]See Appendix A.

where ϵ_t is the residual from the following AR(1) specification for η :

$$\eta_t = \rho_0 + \rho\eta_{t-1} + \epsilon_t. \tag{3}$$

In the following analysis, we denote η_t^{Δ} by $CPTL$. HKM also propose a traded intermediary capital factor that is computed as

$$r_{p,t} = \sum_{i=1}^{n} MktCap_{i,t} * r_{i,t}, \tag{4}$$

where $r_{i,t}$ is the return of PD i at the end of the current calendar quarter t, and $r_{p,t}$ represents the value-weighted portfolio return. This traded factor is denoted by $CPTLT$ in the following analysis. We then apply the traditional two-pass methodology of Fama and MacBeth (1973) to investigate the robustness of these nontraded and traded capital factors in cross-sectional asset pricing. In particular, we focus on the price of multivariate beta risk and on the price of covariance risk in the subsequent empirical analysis. We refer the readers to Gospodinov and Robotti (2021) for the relevant methodological details.

In the second part of our empirical analysis, we will investigate how investors react to the NY Fed's announcement of a new PD. If PDs are special entities, investors should closely monitor the Fed's announcement of a new PD, and we should observe a price reaction around the announcement day. To fulfil this task, we rely on the methodology proposed by Patton and Verardo (2012), and we analyze the stock price reaction of the ultimate parent companies five days around the announcement day. We consider the following specification:

$$\begin{aligned} r_{i,t} = \; & \delta_{-5} I_{i,t+5} + \cdots + \delta_0 I_{i,t} + \cdots + \delta_5 I_{i,t-5} \\ & + \bar{\beta}_{i,1} D_{i,1} + \bar{\beta}_{i,2} D_{i,2} + \bar{\beta}_{i,3} D_{i,3} + \gamma' \mathbf{X}_{i,t} + \epsilon_{i,t}, \end{aligned} \tag{5}$$

where $r_{i,t}$ is the time t dollar return of company i that is about to become a PD on the event day. $I_{i,t}$ are dummy variables defined over a 10-day event window around the day that a broker-dealer becomes a PD. Specifically, $I_{i,t} = 1$ if day t is an announcement day for company i, and $I_{i,t} = 0$ otherwise. Moreover, $D_{i,1}$, $D_{i,2}$, and $D_{i,3}$ are, in order, firm, year, and industry fixed effects. We also include a series of control variables in our specification, through $\mathbf{X}_{i,t}$. We control for various firm-specific characteristics: the first lag of the returns (to account for the mild autocorrelation in equity returns), market capitalization, book-to-market ratio, assets, and book equity (to account for company-specific characteristics). To detect whether the PD announcements lead to a statistically significant change in returns over the estimation window, we analyze the size and significance of the δ_j coefficient estimates

for each day in the estimation window (δ_{-5} refers to the first day, and δ_5 to the last day in the window). In brief, δ_j captures the daily deviations of returns from their long-run average. If investors interpret news positively, then the δ estimates will be positive and statistically significant. In contrast, if investors perceive the news as bad, the estimates will be negative and statistically significant. If the estimates are not statistically significant, the obvious interpretation is that prices do not deviate from their long-run average and investors do not react to this new information. Furthermore, by looking at the timing, it is possible to understand whether investors can predict the PD events and/or have a delayed reaction to the PD announcements. We cluster the standard errors by firms and days, as suggested by Petersen (2009). Such a procedure yields standard errors that are robust to heteroskedasticity and arbitrary within-cluster correlation.

Finally, we investigate whether New York Fed's PDs are special relative to non-primary dealers, as represented by the broker-dealer sector as a whole. We employ a diff-in-diff approach and only consider domestic parent companies in the analysis (due to data limitations in the identification of a control group). We run the following regression model for each of the ultimate parent companies of the various PDs (treatment group):

$$r_{i,t} = \alpha + \beta PD_i + \zeta Time_t + \psi PD_i * Time_t + \epsilon_{it}, \tag{6}$$

by using an equally-weighted portfolio return of all of the US broker-dealers (SIC codes 6211 and 6221) as our control group. To avoid that a company is contemporaneously in the treatment and control group, we exclude broker-dealers while they act as New York Fed's PDs in the computation of the equally-weighted portfolio. In the above specification, $r_{i,t}$ represents the daily returns of the control and treatment groups one year before and one year after a financial intermediary becomes a PD. The dummy variable PD_i takes on the value of one if i is a PD in the treatment group and of zero if i represents the control group. Moreover, $Time_t$ is another dummy variable that takes the value of one after a company becomes a PD and zero before the event (this dummy variable does not change across treatment and control groups). Finally, $PD_i * Time_t$ is the interaction term between the two indicators. The intuition behind this formulation is that if becoming a PD leads to any performance improvement (deterioration), then the coefficient estimate associated with the interaction term should be positive (negative) and statistically significant.

III. Preliminary Insights on the NY Fed's Primary Dealers

In this section, we provide some preliminary insights on the NY Fed's PDs and report some descriptive statistics of the series used in the empirical analysis. Figure 3 plots the capital ratio as defined in Equation (1) (at a quarterly frequency) along with the National Bureau of Economic Research (NBER) recession periods.

Figure 3 about here

The figure shows that the aggregate capital ratio decreases and reaches its troughs around periods of market distress. Furthermore, around 1985 the capital ratio exhibits a threefold increase and then shrinks again towards the average starting from the early 2000s. These two shifts are merely driven by the inclusion and exclusion of Japanese and industrial conglomerate PDs. Figure 4 plots *CPTLT*, the value-weighted portfolio return described in Equation (4).

Figure 4 about here

Again, portfolio returns are lower around recessions and tend to increase afterwards.

In a cross-sectional setting, HKM show that *CPTLT* is a priced source of risk in a wide range of asset classes.[5] In addition, Gospodinov and Robotti (2021) find that the correlation between HKM's traded capital factor and the excess value-weighted return on the US stock market is about 0.84, with *CPTLT* having approximately the same mean as the market factor and a substantially higher standard deviation. We repeat the same exercises here using our newly created sample. Panel A of Table IV leads to similar conclusions.

Table IV about here

The correlation between the market and *CPTLT* is about 0.69, while the *CPTLT* factor commands a statistically insignificant risk premium. Panels B and C of Table IV also confirm the results of Gospodinov and Robotti (2021) when it comes to the Sharpe ratio performance of the two-factor (HKM) and single-factor (HKMSF) models of HKM. Neither of these models is superior to the CAPM based on the squared Sharpe ratio comparisons in the table.[6]

To shed further light on *CPTLT*, we compare *CPTLT* with IXG. IXG is an iShares ETF that invests in the financial sector worldwide.[7] The IXG website provides a list of the constituents and

[5] We refer the readers to their Table 17 for further details.

[6] See Barillas et al. (2020) for an explanation of the nested and non-nested model comparison tests.

[7] Details on the IXG ETF can be found at the following link: https://www.ishares.com/us/products/239742/ishares-global-financials-etf.

their geographical locations. Interestingly, all of the NY Fed's PDs are also part of this ETF. So, if PDs are special and unique relative to the non-primary broker-dealer sector, they should be even more unique when comparing them with the whole financial sector worldwide. This is not what we find. Figure 5 plots *CPTLT* and IXG from 2007:Q2 to 2019:Q3.

Figure 5 about here

The two series seem to almost perfectly match each other, something that is also reflected in the very high correlation of the two series (0.89). *CPTLT* appears to be only slightly more volatile than IXG (0.17 vs. 0.13).

Next, we analyze whether becoming a NY Fed's PD entails any substantial changes in volatility and cumulative returns for the company. Towards this end, we measure the average monthly realized volatilities and cumulative returns of the ultimate parent companies from 12 months before until 12 months after they become PDs. Changing name or merging with other companies do not represent an event in our analysis. Events occur only when the NY Fed announces that a broker-dealer has become a PD, and the ultimate parent was not already identified as a holding company of a PD. Furthermore, we require that the ultimate parent that is about to become the controlling company of a PD has one year of observations before the event date. This leaves us with a total of 74 companies in the sample. Figure 6 shows the monthly average realized volatility (RV) across all PDs over a two-year window.

Figure 6 about here

RV is calculated by summing the daily squared returns in each calendar month for each PD. The zero value on the x axis denotes the month in which the company becomes a PD. The dashed lines denote the 95% confidence bounds for average realized volatility. The figure highlights a slightly higher RV before the event date. The average RV is 0.012 before the event date and 0.010 after. However, bootstrap experiments reveal that this difference is not statistically significant.

Figure 7 plots the cumulative returns 12 months before until 12 months after a company becomes a PD.

Figure 7 about here

The cumulative return reflects an initial investment of 100\$ at $t-13$ for each distinct PD that is then compounded over time using monthly returns. At each time period t, we calculate the cross-sectional average across all PDs and the 95% confidence bounds. The plot displays a slight increase in cumulative returns from the period before to the period after the month of the event. The average cumulative return is around 101\$ at the month of the event and about 118\$ at the end of the twelve

months after the event date. Moreover, the average difference between before and after the event is approximately 12$. The larger confidence bounds after the event date indicate that this difference is highly volatile across PDs and suggest that becoming a PD does not lead to any considerable performance improvement. Such conclusion is also supported by bootstrap tests on the difference in average cumulative returns before and after the event takes place. In conclusion, this preliminary evidence all points to the same direction. NY Fed's PDs do not appear to be special in the sense that the performance of these companies before and after becoming PDs is not substantially different, neither from a risk nor from a return perspective.

IV. Main Results

In this section, we present the main results of our empirical analysis. In Subsection A, we analyze the cross-sectional performance of the nontraded capital risk factor at a quarterly frequency by employing HKM's methods.[8] Subsection B presents the results of an event study around the announcement of a new PD to determine whether there is a positive announcement effect on the company's stock from becoming PDs. Finally, Subsection C displays the results of a diff-in-diff exercise to evaluate whether PDs are special entities relative to the broker-dealer sector. In the last two subsections, the event of a company becoming a PD is defined only when the ultimate parent company is not already a PD in the previous period. This implies that we do not consider mergers and acquisitions and name changes as events.

A. Cross-Sectional Pricing

This subsection reports cross-sectional asset-pricing results for HKM's two-factor model with market and nontraded capital (Table V) as well as their corresponding single-factor specifications (Table VI). Below each risk premium estimate, in round brackets we report the t-statistic under correctly specified models (t-stat$_c$).[9] To be consistent with HKM, we do not adjust for serial correlation in the computation of the t-statistics. Doing so would render the standard errors of the estimates even larger. We also include the ordinary least squares (OLS) cross-sectional regression (CSR) R^2 in the table.

[8]The results based on the traded capital risk factor and a monthly frequency are qualitatively similar and available on request.

[9]The t-statistics under correctly specified models are the standard generalized method of moments (GMM) t-statistics under conditional heteroskedasticity. (See also Jagannathan and Wang (1998).)

In Panel A of Table V, we report OLS cross-sectional asset-pricing tests for HKM's two-factor model.

Table V about here

Based on t-stat$_c$ and a 5% significance level of the test, Panel A of Table V shows that we cannot reject the null of a zero risk premium for HKM's capital risk factor in all seven asset classes. Moreover, when considering an unbalanced panel of all asset excess returns (the All column), the overall capital risk premium is 10.30% per quarter with a t-statistic of 1.23. Consistent with the findings of Lewellen, Nagel, and Shanken (2010) and Kleibergen and Zhan (2015), the OLS CSR R^2s are found to be unrealistically large for many asset classes. In addition, the estimated prices of multivariate beta risk for capital are not very sensible. For example, for sovereign bonds and credit default swaps, the capital risk premium flips sign and becomes negative. In contrast market risk appears to be priced for US bonds, options, credit default swaps, and foreign exchange.

As pointed out by Gospodinov and Robotti (2021), it is incorrect to focus on the price of multivariate beta risk if the factors are correlated and the goal is to determine whether a given factor adds to the explanatory power of the model. In our setting, the correlation between the market factor and *CPTL* is about 55%, and therefore we also compute the prices of covariance risk and report them in Panel B of Table V. Panel B leads to the same conclusions as for Panel A. These results strongly suggest that the PD factor is not priced across a wide range of alternative asset classes.

In Table VI, we also consider two single-factor specifications: the CAPM and HKM's single-factor model (HKMSF).

Table VI about here

Since we are now analyzing single-factor models, focusing on betas or covariances is equivalent, and we choose to report results for the price of beta risk. Comparing Panels A and B again indicates that the market factor works much better than intermediary capital in pricing test assets that are notoriously difficult to explain. Overall, based on HKM's empirical methods, this exercise highlights the poor performance of intermediary capital in cross-sectional asset pricing. In contrast, market risk appears to be a much better candidate risk factor when interest lies in explaining these cross-sections of asset returns.

B. Event Study Analysis

In this subsection, we conduct an event study analysis at a daily frequency for the domestic (USA), foreign (For), and whole (All) samples. Splitting the sample according to the geographic location of

the ultimate parent company allows us to investigate whether there exists a difference in price reaction across PDs that have headquarters in the US and abroad. Moreover, the full-sample analysis allows us to draw more general conclusions about the investors' perception of a PD announcement by looking at the price changes in the reported event window.

Table VII displays our findings.

Table VII about here

"Day" in the table indicates the number of days before and after announcement day, where "Day 0" is the event day. Starting from the full-sample results, the only statistically significant coefficient estimate can be found five days after the announcement day. The estimate is negative and significant at the 99% significance level, which implies that the market reacts only five days after the PD announcements. The coefficient estimate is negative (-0.23) and implies that the prices of the ultimate parent companies' stocks decrease by 0.23% five days after the announcement date. These results are based on 580,749 daily observations and the adjusted R^2 of the regression is 0.14. For the US sub-sample, prices significantly deviate from their long-run average two days before the announcement date, on the announcement day, and five days after the announcement day. In all of the cases, the coefficient estimates are negative and statistically significant at least at a 95% significance level. This model is estimated based on 224,092 daily observations and delivers an adjusted R^2 of 0.20. Finally, the foreign sample only delivers two statistically significant coefficient estimates; a positive one five days before the announcement day that is statistically significant at the 90% level, and a negative one two days after the event that is statistically significant at the 99% level. The latter model is estimated based on 356,657 daily observations and entails an adjusted R^2 of 0.003.

Overall, these results suggest that investors negatively perceive the NY Fed announcement of a new PD. Even though the foreign sample contains more observations than the US sample, investors seem to pay more attention to the US companies than to the foreign ones. This conclusion is based on the number of observations, statistical significance and size of the coefficient estimates, and the adjusted R^2 measure. However, across the two sub-samples, we do not observe consistent and reliable patterns for price changes. This might indicate that the inference and conclusions presented above are unreliable. In fact, when adding a few control variables (lagged returns, market capitalization, book-to-market ratio, assets, and book equity) through the $\mathbf{X}_{i,t}$ term in Equation (5), untabulated results (available on request) indicate that none of the coefficient estimates are statistically significant any longer. Stated differently, the announcement of a new NY Fed's PD does not seem to generate any relevant price reaction.

C. *Performance*

In this subsection, we report results for the diff-in-diff specification discussed earlier. The treatment group includes all of the US PDs, while the control group is represented by an equally-weighted portfolio where the constituent companies are the US broker-dealers (SIC codes 6211 and 6221). Figure 8 plots the results of the analysis.

Figure 8 about here

The two horizontal dashed lines denote statistical significance at the 95% confidence level. The black dots indicate the size of the coefficient estimates (multiplied by 100), and the red bars represent the t-statistics associated with the parameter estimates. Across the 29 companies in the sample, only one coefficient estimate is statistically significant at the 95% level. The sign of this estimate is negative (-0.001) and suggests that the performance of the company deteriorates compared to the performance of the treatment group after the PD announcement is made. The remaining 28 coefficient estimates are not statistically significant even at the 90% significance level. Overall, our results suggest that the NY Fed's PDs are not special relative to the other US non-primary broker-dealers.

V. Concluding Remarks

A common thread in the recent intermediary asset pricing literature is the relentless search for risk factors with robust pricing performance across a wide variety of asset classes. HKM claim that robust pricing can be achieved if we are willing to consider traded and nontraded capital risk factors based on the stock and debt of domestic and foreign ultimate parent companies whose subsidiaries are NY Fed's primary dealers. They identify the marginal investors in many asset classes as the NY Fed's primary dealers and claim that they are special relative to the broker-dealer sector.

We re-examine HKM's empirical evidence by first forming our own capital ratio and risk factors. Our series are very different from those that HKM made publicly available, especially for the middle part of the sample. Based on our newly built data, we document a total lack of pricing performance for the intermediary capital factors even when using HKM's empirical methodology. In addition, we employ an event-study analysis to show that becoming primary dealers of the NY Fed does not generate any relevant price effect for those companies. Therefore, while it is certainly prestigious to become a NY Fed's primary dealer, the market does not seem to reward this type of announcement. Finally, we rely on a difference-in-difference approach to conclude that the domestic NY Fed's primary dealers are not special relative to the broker-dealers in the US.

Appendix A. He, Kelly, and Manela (2017) Replication Exercise

In this appendix, we report the results of our replication exercise of the He, Kelly, and Manela (2017) series. In the interest of brevity, we only include figures for the intermediary capital ratio and traded capital risk factor at a quarterly frequency (the complete set of results is available from the authors upon request). The computations of the intermediary capital ratio are based on Equation (1) and are displayed in Figures 9-11. Similarly, the computations of the traded intermediary capital risk factor are based on Equation (4) and are displayed in Figures 12-14. We report, in order, results for all of the ultimate parent companies (Figures 9 and 12), for all but the Japanese ultimate parent companies (Figures 10 and 13), and for all but the Japanese and a few more ultimate parent companies (Figures 11 and 14).

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Table I
List of Primary Dealers (Domestic Parent Companies)

The table shows the ultimate publicly-listed domestic holding company (Parent Company) for each NY Fed's primary dealer over time. We obtain the list of primary dealers from the NY Fed's website for HKM's 1970-2014 sample period, and we employ the information available on the same website to update the list until 2020. We include the name of the primary dealer and its ultimate parent company along with its global company key (GVKEY), as reported by Compustat. The date range highlights the period in which a company was a NY Fed's primary dealer.

Primary Dealer	From	To	Parent Company	GVKEY
BA SECURITIES, INC.	18/04/1994	30/09/1997	BANKAMERICA CORP-OLD	2024
BANC OF AMERICA SECURITIES LLC	17/05/1999	01/11/2010	BANK OF AMERICA CORP	7647
BANC ONE CAPITAL MARKETS, INC	01/04/1999	01/08/2004	BANK ONE CORP	1998
BANCAMERICA ROBERTSON STEPHEN	01/10/1997	31/08/1998	BANKAMERICA CORP-OLD	2024
BANCAMERICA SECURITIES, INC.	01/09/1998	30/09/1998	BANKAMERICA CORP-OLD	2024
BANK OF AMERICA NT & SA	17/11/1971	15/04/1994	BANKAMERICA CORP-OLD	2024
BANKERS TRUST	19/05/1960	07/07/1989	BANKERS TRUST CORP	2029
BEAR,STEARNS & CO., INC.	10/06/1981	01/10/2008	BEAR STEARNS COMPANIES INC	11818
BLYTH EASTMAN DILLON CAPITAL MARKETS	05/12/1974	31/12/1979	INA CORP	5843
BNY SECURITIES, INC.	01/08/1989	09/08/1990	BANK OF NEW YORK MELLON CORP	2019
BofA SECURITIES	13/05/2019	Current Dealer	BANK OF AMERICA CORP	7647
BT ALEX. BROWN INCORPORATED	23/10/1997	04/06/1999	BANKERS TRUST CORP	2029
BT SECURITIES CORPORATION	10/07/1989	22/10/1997	BANKERS TRUST CORP	2029
CHASE MANHATTAN CAPITAL MARKETS CORP	01/07/1987	19/12/1988	CHASE MANHATTAN CORP-OLD	2943
CHASE MANHATTAN GOV'T SECURITIES	15/07/1970	30/06/1987	CHASE MANHATTAN CORP-OLD	2943
CHASE SECURITIES, INC	01/04/1996	30/04/2001	JPMORGAN CHASE & CO	2968
CHASE SECURITIES, INC	20/12/1988	31/03/1996	CHASE MANHATTAN CORP-OLD	2943
CHEMICAL	19/05/1960	31/03/1989	JPMORGAN CHASE & CO	2968
CHEMICAL SECURITIES INC	01/01/1992	31/03/1996	JPMORGAN CHASE & CO	2968
CHEMICAL SECURITIES, INC.	01/04/1989	31/12/1991	JPMORGAN CHASE & CO	2968
CITIBANK	15/06/1961	13/04/1989	CITICORP	3066
CITICORP SECURITIES MARKETS, INC.	14/04/1989	14/07/1993	CITICORP	3066
CITICORP SECURITIES, INC.	15/07/1993	30/11/1998	CITICORP	3066
CITIGROUP GLOBAL MARKETS INC.	07/04/2003	Current Dealer	CITIGROUP INC	3243
CONTINENTAL BANK, NATIONAL ASSOC.	15/12/1988	30/08/1991	CONTINENTAL BANK CORP	3463
CONTINENTAL ILL.	19/05/1960	14/12/1988	CONTINENTAL BANK CORP	3463
COUNTRYWIDE SECURITES CORPORATION	15/01/2004	15/07/2008	COUNTRYWIDE FINANCIAL CORP	3555
DEAN WITTER REYNOLDS INC.	02/11/1977	30/04/1998	DEAN WITTER REYNOLDS ORG INC	3823
DEAN WITTER REYNOLDS INC.	02/11/1977	30/04/1998	SEARS HOLDINGS CORP	6307
DEAN WITTER REYNOLDS INC.	02/11/1977	30/04/1998	DEAN WITTER DISCOVER & CO	27867
DILLON, READ & CO., INC.	24/06/1988	02/09/1997	TRAVELERS CORP	10705
DISCOUNT CORPORATION OF NEW YORK	19/05/1960	10/08/1993	DISCOUNT CORP NY/DEL	3689
DLJ SECURITIES CORPORATION	06/03/1974	31/12/2000	DONALDSON LUFKIN & JENRETTE	4037
FIRST CHICAGO	19/05/1960	01/01/1990	FIRST CHICAGO CORP	4689
FIRST CHICAGO CAPITAL MARKETS	02/01/1990	31/03/1999	FIRST CHICAGO NBD CORP	7650
FIRST INTERSTATE	31/07/1964	31/10/1986	FIRST INTERSTATE BNCP	4710
FIRST INTERSTATE CAPITAL MARKETS,INC	03/11/1986	17/06/1988	FIRST INTERSTATE BNCP	4710
FIRST N/B OF BOSTON	21/03/1983	17/11/1985	BANKBOSTON CORP	2014
FIRST PENNCO SEC. INC.	07/03/1974	27/08/1980	FIRST PENNSYLVANIA CORP	4732
GOLDMAN, SACHS & CO.	04/12/1974	Current Dealer	GOLDMAN SACHS GROUP INC	114628
HARRIS TRUST	15/07/1965	31/08/1988	HARRIS BANKCORP INC	5491
HUTTON	02/11/1977	31/12/1987	HUTTON (E.F.) GROUP	5793
IRVING SECURITIES, INC.	19/05/1960	31/07/1989	IRVING BANK CORP	6186
J.P. MORGAN SECURITIES INC.	01/05/2001	01/09/2010	JPMORGAN CHASE & CO	2968
J.P. MORGAN SECURITIES LLC	01/09/2010	Current Dealer	JPMORGAN CHASE & CO	2968
J.P.MORGAN SECURITIES,INC.	19/05/1960	30/04/2001	MORGAN (J P) & CO	7562
JEFFERIES & COMPANY, INC.	18/06/2009	01/03/2013	JEFFERIES FINANCIAL GRP INC	6682
JEFFERIES LLC	01/03/2013	Current Dealer	JEFFERIES FINANCIAL GRP INC	6682
KIDDER, PEABODY & CO., INCORPORATED	07/02/1979	30/12/1994	GENERAL ELECTRIC	5047
L.F.ROTHSCHILD & CO., INC.	18/05/1987	17/01/1989	ROTHSCHILD (LF) HOLDINGS INC	12223
L.F.ROTHSCHILD,UNTERBERG,TOWBIN	11/12/1986	15/05/1987	ROTHSCHILD (LF) HOLDINGS INC	12223
LEHMAN	25/11/1976	31/12/1987	AMERICAN EXPRESS CO	1447
LEHMAN BROTHERS INC.	31/08/1995	22/09/2008	LEHMAN BROTHERS HOLDINGS INC	30128
LEHMAN GOVERNMENT SECURITIES INC	01/08/1990	30/08/1995	AMERICAN EXPRESS CO	1447
MANUFACTURERS HANOVER	31/08/1983	29/07/1988	MANUFACTURERS HANOVER CORP	7003
MANUFACTURERS HANOVER SECURITIES COR	01/08/1988	31/12/1991	MANUFACTURERS HANOVER CORP	7003
MERRILL LYNCH GOVERNMENT SEC. INC.	19/05/1960	11/02/2009	MERRILL LYNCH & CO INC	7267
MERRILL LYNCH, PIERCE, FENNER & SMITH INCORPORATED	01/11/2010	13/05/2019	BANK OF AMERICA CORP	7647
MF GLOBAL	02/02/2011	31/10/2011	MF GLOBAL HOLDINGS LTD	177745
MORGAN STANLEY & CO. INCORPORATED	01/02/1978	31/05/2011	MORGAN STANLEY	12124
MORGAN STANLEY & CO. LLC	31/05/2011	Current Dealer	MORGAN STANLEY	12124
NATIONSBANC CAPITAL MARKETS, INC.	01/10/1993	30/09/1997	BANK OF AMERICA CORP	7647
NATIONSBANC MONTGOMERY SECURITIES, INC	01/10/1997	30/09/1998	BANK OF AMERICA CORP	7647
NATIONSBANC MONTGOMERY SECURITIES, LLC	01/10/1998	16/05/1999	BANK OF AMERICA CORP	7647
NATIONSBANK OF NORTH CAROLINA, N.A.	06/07/1993	30/09/1993	BANK OF AMERICA CORP	7647
NORTHERN TRUST	08/08/1973	29/05/1986	NORTHERN TRUST CORP	7982
NUVEEN GOV'T SEC. INC.	18/11/1971	27/08/1980	ST PAUL COS	9380
PAINE WEBBER INCORPORATED	25/11/1976	04/12/2000	PAINE WEBBER GROUP	8299
PAINE, WEBBER, JACKSON & CURTIS INC.	22/06/1972	27/06/1973	PAINE WEBBER GROUP	8299
PRUDENTIAL SECURITIES INCORPO	25/02/1991	01/12/2000	PRUDENTIAL FINANCIAL INC	143356
PRUDENTIAL-BACHE	29/10/1975	24/02/1991	BACHE GROUP INC	1967
SALOMON SMITH BARNEY INC.	01/09/1998	06/04/2003	CITIGROUP INC	3243
SECURITY PACIFIC NATIONAL BANK	11/12/1986	17/01/1991	SECURITY PACIFIC CORP	9577
SHEARSON LEHMAN	01/01/1988	31/07/1990	AMERICAN EXPRESS CO	1447
SMITH BARNEY INC.	01/06/1994	31/08/1998	CITIGROUP INC	3243
SMITH BARNEY SHEARSON INC.	02/08/1993	31/05/1994	CITIGROUP INC	3243
SMITH BARNEY, HARRIS UPHAM & CO.,INC	22/08/1979	01/08/1993	CITIGROUP INC	3243
THE FIRST BOSTON CORPORATION	19/05/1960	11/10/1993	FIRST BOSTON INC	4684
WELLS FARGO SECURITIES, LLC	18/04/2016	Current Dealer	WELLS FARGO & CO	8007
ZIONS FIRST NATIONAL BANK	11/08/1993	31/03/2002	ZIONS BANCORPORATION NA	11687

Table II
List of Primary Dealers (Foreign Parent Companies)

The table shows the ultimate publicly-listed foreign holding company (Parent Company) for each NY Fed's primary dealer over time. We obtain the list of primary dealers from the NY Fed's website for HKM's 1970-2014 sample period, and we employ the information available on the same website to update the list until 2020. We include the name of the primary dealer and its ultimate parent company along with its unique mnemonic code (MNEM), as reported by Datastream. The date range highlights the period in which a company was a NY Fed's primary dealer. Finally, we report the currency in which each company's stock is traded (Country column).

Primary Dealer	From	To	Parent Company	Country	MNEM
ABN AMRO BANK, N.V., NY BR	09/12/2002	15/09/2006	ABN AMRO HOLDING	NLD	H:AAB
ABN AMRO INCORPORATED	29/09/1998	08/12/2002	ABN AMRO HOLDING	NLD	H:AAB
AUBREY G. LANSTON & CO., INC.	19/05/1960	17/04/2000	INDUSTRIAL BANK OF JAPAN LTD	JPN	J:IK@N
BANK OF NOVA SCOTIA, NEW YORK AGENCY	04/10/2011	Current Dealer	BANK OF NOVA SCOTIA	CAN	C:BNS
BARCLAYS CAPITAL INC.	01/04/1998	Current Dealer	BARCLAYS	GBR	BARC
BARCLAYS DE ZOETE WEDD GSI	07/12/1989	01/03/1990	BARCLAYS	GBR	BARC
BARCLAYS DE ZOETE WEDD SECURITIES IN	02/03/1990	30/06/1996	BARCLAYS	GBR	BARC
BMO CAPITAL MARKETS CORP.	04/10/2011	Current Dealer	BANK OF MONTREAL	CAN	C:BMO
BMO NESBITT BURNS CORP.	15/02/2000	31/03/2002	BANK OF MONTREAL	CAN	C:BMO
BNP PARIBAS SECURITIES CORP.	15/09/2000	Current Dealer	BNP PARIBAS	FRA	F:BNP
BZW SECURITIES INC.	01/07/1996	31/03/1998	BARCLAYS	GBR	BARC
CARROLL MCENTEE & MCGINLEY INC.	29/09/1976	06/05/1994	HSBC HLDGS PLC	HK	K:HSBC
CIBC OPPENHEIMER CORP.	04/12/1997	02/05/1999	CANADIAN IMPERIAL BANK	CAN	C:CM
CIBC WOOD GUNDY SECURITIES CO	27/03/1996	03/12/1997	CANADIAN IMPERIAL BANK	CAN	C:CM
CIBC WORLD MARKETS CORP.	03/05/1999	08/02/2007	CANADIAN IMPERIAL BANK	CAN	C:CM
COUNTY NATWEST GOV. SEC., INC.	29/09/1988	13/01/1989	NATL WESTMINSTER BANK	GBR	NWB
CREDIT SUISSE 1ST BOSTON LLC	17/01/2003	16/01/2006	CREDIT SUISSE GROUP	CHE	S:CSGN
CREDIT SUISSE AG, NEW YORK BRANCH	13/11/2017	Current Dealer	CREDIT SUISSE GROUP	CHE	S:CSGN
CREDIT SUISSE FIRST BOSTON CO	16/12/1996	16/01/2003	CREDIT SUISSE GROUP	CHE	S:CSGN
CREDIT SUISSE SECURITIES (USA) LLC	16/01/2006	13/11/2017	CREDIT SUISSE GROUP	CHE	S:CSGN
CS FIRST BOSTON CORPORATION	12/10/1993	15/12/1996	CREDIT SUISSE GROUP	CHE	S:CSGN
DAIWA CAPITAL MARKETS AMERICA INC.	01/04/2010	Current Dealer	DAIWA SECURITIES GROUP INC	JPN	J:DS@N
DAIWA SECURITIES AMERICA INC.	11/12/1986	01/04/2010	DAIWA SECURITIES GROUP INC	JPN	J:DS@N
DEUTSCH BANC ALEX. BROWN INC.	12/01/2001	29/03/2002	DEUTSCHE BANK	DEU	D:DBK
DEUTSCHE BANK GSI	13/12/1990	30/09/1993	DEUTSCHE BANK	DEU	D:DBK
DEUTSCHE BANK SECURITIES CORPORATION	01/10/1993	31/10/1995	DEUTSCHE BANK	DEU	D:DBK
DEUTSCHE BANK SECURITIES INC.	01/06/1998	11/01/2001	DEUTSCHE BANK	DEU	D:DBK
DEUTSCHE BANK SECURITIES INC.	30/03/2002	Current Dealer	DEUTSCHE BANK	DEU	D:DBK
DEUTSCHE MORGAN GRENFELL/C.J.	01/11/1995	29/05/1998	DEUTSCHE BANK	DEU	D:DBK
DLJ SECURITIES CORPORATION	06/03/1974	31/12/2000	AXA SA	FRA	F:MIDI
DRESDNER KLEINWORT BENSON NOR	08/05/1997	29/04/2001	DRESDNER BANK	DEU	D:DRB
DRESDNER KLEINWORT SECURITIES LLC	18/09/2006	26/06/2009	ALLIANZ	DEU	D:ALV
DRESDNER KLEINWORT WASSERSTEIN SECURITIES LLC	30/04/2001	18/09/2006	ALLIANZ	DEU	D:ALV
EASTBRIDGE CAPITAL INC.	18/06/1992	29/05/1998	NIPPON CREDIT BANK LTD	JPN	J:NPCB
FUJI SECURITIES INC.	28/12/1989	31/03/2002	FUJI BANK LTD	JPN	J:FB@N
GREENWICH CAPITAL MARKETS, INC.	31/07/1984	01/04/2009	NATL WESTMINSTER BANK	GBR	NWB
GREENWICH CAPITAL MARKETS, INC.	31/07/1984	01/04/2009	ROYAL BANK OF SCOTLAND GROUP	GBR	RBS
GREENWICH CAPITAL MARKETS, INC.	31/07/1984	01/04/2009	LONG TERM CREDIT BANK OF JAPAN	JPN	J:LTCR
HARRIS GOVERNMENT SECURITIES	01/09/1988	30/12/1992	BANK OF MONTREAL	CAN	C:BMO
HARRIS NESBITT THOMSON SEC. INC.	08/09/1993	31/05/1995	BANK OF MONTREAL	CAN	C:BMO
HARRIS-NESBITT THOMSON SEC., INC.	31/12/1992	07/09/1993	BANK OF MONTREAL	CAN	C:BMO
HSBC SECURITIES (USA) INC.	01/06/1999	Current Dealer	HSBC HLDGS PLC	HK	K:HSBC
HSBC SECURITIES, INC.	09/05/1994	31/05/1999	HSBC HLDGS PLC	HK	K:HSBC
KLEINWORT BENSON GOV'T SEC., INC.	13/02/1980	27/12/1989	KLEINWORT BENSON GROUP PLC	GBR	KBL
LLOYDS GOV'T SECURITIES, INC.	22/12/1987	28/04/1989	LLOYDS BANKING GROUP PLC	GBR	LLOY
MIDLAND-MONTAGU GOV. SEC.,INC.	13/08/1975	26/07/1990	MIDLAND BANK	GBR	MID
MIZUHO SECURITIES USA INC.	01/04/2002	Current Dealer	MIZUHO FINANCIAL GROUP INC	JPN	J:MIZH
NESBITT BURNS SECURITIES INC.	01/06/1995	14/02/2000	BANK OF MONTREAL	CAN	C:BMO
NOMURA SECURITIES INTERNATIONAL,INC	11/12/1986	30/11/2007	NOMURA HOLDINGS INC	JPN	J:NM@N
NOMURA SECURITIES INTERNATIONAL,INC	27/07/2009	Current Dealer	NOMURA HOLDINGS INC	JPN	J:NM@N
PARIBAS CORPORATION	01/05/1997	14/09/2000	BNP PARIBAS	FRA	F:BNP
RBC CAPITAL MARKETS CORPORATION	08/07/2009	01/11/2010	ROYAL BANK OF CANADA	CAN	C:RY
RBC CAPITAL MARKETS, LLC	01/11/2010	Current Dealer	ROYAL BANK OF CANADA	CAN	C:RY
RBS SECURITIES INC.	01/04/2009	Current Dealer	ROYAL BANK OF SCOTLAND GROUP	GBR	RBS
S.G. WARBURG & CO., INC.	24/06/1988	26/07/1995	WARBURG SG GROUP	GBR	WARB
SANWA SECURITIES (USA) CO., L	01/01/1994	20/07/1998	SANWA BANK LTD	JPN	J:SA@N
SANWA-BGK SECURITIES CO., L.P.	20/06/1988	31/12/1993	SANWA BANK LTD	JPN	J:SA@N
SBC CAPITAL MARKETS INC.	03/01/1995	02/06/1996	SWISS BANK CO	CHE	S:SBVN
SBC GOVERNMENT SECURITIES, INC.	29/03/1990	02/01/1995	SWISS BANK CO	CHE	S:SBVN
SBC WARBURG DILLON READ INC.	03/09/1997	28/06/1998	SWISS BANK CO	CHE	S:SBVN
SBC WARBURG INC.	03/06/1996	02/09/1997	SWISS BANK CO	CHE	S:SBVN
SG AMERICAS SECURITIES, LLC	02/02/2011	07/12/2015	SOCIETE GENERALE GROUP	FRA	F:SGE
SG COWEN SECURITIES CORP.	01/07/1999	31/10/2001	SOCIETE GENERALE GROUP	FRA	F:SGE
SOCIETE GENERALE, NEW YORK BRANCH	07/12/2015	Current Dealer	SOCIETE GENERALE GROUP	FRA	F:SGE
TD SECURITIES (USA) LLC	11/02/2014	Current Dealer	TORONTO DOMINION BANK	CAN	C:TD
THE NIKKO SECURITIES CO. INT'	22/12/1987	03/01/1999	NIKKO CORDIAL CORP	JPN	J:NK@N
UBS SECURITIES INC.	07/12/1989	29/02/1996	UBS GROUP AG	CHE	S:UBSG
UBS SECURITIES LLC	01/03/1996	28/06/1998	UBS GROUP AG	CHE	S:UBSG
UBS SECURITIES LLC.	09/06/2003	Current Dealer	UBS GROUP AG	CHE	S:UBSG
UBS WARBURG LLC.	01/05/2000	08/06/2003	UBS GROUP AG	CHE	S:UBSG
WARBURG DILLON READ LLC.	29/06/1998	28/04/2000	UBS GROUP AG	CHE	S:UBSG
WERTHEIM SCHRODER & CO., INC.	24/06/1988	08/11/1990	SCHRODERS PLC	GBP	SDR
WESTPAC POLLOCK GOV'T SECURITIES INC	04/02/1987	27/06/1990	WESTPAC BANKING	AUS	A:WBCX
YAMAICHI INT'L (AMERICA), INC.	29/09/1988	04/12/1997	YAMAICHI SECURITIES CO LTD	JPN	J:YG@N

Table III
Primary Dealers (Quarterly Average Sample Statistics)

The table displays sample statistics for domestic (USA) and foreign (Foreign) ultimate parent companies of the NY Fed's primary dealers (USD in millions). The various statistics are calculated by taking the cross-sectional average of the characteristics of the parent companies of active primary dealers in each quarter and then by averaging over each sub-period (1970-1990, 1990-2020, and 1970-2020). The accounting data for the domestic sample is from CRSP and Compustat, while for the foreign sample the data is from Datastrem. Total in Panel A refers to the sample of foreign and domestic companies. The ratios in Panel B are calculated based on the same data as in Panel A. Panel C reports sample statistics for the entire US financial sector by excluding the domestic parent companies whose subsidiaries were operating as primary dealers during each sample period. Panel D employs simple ratios to compare the entire US financial sector with the domestic parent companies of the primary dealer subsidiaries reported in Panel A.

Panel A: Accounting Sample Statistics

	Assets			Debt			Equity			Market Cap		
	Total	USA	Foreign	Total	USA	Foreign	Total	USA	Foreign	Total	USA	Foreign
1970-1990	101.960	35.138	66.822	97.012	33.439	63.572	4.936	1.686	3.250	9.485	2.098	7.387
1990-2020	1,673.505	792.240	881.265	1,574.793	728.960	845.833	97.960	62.528	35.432	116.516	72.509	44.007
1970-2020	1,137.326	480.033	657.293	1,072.859	442.147	630.711	64.020	37.439	26.582	77.437	43.474	33.936

Panel B: Financial Ratios

	Debt-To-Assets		Debt-To-Equity		Book-To-Market	
	USA	Foreign	USA	Foreign	USA	Foreign
1970-1990	0.952	0.951	19.829	19.563	0.804	0.440
1990-2020	0.920	0.960	11.658	23.872	0.862	0.805
1970-2020	0.921	0.960	11.810	23.727	0.861	0.783

Panel C: US Financial Sector (Without Domestic Primary Dealers)

	Assets	Debt	Equity	Market Cap
1970-1990	2.772	2.562	0.195	0.209
1990-2020	12.110	10.793	0.831	1.316
1970-2020	8.279	7.417	0.570	0.862

Panel D: Domestic Primary Dealers vs. US Financial Sector

	Assets	Debt	Equity	Market Cap
1970-1990	12.676	13.051	8.660	10.015
1990-2020	65.422	67.539	75.260	55.079
1970-2020	57.982	59.617	65.704	50.415

Table IV
Summary Statistics and Sharpe Ratio Analysis

Panel A reports factor means (Fac. Mean), standard deviations (Fac. SD), and correlation (Fac. Corr). In Panel B, we report bias-adjusted squared Sharpe ratios (Sh^2) for the CAPM, the two-factor model of HKM (HKM), and the single-factor model of HKM (HKMSF). Panel C is for differences in bias-adjusted sample squared Sharpe ratios between models. MKT and $CPTLT$ denote the market and traded capital factors, respectively. Panels A through C are based on $T = 172$ quarterly observations from 1970:Q1 to 2012:Q4. The p-values are in square brackets.

Panel A: Summary Statistics

	MKT		*CPTLT*
Fac. Mean	0.015		0.013
	[0.030]		[0.279]
Fac SD.	0.091		0.155
Fac Corr.		0.691	

Panel B: Squared Sharpe Ratios

	CAPM	HKM	HKMSF
Sh^2	0.021	0.017	0.001
	[0.056]	[0.229]	[0.698]

Panel C: Squared Sharpe Ratio Comparisons

	HKM	HKMSF
CAPM	0.004	0.020
	[0.557]	[0.299]
HKM		0.016
		[0.053]

Table V
OLS Cross-Sectional Asset-Pricing Tests by Asset Class

The table presents the OLS estimates of the prices of beta and covariance risks for HKM's two-factor model. *MKT* and *CPTL* denote the market and nontraded capital risk factors, respectively. *INT* is the cross-sectional intercept estimate. For each parameter estimate, we report the t-ratio under correctly specified models (t-stat$_c$) in round brackets. In addition, we present the sample OLS cross-sectional R^2 (R^2). The sample periods for equities (*FF25*), government and corporate bonds (*US bonds*), sovereign bonds (*Sov. bonds*), options (*Options*), credit default swaps (*CDS*), commodities (*Commod.*), and foreign exchange (*FX*) are 1970:Q1-2012:Q4, 1975:Q1-2011:Q4, 1995:Q1-2011:Q1, 1986:Q2-2011:Q4, 2001:Q2-2012:Q4, 1986:Q4-2012:Q4, and 1976:Q2-2009:Q4, respectively. N and T represent the number of assets and time series observations, respectively.

Panel A: Price of Beta Risk

	*FF*25	*US bonds*	*Sov. bonds*	*Options*	*CDS*	*Commod.*	*FX*	*All*
CPTL	12.92	2.15	−35.74	8.59	−17.80	1.68	20.04	10.30
t-stat$_c$	(1.83)	(0.21)	(−0.58)	(1.29)	(−1.77)	(0.75)	(0.87)	(1.23)
MKT	1.19	3.42	9.92	8.20	6.39	−0.95	14.51	1.99
t-stat$_c$	(0.74)	(2.15)	(0.94)	(2.88)	(2.17)	(−0.56)	(2.59)	(1.16)
INT	0.59	0.40	−1.40	−5.74	−0.26	0.40	−2.03	-0.32
t-stat$_c$	(0.38)	(3.80)	(−0.32)	(−2.67)	(−2.07)	(0.66)	(−1.54)	(-0.62)
R^2	0.50	0.81	0.90	0.91	0.83	0.03	0.51	0.53
N	25	20	6	18	20	23	12	124
T	172	148	65	103	47	105	135	172

Panel B: Price of Covariance Risk

	*FF*25	*US bonds*	*Sov. bonds*	*Options*	*CDS*	*Commod.*	*FX*	*All*
CPTL	10.02	−0.08	−39.95	3.01	−22.1	1.63	8.14	7.40
t-stat$_c$	(1.81)	(−0.01)	(−0.66)	(0.70)	(−2.02)	(0.95)	(0.50)	(1.14)
MKT	−5.38	4.49	35.26	9.06	24.50	−2.05	15.21	−2.63
t-stat$_c$	(−1.68)	(0.60)	(0.72)	(1.91)	(2.88)	(−0.78)	(1.51)	(−0.57)

Table VI
OLS Cross-Sectional Asset-Pricing Tests by Asset Class (Price of Beta Risk in Single-Factor Models)

The table presents the OLS estimates of the prices of beta risks for the CAPM (Panel A) and HKM's single-factor model (HKMSF, Panel B). MKT and $CPTL$ denote the market and nontraded capital risk factors, respectively. INT is the cross-sectional intercept estimate. For each parameter estimate, we report the t-ratio under correctly specified models (t-stat$_c$) in round brackets. In addition, we present the sample OLS cross-sectional R^2 (R^2). The sample periods for equities (*FF25*), government and corporate bonds (*US bonds*), sovereign bonds (*Sov. bonds*), options (*Options*), credit default swaps (*CDS*), commodities (*Commod.*), and foreign exchange (FX) are 1970:Q1-2012:Q4, 1975:Q1-2011:Q4, 1995:Q1-2011:Q1, 1986:Q2-2011:Q4, 2001:Q2-2012:Q4, 1986:Q4-2012:Q4, and 1976:Q2-2009:Q4, respectively. N and T represent the number of assets and time series observations, respectively.

Panel A: CAPM

	FF25	*US Bonds*	*Sov. Bonds*	*Options*	*CDS*	*Commod.*	*FX*	*All*
MKT	−0.99	3.41	4.21	8.60	5.85	−0.88	12.48	1.77
t-stat$_c$	(−0.80)	(2.97)	(1.74)	(2.91)	(2.85)	(−0.53)	(2.93)	(1.04)
INT	3.27	0.40	0.56	−5.98	−0.34	0.52	−1.74	0.09
t-stat$_c$	(3.12)	(1.86)	(0.88)	(−2.72)	(−3.54)	(0.84)	(−1.91)	(0.16)
R^2	0.08	0.81	0.69	0.91	0.61	0.01	0.49	0.32
N	25	20	6	18	20	23	12	124
T	172	148	65	103	47	105	135	172

Panel B: HKMSF

	FF25	*US Bonds*	*Sov. Bonds*	*Options*	*CDS*	*Commod.*	*FX*	*All*
$CPTL$	1.70	8.48	8.25	27.08	10.65	0.89	40.20	5.68
t-stat$_c$	(0.43)	(2.32)	(1.32)	(1.85)	(1.78)	(0.40)	(1.45)	(1.02)
INT	1.49	0.33	0.95	-4.62	-0.25	0.28	-2.22	-0.14
t-stat$_c$	(1.22)	(1.35)	(1.37)	(-1.88)	(-3.28)	(0.48)	(-1.26)	(-0.26)
R^2	0.02	0.79	0.61	0.91	0.42	0.00	0.27	0.38

Table VII
Price Reaction Around the NY Fed's Announcement of a New Primary Dealer

The table displays the daily estimation results based on Equation (5) from January 1970 until December 2020. We consider the 10 days that surround the NY Fed's announcement of a new primary dealer. We have 70 such events. The returns on the ultimate parent companies are regressed against company, year, and industry fixed effects, and a series of dummy variables for each day in the estimation window. These dummy variables are equal to one when it is announcement day and zero otherwise. Beta represents the deviation of the ultimate parent company's return from its long-run average on a given day. Day 0 represents the announcement day. The asterisks *, **, *** denote statistical significance at the 90%, 95%, and 99% significance levels, respectively. The t-statistics (in brackets) are computed by using robust standard errors clustered by firms and days. N. Obs. represents the number of observations used to estimate the panel regressions, and Adj. R^2 denotes the adjusted R-squared.

	Beta				Beta				Beta		
Day	All	USA	For	Day	All	USA	For	Day	All	USA	For
−5	0.117	−0.002	0.006*	−1	0.178	0.278	0.003	3	0.111	0.127	0.001
	(0.78)	(−0.63)	(1.75)		(1.33)	(1.22)	(0.93)		(0.65)	(0.39)	(0.23)
−4	0.352	0.219	0.002	0	1.301	−0.386**	−0.001	4	−0.169	−0.142	−0.001
	(0.84)	(0.52)	(1.09)		(1.12)	(−2.19)	(−0.50)		(−1.19)	(−0.51)	(−0.27)
−3	0.198	0.487	0.000	1	0.060	−0.256	0.004	5	−0.232***	−0.521***	0.002
	(0.97)	(1.51)	(0.08)		(0.37)	(−0.90)	(1.06)		(−3.00)	(−3.80)	(0.88)
−2	−0.159	−0.449**	0.000	2	0.008	0.165	−0.010***				
	(−1.58)	(−2.35)	(−0.07)		(0.07)	(0.69)	(−2.95)				
N. Obs.	580,749	224,092	356,657								
Adj. R^2	0.140	0.203	0.003								

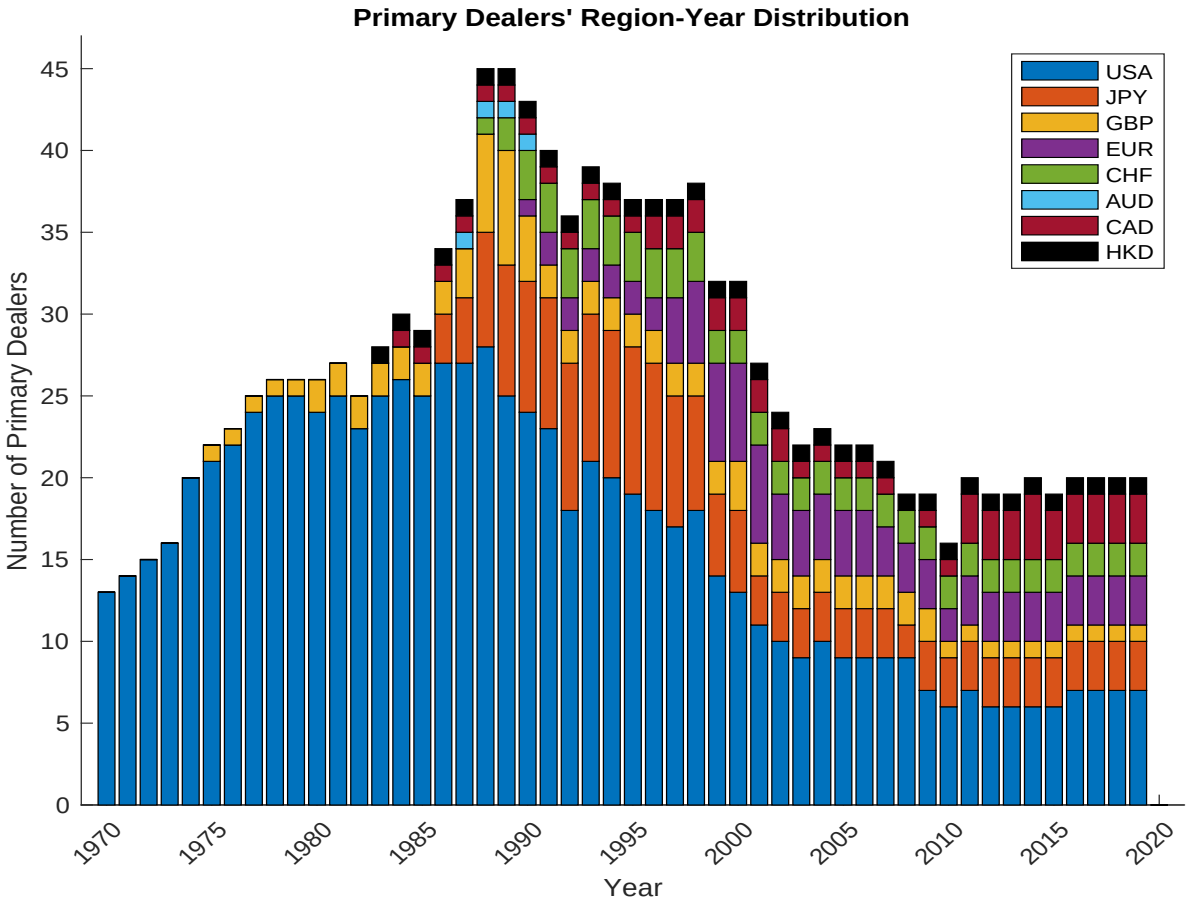

Figure 1. Number of Primary Dealers per Year per Geographic Area. The figure shows the distribution of the primary dealers over time based on the geographic area of the ultimate parent company. The list of primary dealers is from the NY Fed's website, while the ultimate parent companies are manually matched. The sample covers the period from 1970 to 2020 for a total of 177 primary dealers, where 74 ultimate parent companies are located outside the US and 80 of them are from the US. The countries are identified by the currency of the traded stock's price: United States (USA), Japan (JPY), Great Britain (GBP), Euro Area (EUR), Switzerland (CHF), Australia (AUD), Canada (CAD), and Hong Kong (HKD).

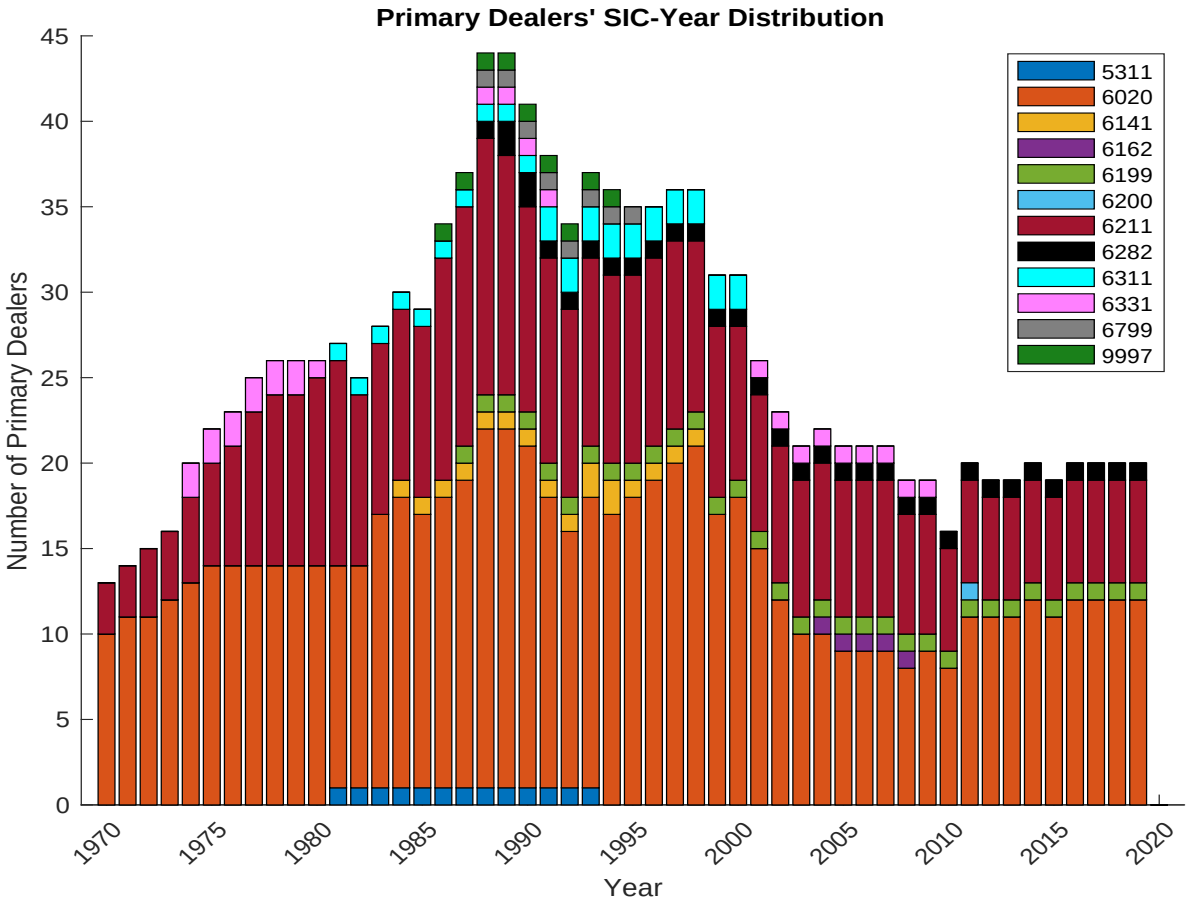

Figure 2. Number of Primary Dealers per Year per Standard Industry Classification Code. The figure shows the distribution of the primary dealers over time based on the standard industry classification (SIC) of the ultimate parent company. The list of primary dealers is from the NY Fed's website, while the ultimate parent companies are manually matched. The sample covers the period from 1970 to 2020. The SIC classification is as follows: department stores (5311); commercial banks (6020); personal credit institutions (6141); mortgage bankers and loan correspondents (6162); finance services (6199); security and commodity brokers (6200); security brokers, dealers, and flotation companies (6211); investment advice (6282); life insurance (6311); fire, marine, and casualty insurance (6331); investors, not elsewhere classified (6799); industrial conglomerates (9997).

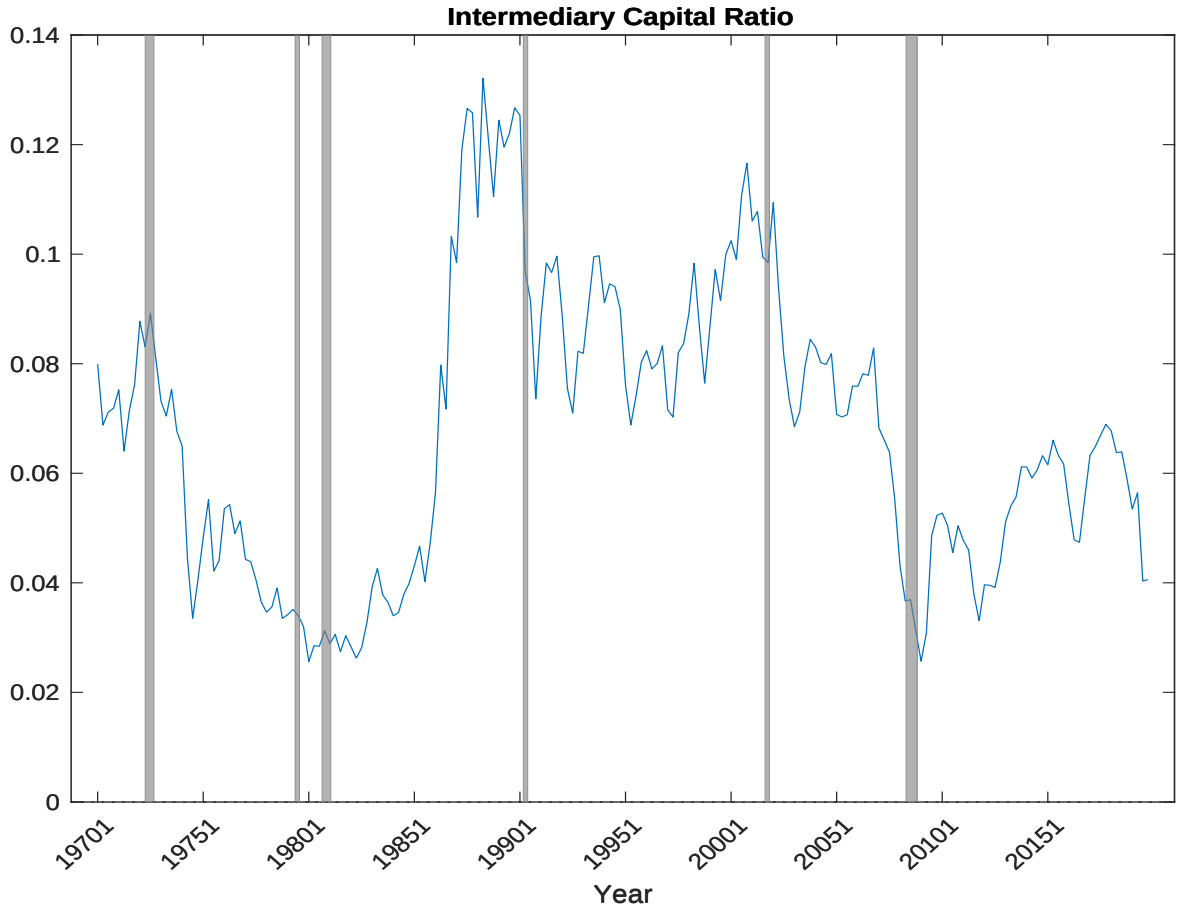

Figure 3. Intermediary Capital Ratio. The figure plots the capital ratio of the NY Fed's primary dealers (as identified by their ultimate parent companies) at a quarterly frequency from 1970:Q1 to 2020:Q4. The shaded regions in the chart represent the NBER recession periods.

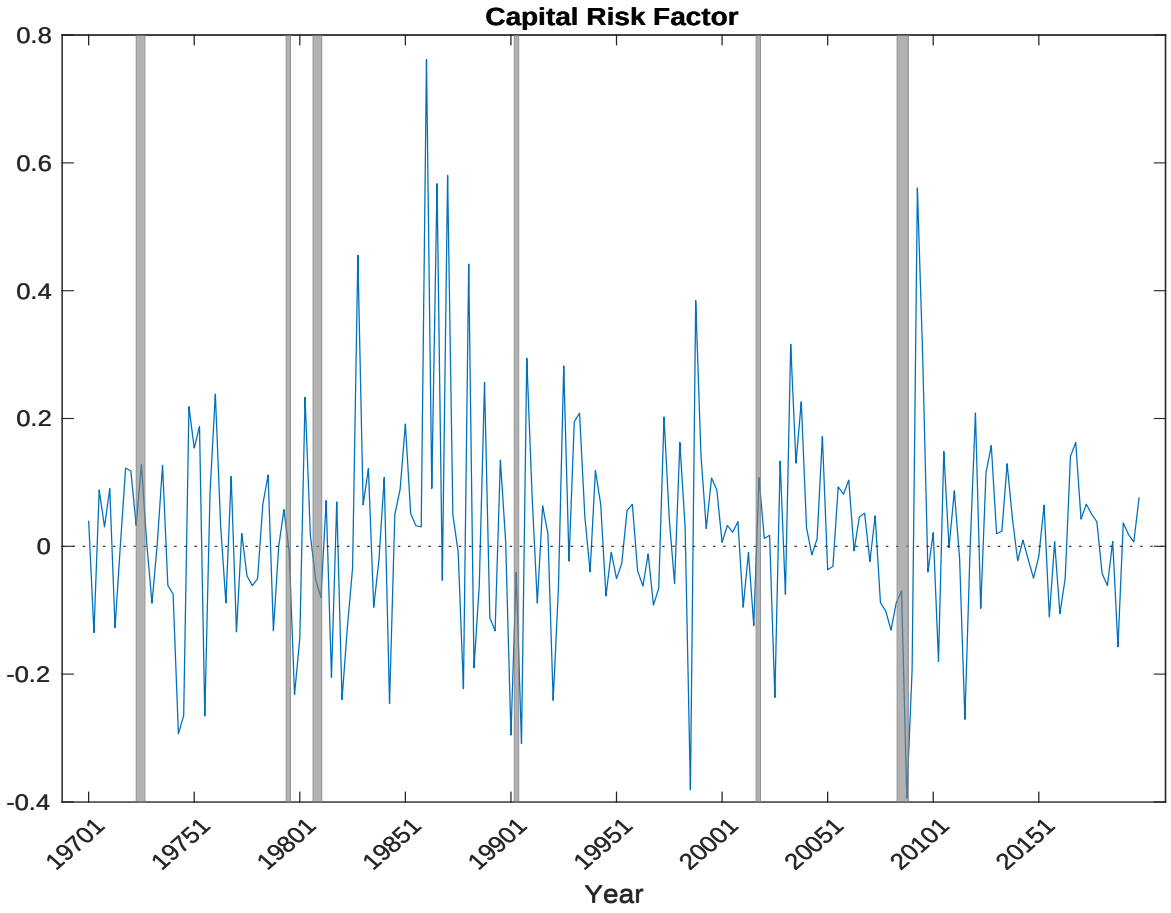

Figure 4. Intermediary Capital Risk Factor. The figure plots the value-weighted return of the NY Fed's primary dealers (as identified by their ultimate parent companies) at a quarterly frequency from 1970:Q1 to 2020:Q4. The shaded regions in the chart represent the NBER recession periods.

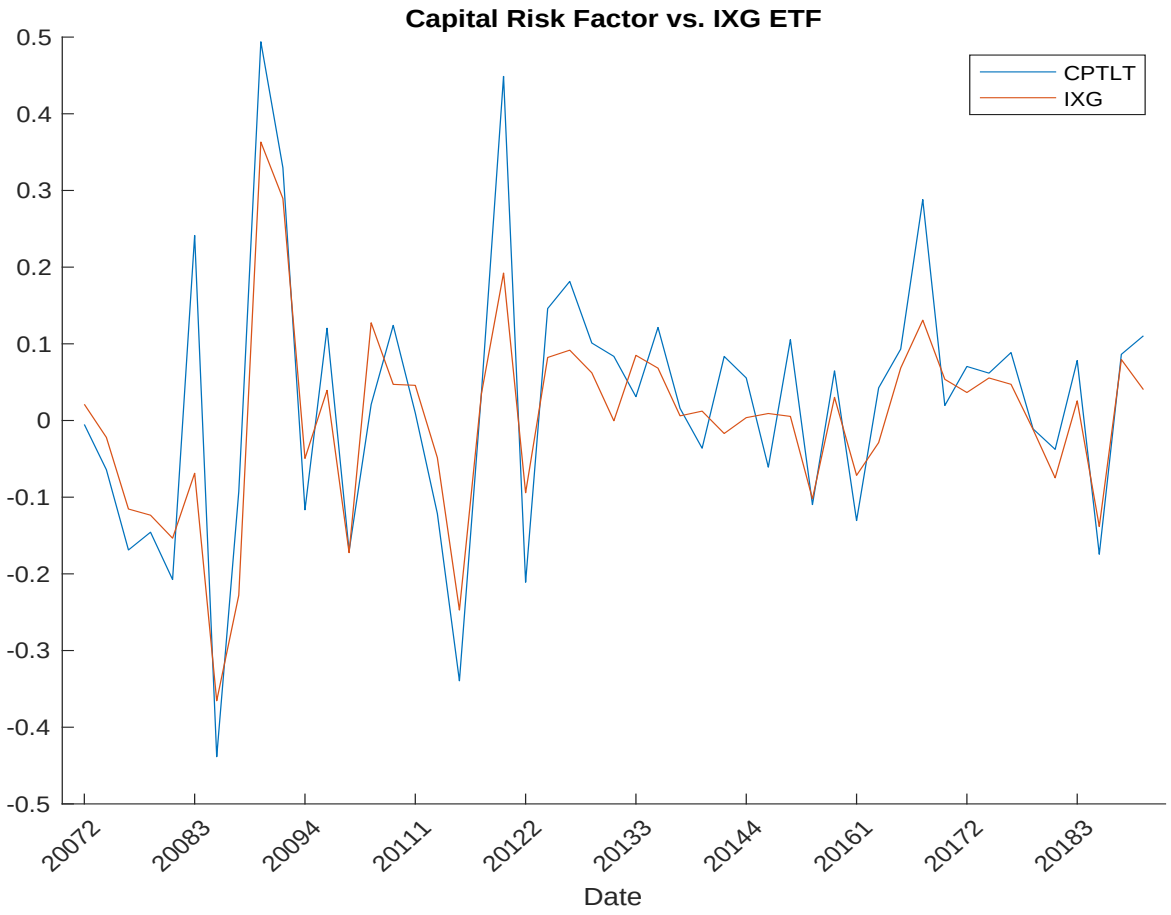

Figure 5. Market Risk Factor vs. IXG. The figure shows the excess value-weighted return of the NY Fed's primary dealers and the IXG excess return at a quarterly frequency from 2007:Q2 to 2020:Q4.

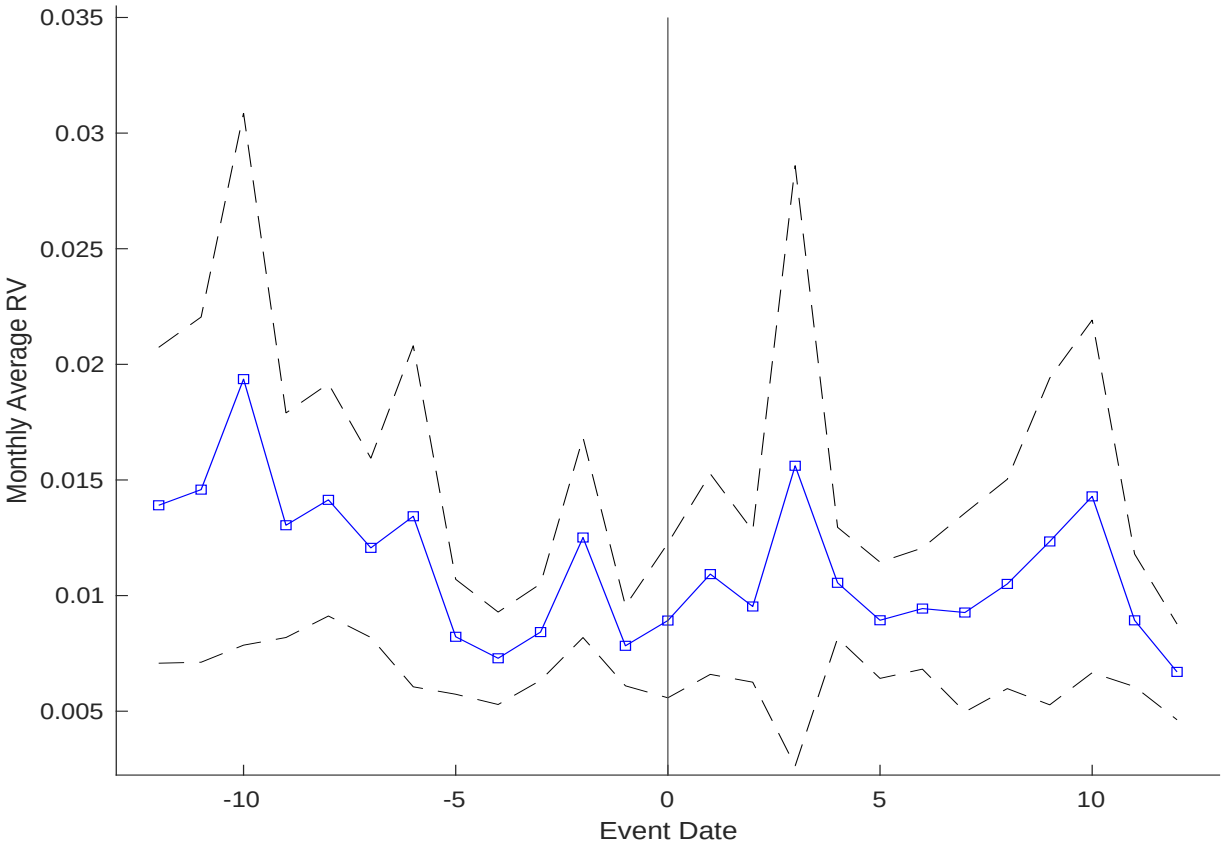

Figure 6. Two-Year Realized Volatility. The figure shows the monthly average realized volatility of 74 selected financial intermediaries from 12 months before to 12 months after they become NY Fed's primary dealers. The dashed lines represent the 95% confidence bounds. An event date equal to 0 indicates the month in which the selected financial intermediaries become NY Fed's primary dealers.

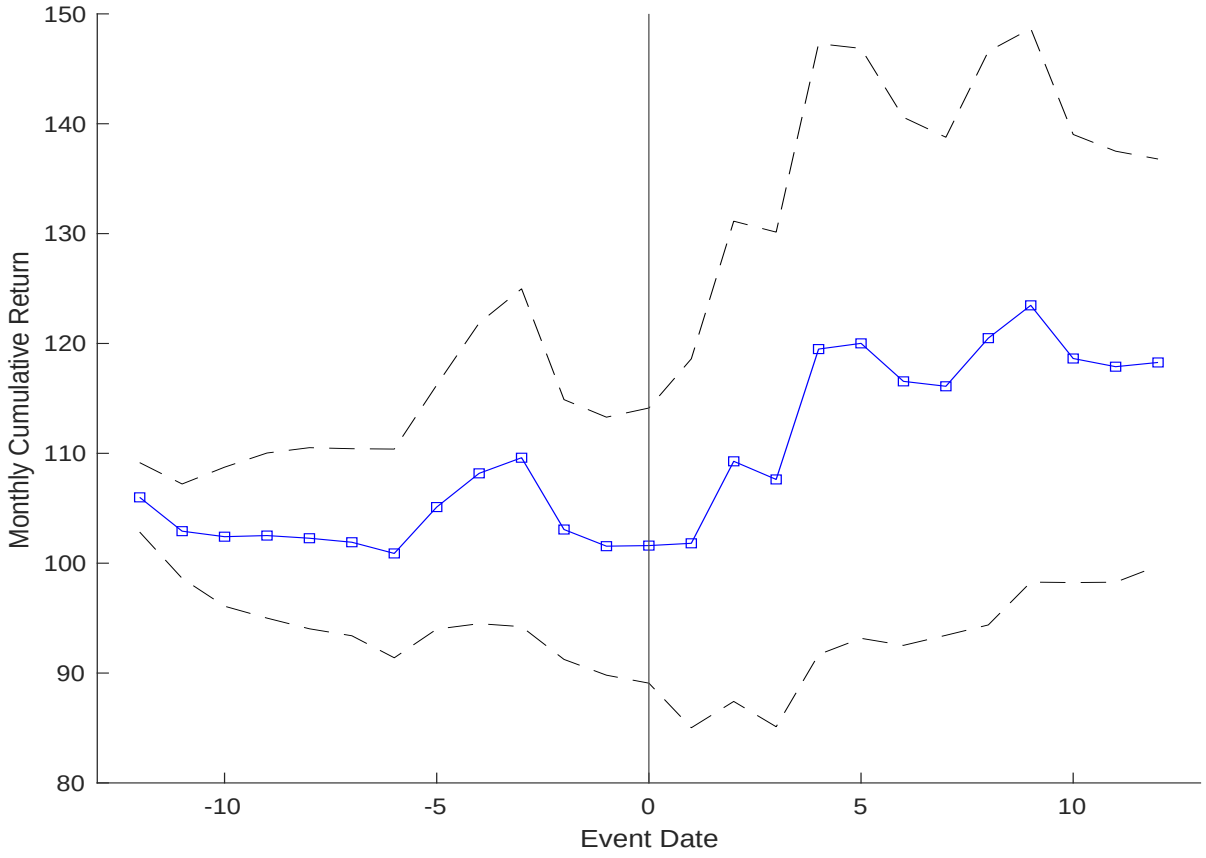

Figure 7. Two-Year Cumulative Return. The figure shows the monthly average cumulative return of 74 selected financial intermediaries from 12 months before to 12 months after they become NY Fed's primary dealers. The dashed lines represent the 95% confidence bounds. An event date equal to 0 indicates the month in which the selected financial intermediaries become NY Fed's primary dealers. At month $t - 13$, the initial investment in each company is 100\$. Then, we compute the cumulative return over time and average it across all of the selected firms.

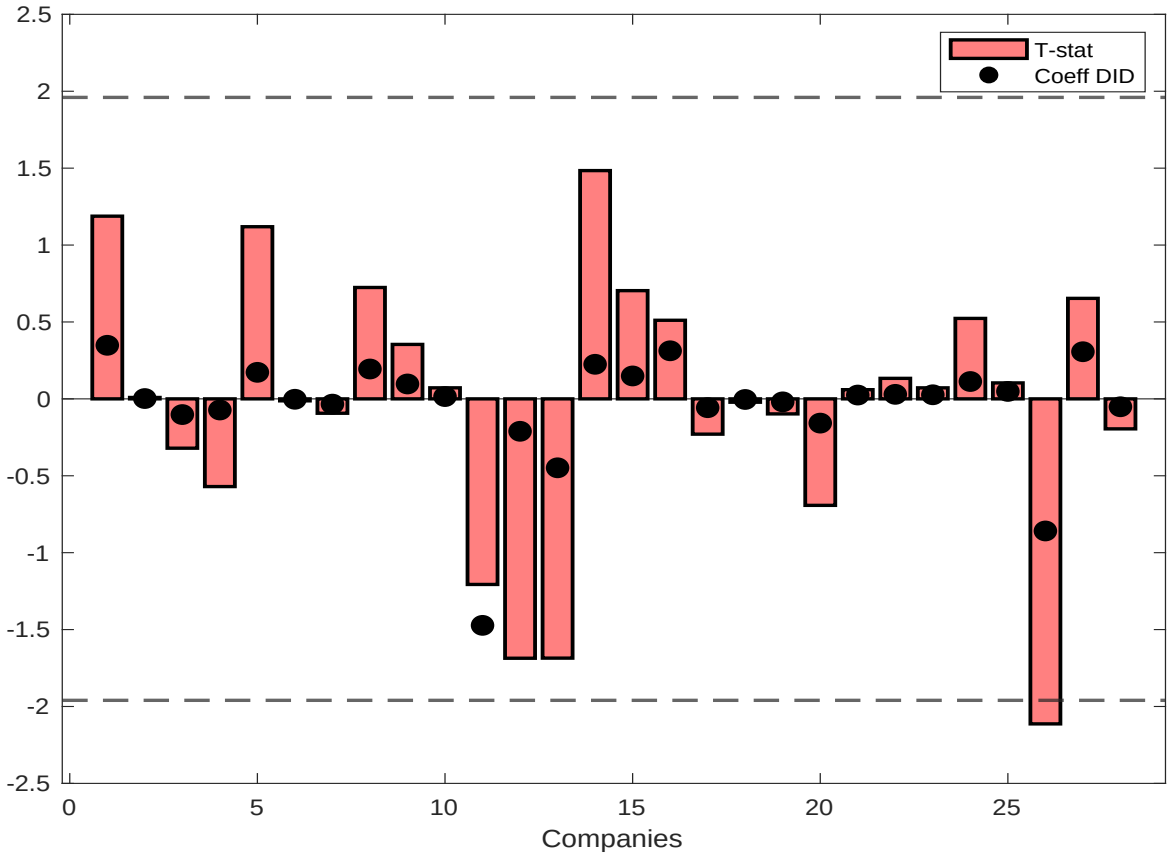

Figure 8. Difference-in-Difference Results. The figure displays the results based on estimating Equation (6) company by company. The regression is performed using the daily returns of the domestic financial intermediaries for which we have the relevant stock information from one year before until one year after the date in which they become NY Fed's primary dealers for the first time (29 companies in total, treatment group). The control group consists of an equally-weighted portfolio that contains all of the companies classified as broker-dealers (SIC codes 6211 or 6221). In the calculation of this daily equally-weighted portfolio, we exclude those ultimate parent companies whose subsidiaries, on each given day, were operating as NY Fed's primary dealers. The bars represent the t-statistics associated with the interaction term coefficient estimates, while the dots denote the magnitudes of the coefficient estimates (multiplied by 100). The horizontal dashed lines denote statistical significance at the 95% confidence level.

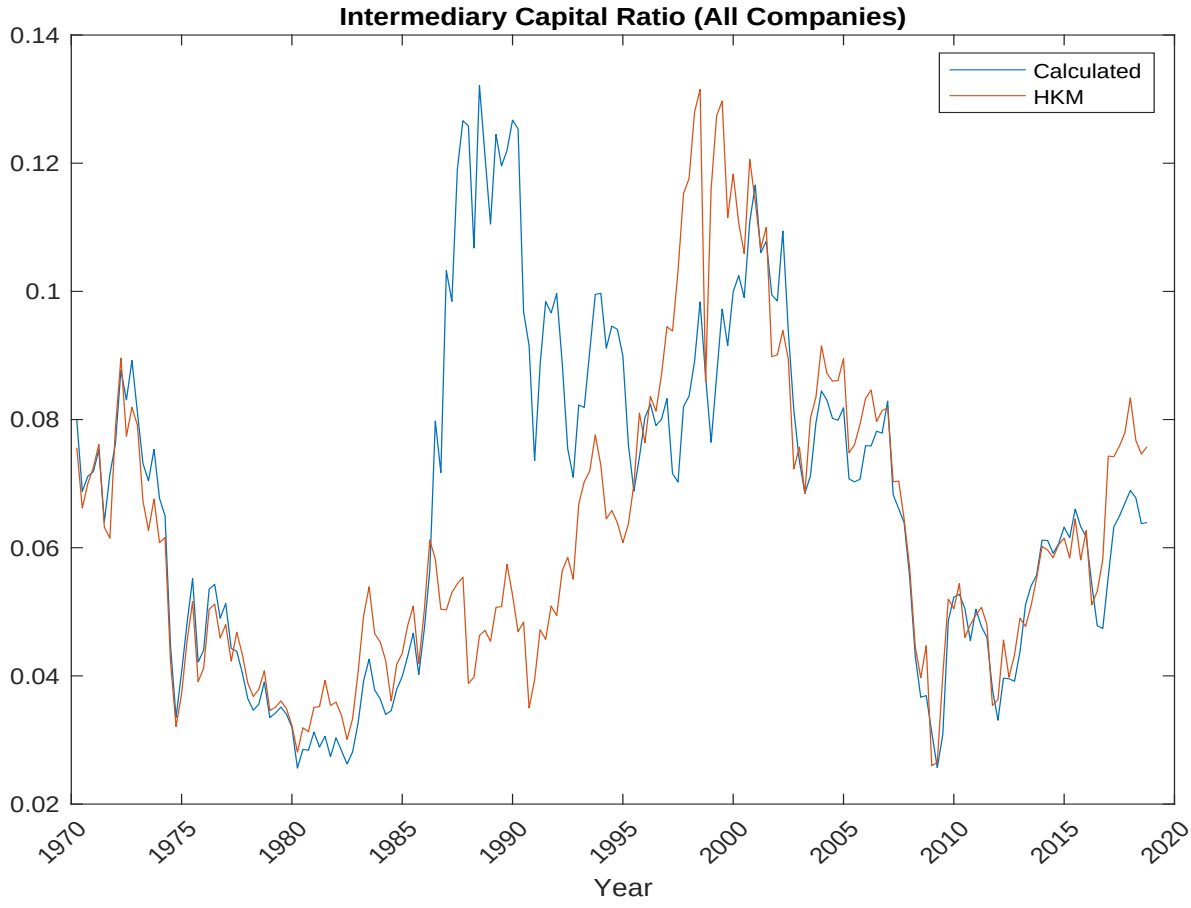

Figure 9. Intermediary Capital Ratio (All Companies). The figure plots two capital ratio series from 1970:Q1 to 2018:Q3. HKM is the series of He, Kelly, and Manela (2017) from Asaf Manela's website, while Calculated denotes the series based on our own calculations and includes all domestic and foreign ultimate parent companies.

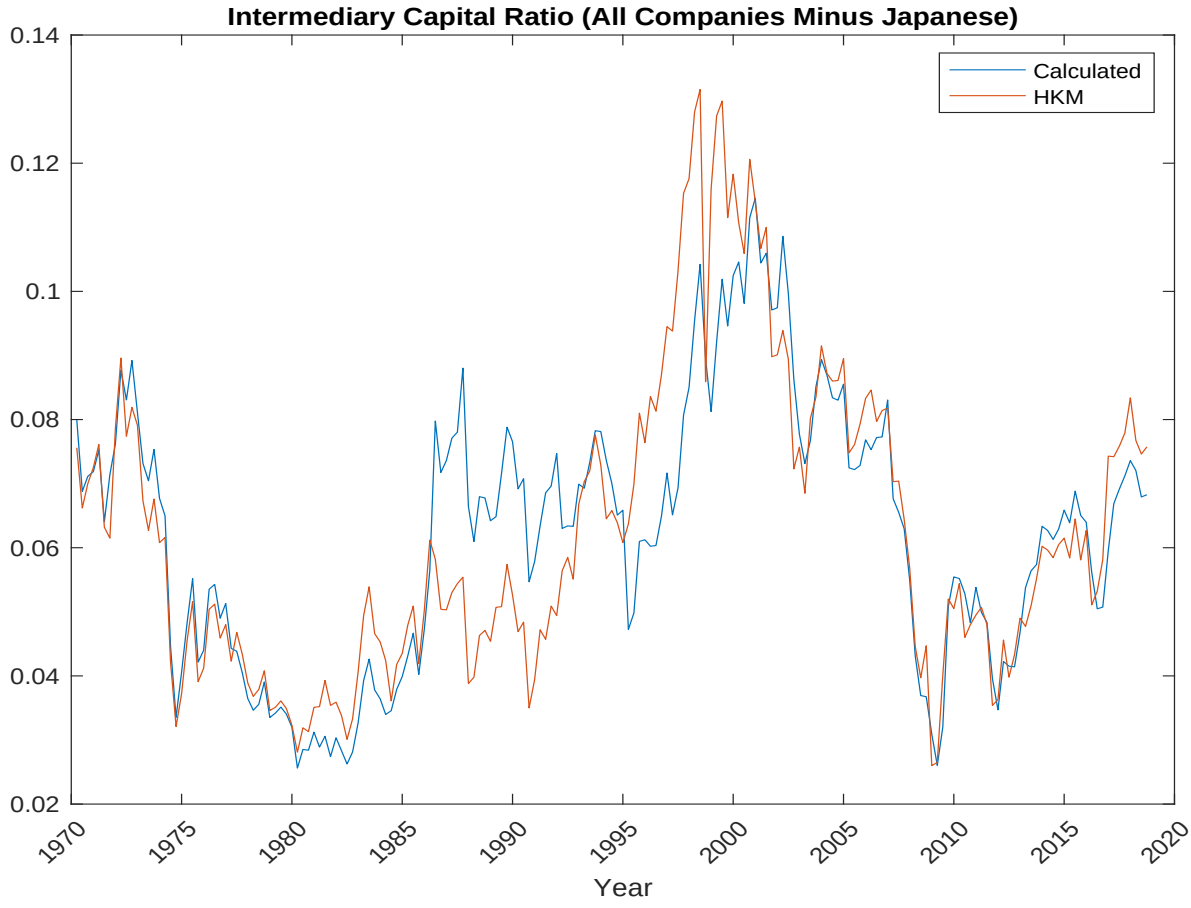

Figure 10. Intermediary Capital Ratio (All Companies Minus Japanese). The figure plots two capital ratio series from 1970:Q1 to 2018:Q3. HKM is the series of He, Kelly, and Manela (2017) from Asaf Manela's website, while Calculated denotes the series based on our own calculations by excluding all of the Japanese ultimate parent companies.

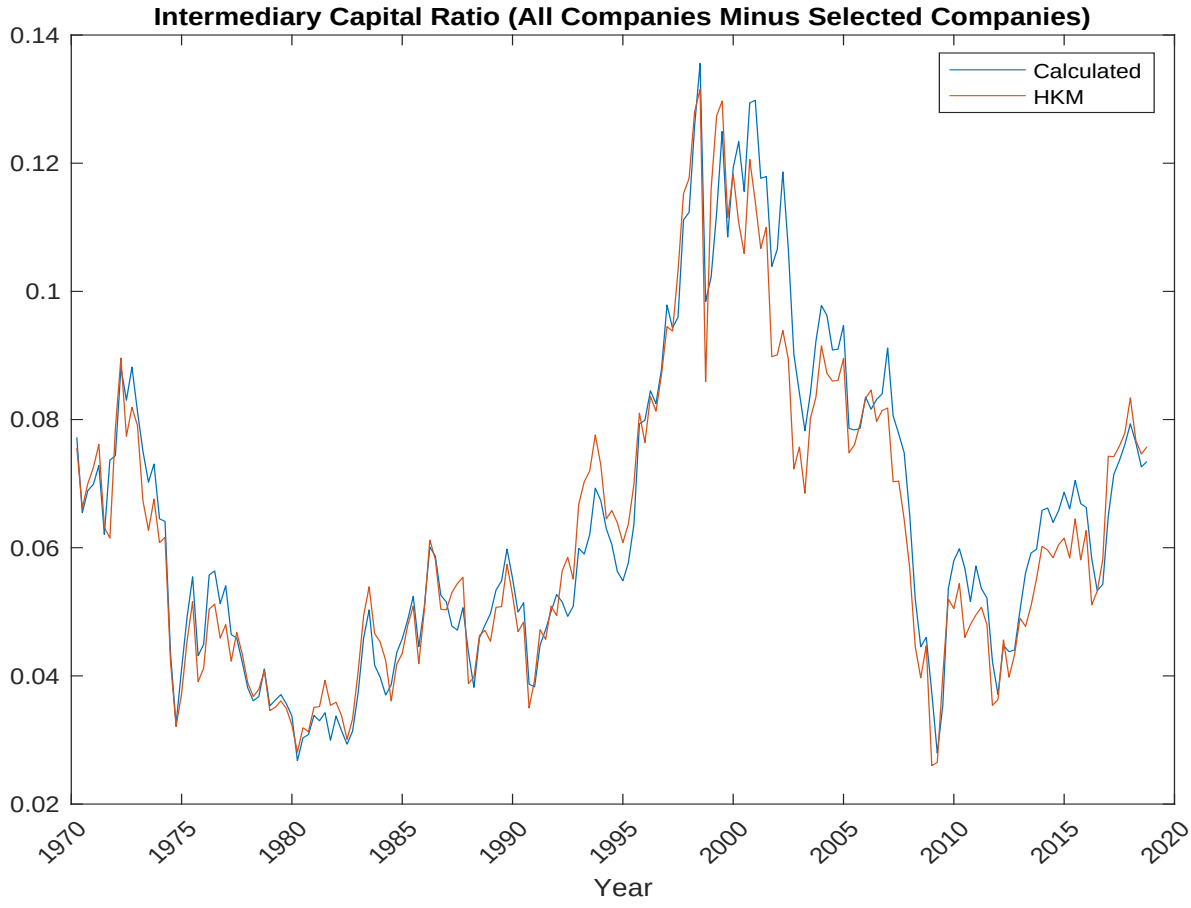

Figure 11. Intermediary Capital Ratio (All Companies Minus Selected Companies). The figure plots two capital ratio series from 1970:Q1 to 2018:Q3. HKM is the series of He, Kelly, and Manela (2017) from Asaf Manela's website, while Calculated denotes the series based on our own calculations by excluding all of the Japanese and some other ultimate parent companies.

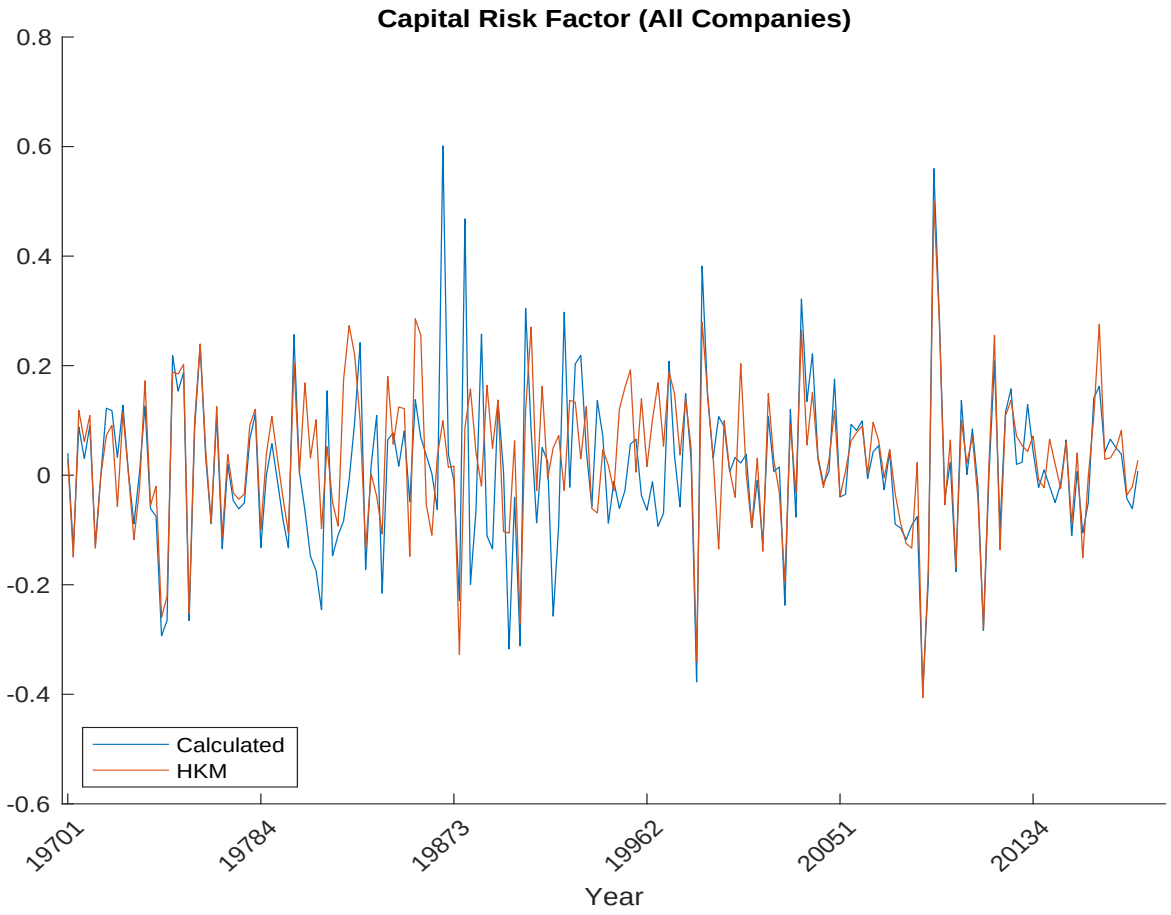

Figure 12. Capital Risk Factor (All Companies). The figure plots two traded capital risk factor series from 1970:Q1 to 2018:Q3. HKM is the series of He, Kelly, and Manela (2017) from Asaf Manela's website, while Calculated denotes the series based on our own calculations and includes all domestic and foreign ultimate parent companies.

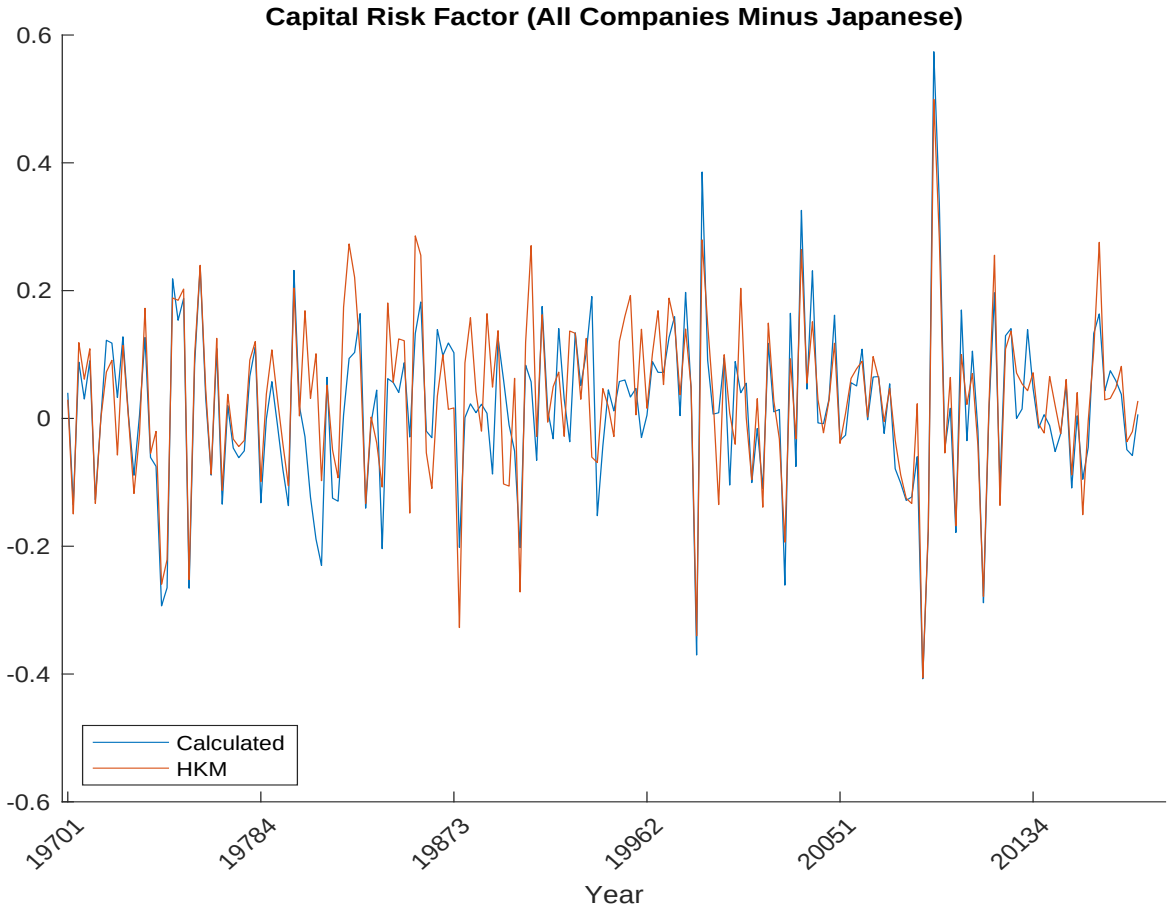

Figure 13. Capital Risk Factor (All Companies Minus Japanese). The figure plots two traded capital risk factor series from 1970:Q1 to 2018:Q3. HKM is the series of He, Kelly, and Manela (2017) from Asaf Manela's website, while Calculated denotes the series based on our own calculations by excluding all of the Japanese ultimate parent companies.

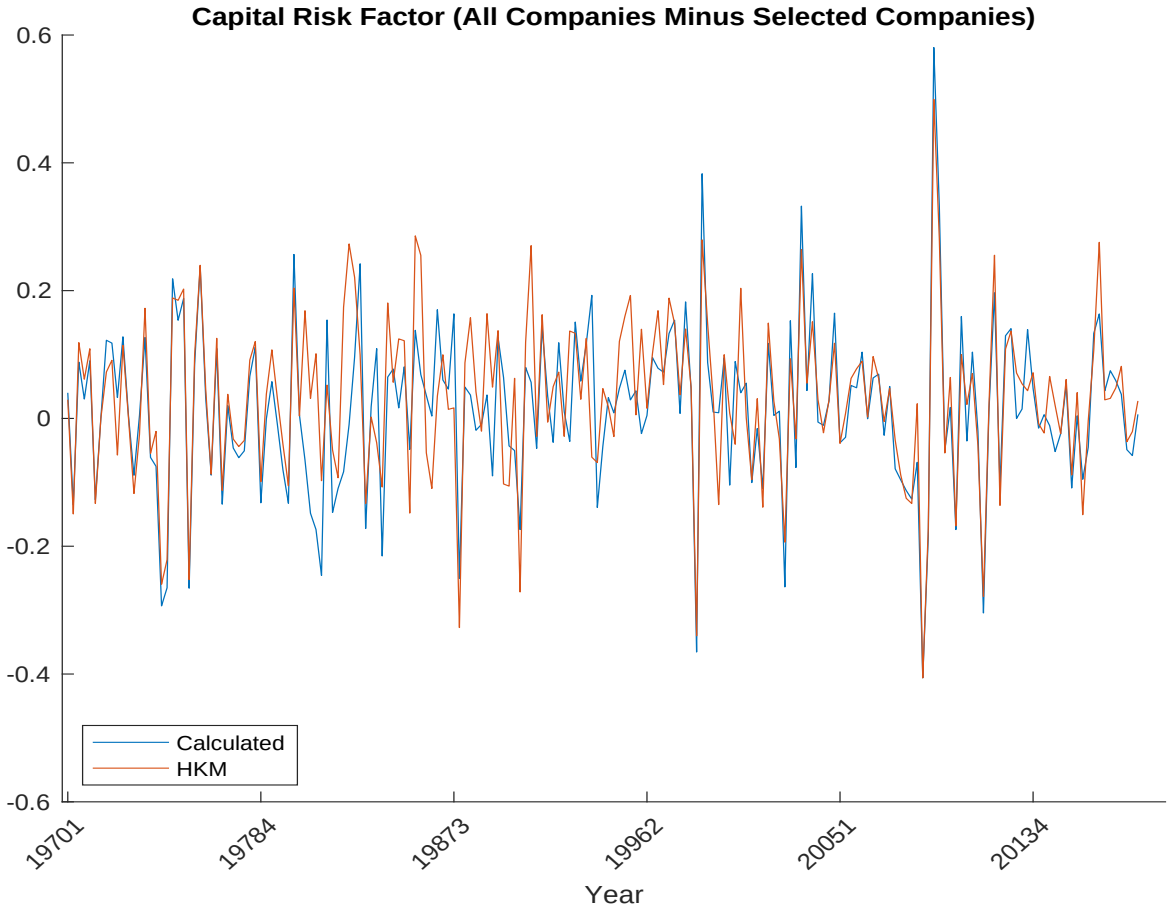

Figure 14. Capital Risk Factor (All Companies Minus Selected Companies). The figure plots two traded capital risk factor series from 1970:Q1 to 2018:Q3. HKM is the series of He, Kelly, and Manela (2017) from Asaf Manela's website, while Calculated denotes the series based on our own calculations by excluding all of the Japanese and some other ultimate parent companies.