IPO Allocations to Affiliated Mutual Funds and Underwriter Proximity: International Evidence

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We examine the way investment banks allocate IPOs to their affiliated mutual funds worldwide. We analyze IPO allocations to affiliates globally and find significant cross-country differences in the first-day returns of these IPOs. IPOs allocated to mutual funds affiliated with the underwriter have significantly lower first-day returns in Europe, and significantly higher first-day returns in Asia-Pacific, but only if the underwriter for an IPO is not from the same geographic region as the issuer. Overall, the evidence suggests the presence of an economically significant conflict of interest within financial conglomerates for which prior literature has not found robust empirical support.

INTRODUCTION

In this study, we examine a potential conflict of interest between the investment banking and asset management divisions of financial services firms worldwide. Specifically, we look at how investment banks allocate IPOs to their mutual fund affiliates (which we call "affiliated mutual funds"), given the investment bank's informational advantage about the quality of the IPO prior to the offering. A bank could allocate hot IPOs to affiliated mutual funds in an effort to improve fund returns and increase management fee income, which existing literature calls the *nepotism hypothesis* (Ritter and Zhang, 2007). On the other hand, banks may use affiliated mutual funds as a means to subscribe cold IPOs to preserve investment banking fee income at the expense of fund shareholders, known as the *dumping ground hypothesis*.

Ritter and Zhang study this issue in the U.S., and their empirical results yield mixed evidence. The authors find limited support for the nepotism hypothesis, but only during the Internet bubble period of 1999-2000 when the overall IPO market was very strong. Their study focuses on IPOs in a country with a highly developed stock market and strong investor protection. Although Ritter and Zhang's work is groundbreaking, it may also be illuminating to explore cross-country differences in IPO allocations involving mutual funds that are affiliated with IPO underwriters. We extend their results in two distinct dimensions. First, we explore how country-level variation in IPO markets may affect the way underwriters allocate IPOs to affiliates. Second, we consider the possibility that an underwriter's propensity to allocate hot or cold IPOs to affiliates may be different depending on the underwriter's location relative to the issuing firm.

We analyze IPO allocations to affiliated mutual funds in 24 countries during the period covering 1999-2009. In particular, we look at IPO allocations to mutual funds affiliated with the offering's lead underwriter. We begin our analysis by comparing IPO first-day returns (or "initial returns") across countries. Initial return is a measure of the degree to which an IPO is underpriced; any investors who

receive allocations of underpriced IPOs capture the gains from this underpricing. In Europe and the Asia-Pacific region, we find that IPOs purchased by affiliated mutual funds have significantly lower initial returns than IPOs not purchased by an affiliated fund. In contrast, IPOs purchased by affiliated funds in the United States tend to perform significantly better, consistent with Ritter and Zhang's (2007) univariate results.

Next, we consider the location of the underwriter relative to the firm going public. We find that a significantly higher proportion of IPOs are allocated to affiliates when the underwriter is from a different region than the IPO issuer ("foreign underwriter"). In Asia-Pacific and Europe, affiliated IPOs with underwriters from the same region have significantly lower initial returns, but initial returns for affiliated IPOs with foreign underwriters are not significantly lower.

We also examine the determinants of an IPO's initial return. After controlling for relevant deal characteristics, we find that IPOs purchased by affiliated mutual funds are associated with significantly higher initial returns in Asia-Pacific, consistent with the nepotism hypothesis. In contrast, European IPOs allocated to affiliates are associated with significantly lower initial returns, consistent with the dumping ground hypothesis. In the U.S. and for the full sample, the relation is insignificant. We also test whether this relation depends on the location of the underwriter relative to the firm going public. Outside the U.S., having an underwriter from the same region as the issuer is associated with higher initial returns. Interestingly, the interaction between allocations to affiliates and an underwriter's location (same region as issuer versus different region) is negative outside the U.S. In other words, the effect of affiliation between the IPO underwriter and mutual funds that receive shares of the offering is negative if the underwriter is in the same region as the issuer.

We also examine how IPOs are allocated to affiliated mutual funds. In particular, we are interested in whether cold IPOs—those with negative initial returns—are more likely to be allocated to affiliates, since these IPOs seem most likely to be undersubscribed and prone to dumping. We find some evidence that cold IPOs are more likely to be allocated to affiliates in Europe. Finally, we compare the long-run performance of affiliated IPOs to offerings not allocated to affiliates. Although both of these categories of IPO tend to underperform various benchmarks in the long run, we find no significant differences between the underperformance of affiliated and unaffiliated IPOs.

This study contributes to existing literature in two areas. First, our results build on the relationship between investment banks and their affiliated mutual funds. We show new evidence that IPO initial return is significantly associated with affiliation between the IPO underwriter and mutual funds that purchase the offering. This association varies by the location of the IPO; in Europe, we find evidence consistent with the dumping ground hypothesis, representing empirical support for a conflict of interest between underwriters and shareholders of their affiliated mutual funds. Prior literature has not found robust evidence of this conflict. Second, our analysis provides new insight into cross-country variation in IPO underpricing. The location of the IPO underwriter relative to the issuing firm may impact the quality of the IPOs that mutual funds are allocated from their affiliates. The remainder of this paper is organized as follows. Section 2 briefly reviews relevant literature. Section 3 describes the data. Section 4 examines IPO initial returns in a multivariate setting. Section 5 covers long-run IPO performance, and section 6 concludes.

LITERATURE REVIEW

A few studies have examined IPO allocations to mutual funds affiliated with the offering's lead underwriter. As mentioned above, Ritter and Zhang (2007) lay the groundwork for our study. They analyze U.S. IPOs purchased by mutual funds between 1990 and 2001. The results in their study are mixed; there is no robust support for either hypothesis. The authors find limited evidence supporting the nepotism hypothesis, particularly during the Internet bubble period of 1999-2000. During periods when the overall IPO market is hot, IPOs purchased by funds affiliated with the lead underwriter are associated with higher initial returns. In other years, the relationship is insignificant. Ritter and Zhang provide insight into how affiliated IPOs are allocated to mutual funds in a country with a highly developed stock

market and strong investor protection. Their study provides a foundation for our investigation of how this potential conflict of interest between investment banks and their affiliated funds might vary across countries with different economic and regulatory environments.

Ber, Yafeh, and Yosha (2001) examine a small sample of 128 Israeli IPOs, and they find that IPOs purchased by affiliated funds have significantly lower returns if the affiliated bank is also a lender to the IPO firm. If the bank is not a lender, then affiliate-purchased IPOs do not realize poorer performance. Although their analysis is limited to a small sample from a single Middle-Eastern country, the results of Ber, Yafeh, and Yosha suggest that there may be circumstances under which banks favor other business lines at the expense of mutual fund shareholders.

Johnson and Marietta-Westberg (2009) also look at the relationship between equity IPO underwriters and affiliated mutual funds, but their main concentration is on stocks purchased on the secondary market by funds affiliated with the underwriter. The authors argue that banks may use affiliated mutual funds to purchase shares of poorly-performing IPO clients in an effort to win future underwriting business from that client. In addition, they find some evidence that funds can gain an informational advantage from their underwriter affiliates, similar to the nepotism hypothesis of Ritter and Zhang (2007). Johnson and Marietta-Westberg's results suggest that affiliation with an investment bank can result in both a conflict of interest as well as an informational advantage.

Researchers have also examined a firm's decision to employ a foreign underwriter. Lopez and Spiegel (2014) examine foreign underwriting in the Japanese bond market and find that bond offerings with foreign underwriters tend to be larger and less volatile. In the context of IPO allocations to affiliates, one might expect foreign-underwritten IPOs that are allocated to affiliates to have lower initial returns, and a lower likelihood of having negative initial returns. In other words, it is conceivable that foreign underwriters are less likely to dump cold IPOs. A few studies highlight the disparity in fees between U.S. and European IPOs, including Torstila (2003), and Abrahamson, Jenkinson, and Jones (2011). However, Chen and Ritter (2000) find that the disparity is almost non-existent for mid-size IPOs, where the standard spread is 7% of the offering amount.

More general studies of IPO underpricing abound, going back at least as far as Rock's (1986) model based on information asymmetry between informed and uninformed investors. Ritter and Welch (2002) review this strand of literature. \Brennan and Franks (1997) present a model to explain why IPO underpricing is so prevalent. In their model, managers seek to avoid monitoring by outside blockholders. To do this, firms offer underpriced shares to ensure excess demand for an IPO, leading to oversubscription, allowing the offering to be divided into smaller allocations to bidders, and ultimately more diffuse ownership among those initially allocated shares of the offering. The authors argue that managers use underpricing as a tool to avoid monitoring and maintain control of the firm. Liu and Ritter (2011) show that the market for equity IPO underwriting consists of local oligopolies, since banks do not seem to compete on price. Lowry, Officer, and Schwert (2010) examine a return period of 21 days from the offer, much longer than the typical measure of underpricing. They find that return volatility is higher among firms with more information asymmetry, highlighting the challenge faced by underwriters in valuing issuers. Carter and Manaster (1990) develop a metric for ranking underwriter reputations based on underwriters' relative positions in U.S. tombstone announcements. They find that underwriter prestige is associated with less risky, lower-return IPOs, where IPO return is measured in the first two weeks following the announcement. Megginson and Weiss (1991) construct an underwriter reputation measure based on market share, and although their study focuses on venture capital-backed IPOs, they find that underpricing for IPOs without VC backing is negatively related to underwriter market share, consistent with Carter and Manaster (1990). In contrast, Hoberg (2007) measures underwriter quality based on a bank's prior record of IPO initial returns, and he finds that a strong prior record of IPO underpricing is associated with higher future IPO initial returns.

Another relevant segment of the finance literature deals with conflicts of interest between different business lines of the same financial institution. Because banks are providing an ever-widening scope of services, this field is quite broad, and Mehran and Stulz (2007) provide a general review. The most relevant of these studies are those that specifically address conflicts of interest between mutual funds and

their affiliates. Reuter (2006) analyzes the relationship between IPO allocations to mutual funds and prior brokerage commissions paid by the funds to the IPO's lead underwriter. He finds a positive relationship between brokerage commissions paid and IPO allocations. This relationship is limited to IPOs with non-negative first-day returns, consistent with the intuition that a bookrunner must look beyond its most favored clients in order to subscribe a cold IPO. Most relevant to our study, Reuter finds that this relationship holds whether or not the fund is affiliated with the underwriter, suggesting that IPO allocations are "for sale" to both affiliated and non-affiliated mutual funds. Jenkinson and Jones' (2009) survey of institutional investors shows that money managers' perceptions of factors affecting IPO allocations are consistent with Reuter's results—institutional investors view brokerage relationships as highly important for determining IPO allocations.

Equity IPOs are not the only channel through which mutual funds and their affiliates interact. Massa and Rehman (2008) find that a mutual fund tends to buy more stock in firms that borrow from the fund's affiliated bank. These stocks tend to outperform similar stocks with no lending relationship between firm and affiliated bank. The authors argue that the bank gains an informational advantage about the firm as a result of the due diligence associated with the lending relationship, which the bank uses to benefit its affiliated mutual funds. This evidence is in line with the nepotism hypothesis. Funds may also benefit from affiliated research analysts. Guidolin and Mola (2009) find that an analyst is likely to assign more favorable ratings to stocks recently purchased by mutual funds affiliated with that analyst. These stocks tend to realize positive abnormal returns, further evidence that affiliates can be beneficial to mutual funds.

Overall, existing literature presents evidence that relationships exist among IPO initial return, and affiliations between underwriters and mutual funds. However, conflicting results within these studies highlight the ongoing debate over the nature of these relationships.

DATA AND SUMMARY STATISTICS

Data Sources

We use the Thomson SDC Platinum database to collect equity IPOs issued between 1999 and 2009. We collect IPOs held by funds in countries with a substantial institutional investor base, as analyzed by Ferreira and Matos (2008). We exclude unit offerings, American depository receipts, real estate investment trusts, closed-end funds, partnerships, and banks/savings & loan associations. We obtain global mutual fund holdings data from the FactSet LionShares database. Our proxy for IPO allocations follows existing literature. Funds that report holdings of an IPO within 180 days of the offering date are considered to have been allocated the IPO. Because our main concern is how IPOs are allocated to mutual funds depending on their affiliation with the underwriter, we consider only IPOs underwritten by investment banks that have affiliated mutual funds, and we also restrict our sample to IPOs held by at least one mutual fund (affiliated or unaffiliated) within 180 days of the offering date, consistent with Ritter and Zhang (2007). We calculate initial returns using pricing data from Thomson Datastream. Initial return is calculated as the percentage difference between the IPO offering price and the closing price on the first day of trading. In order to prevent the influence of outliers and data exceptions, we winsorize observations in the top and bottom one percent of initial return. Our final sample consists of 1,975 IPOs from 24 countries. Affiliated mutual funds report holdings of 613 of these IPOs within 180 days of the offering date.

We use multiple sources to identify affiliations between underwriters and mutual funds. We examine annual reports, SEC filings, and company websites to obtain the names of asset management subsidiaries and mutual fund families. We also perform manual matching, similar to Ritter and Zhang's (2007) methodology, identifying funds that contain the names of prestigious financial firms, and then using the auxiliary sources above to confirm the matching. In addition, we take into account major financial mergers and divestitures so that an acquired asset management firm is not treated as an affiliate of an acquiring underwriter until after the merger date. For example, after Wells Fargo & Company completed its acquisition of Wachovia in October 2008, an IPO underwritten by Wachovia and allocated to Wells Fargo mutual funds is treated as an affiliated IPO.

Summary Statistics and Univariate Analysis

Table 1 shows the geographic breakdown of our sample of IPOs. The United States has by far the most IPOs, and also the most IPOs that were purchased by affiliated mutual funds. Some countries have very few IPOs, limiting our ability to conduct country-level analysis. Hence, for the univariate results that follow we aggregate IPOs to the regional level. Later analysis includes country-specific information. Also, because U.S. IPOs may drown out relationships in other countries, we will treat the United States as a separate region for purposes of univariate analysis.

We are interested in how IPO initial return is related to the affiliation between an IPO's lead underwriter and the mutual funds that purchase the offering. Table 1 compares initial returns as well as offering proceeds for IPOs according to whether or not an affiliated mutual fund was allocated shares of the offering. In Asia-Pacific and Europe, IPOs purchased by affiliated mutual funds have significantly lower initial returns than IPOs not purchased by affiliated funds. In addition, the pattern of lower initial returns for affiliated IPOs is consistent for individual countries within these two regions, with the exception of Finland and Spain. The evidence that affiliated mutual funds receive IPOs with lower initial returns than IPOs not allocated to affiliates is consistent with the dumping ground hypothesis. Results in Europe and Asia-Pacific contrast sharply with those for the United States—IPOs purchased by affiliated funds have significantly higher initial returns in the U.S. than other IPOs, consistent with the nepotism hypothesis and the univariate results of Ritter and Zhang (2007). Table 1 also shows the proportion of

TABLE 1
GLOBAL IPO ACTIVITY

Panel A	Number of IPOs purchased by			Initial Return			Proceeds ($ million)		
	Affiliated Mutual Funds	Unaffiliated Mutual Funds	Total	Affiliated Mutual Funds		Unaffiliated Mutual Funds	Affiliated Mutual Funds		Unaffiliated Mutual Funds
	(1)	(2)	(3)	(4)		(5)	(6)		(7)
Australia	2	14	16	12.0%		35.1%	283.7		71.0
Hong Kong	18	40	58	7.9%		20.4%	487.4		107.7
India	11	26	37	40.5%		54.4%	456.2		82.2
Japan	65	244	309	42.0%		59.3%	239.5		32.8
Singapore	8	7	15	5.6%		27.6%	322.8		59.2
Asia-Pacific Total	104	331	435	30.6%	<	**50.59*** **	**300.1*** **	>	72.9
Austria	8	9	17	1.6%		6.5%	437.2		218.6
Belgium	11	2	13	1.7%		11.4%	344.5		151.2
Denmark	0	8	8			4.9%			68.1
Finland	4	1	5	9.9%		-4.4%	274.0		58.0
France	37	87	124	8.1%		10.6%	777.2		43.9
Germany	72	136	208	11.9%		13.6%	363.6		66.3
Greece	7	16	23	-5.4%		23.7%	154.4		115.3
Ireland	1	1	2	5.4%		11.2%	1,719.1		78.9
Italy	4	43	47	1.1%		13.1%	214.5		424.6
Netherlands	14	14	28	17.5%		24.6%	428.7		165.7
Norway	6	16	22	20.7%		36.8%	553.4		120.0
Poland	2	10	12	8.0%		32.6%	224.4		38.4
Spain	16	10	26	4.6%		0.7%	1,185.1		250.4
Sweden	8	7	15	7.4%		16.0%	947.5		162.9
Switzerland	6	7	13	14.9%		42.0%	470.0		76.9
United Kingdom	26	44	70	12.5%		22.4%	772.6		98.2
Europe Total	222	411	633	9.0%	<	**16.7%** **	**583.4*** **	>	95.8
South Africa	2	5	7	-0.3%		20.9%	332.6		118.5
Africa Total	2	5	7	-0.3%		20.9%	332.6		94.1
Canada	9	5	14	14.0%		14.5%	225.6		111.1
United States	276	610	886	**45.3*** **	>	30.4%	**401.6*** **	>	111.6
Grand Total	613	1,362	1,975	29.0%		31.1%	**447.0*** **	>	97.4

TABLE 1 (CONTINUED)

Panel B	Number of IPOs purchased by			% with Positive Initial Return		% of Offering Purchased	
	Affiliated Mutual Funds	Unaffiliated Mutual Funds	Total	Affiliated Mutual Funds	Unaffiliated Mutual Funds	Affiliated Mutual Funds	Unaffiliated Mutual Funds
	(1)	(2)	(3)	(8)	(9)	(10)	(11)
Australia	2	14	16	85.7%	82.2%	36.1%	14.6%
Hong Kong	18	40	58	65.4%	69.0%	23.7%	13.4%
India	11	26	37	64.7%	73.2%	45.0%	23.6%
Japan	65	244	309	74.7%	75.4%	18.8%	12.5%
Singapore	8	7	15	50.0%	73.5%	30.9%	11.2%
Asia-Pacific Total	104	331	435	71.2%	77.0%	23.7%	13.8%
Austria	8	9	17	66.7%	92.3%	21.7%	23.9%
Belgium	11	2	13	86.7%	100.0%	24.3%	37.8%
Denmark	0	8	8		100.0%		19.5%
Finland	4	1	5	100.0%	60.0%	21.0%	72.8%
France	37	87	124	80.0%	87.4%	37.2%	22.3%
Germany	72	136	208	83.5%	85.6%	32.2%	24.4%
Greece	7	16	23	0.0%	76.2%	28.2%	24.2%
Ireland	1	1	2	100.0%	100.0%	4.9%	7.7%
Italy	4	43	47	60.0%	72.5%	29.5%	19.5%
Netherlands	14	14	28	76.5%	82.4%	32.6%	20.6%
Norway	6	16	22	100.0%	92.6%	51.2%	36.1%
Poland	2	10	12	100.0%	90.0%	31.6%	17.0%
Spain	16	10	26	87.5%	78.6%	35.1%	19.8%
Sweden	8	7	15	80.0%	92.3%	45.5%	24.4%
Switzerland	6	7	13	100.0%	81.8%	36.1%	22.3%
United Kingdom	26	44	70	85.7%	88.1%	42.3%	30.8%
Europe Total	222	411	633	79.7%	84.7%	34.3%	24.2%
South Africa	2	5	7	50.0%	100.0%	66.8%	50.3%
Africa Total	2	5	7	50.0%	100.0%	66.8%	50.3%
Canada	9	5	14	80.8%	66.7%	77.2%	55.0%
United States	276	610	886	**88.8*** **	> 77.7%	66.4%	48.9%
Grand Total	613	1,362	1,975	82.1%	79.8%	47.7%	32.9%

IPOs with positive initial returns. In the United States, affiliated mutual funds receive a higher proportion of IPOs with positive initial returns—and conversely, a lower proportion of "cold" IPOs with negative initial returns. This difference in proportions is not significant in other regions. Average proceeds for affiliated IPOs are significantly higher in most regions, consistent with the intuition that larger offerings have more total proceeds available to allocate to affiliates.

IPOs, Affiliated Mutual Funds, and Underwriter Location: Univariate Analysis

The univariate results above provide mixed messages about what kind of IPOs investment banks allocate to their affiliated mutual funds. In the U.S., funds appear to benefit from their affiliation with equity underwriters, whereas in Asia and Europe, affiliated funds receive IPOs with lower initial returns. However, these results do not consider other factors associated with IPO initial return, including the possibility that underwriter location may affect the relationship between mutual funds and the IPOs they receive from their investment bank affiliates. Consequently, we look at affiliated and unaffiliated IPOs by the location of the underwriter relative to the issuer. Table 2 summarizes initial returns for affiliated and unaffiliated IPOs, which we further divide according to whether the underwriter is foreign (from a different region) or from the same region as the issuer. Looking across the rows of the table, the relationship between initial return and fund-underwriter affiliation holds only when the underwriter is from the same region as the issuer. Initial returns are significantly lower for affiliated IPOs with underwriters from the same region in Asia-Pacific and Europe. This evidence is consistent with the

dumping ground hypothesis for IPOs with underwriters from the same region as the issuer. In the U.S., the positive relation between initial returns and IPO allocations to affiliates holds only when the underwriter is from the same region. This relation is consistent with the nepotism hypothesis, but again, only for IPOs with underwriters from the same region. These univariate results suggest that underwriter location is important in the context of the potential conflict of interest between investment banks and their affiliated mutual funds, but simple mean comparisons do not capture issue- and market-specific characteristics that could explain these initial return differences, so we turn to regression analysis.

TABLE 2
IPO INITIAL RETURNS, FUND-UNDERWRITER AFFILIATION, AND UNDERWRITER LOCATION

			Number of IPOs		Proportion of IPOs Allocated to Affiliates	Initial Return		
			Affiliated	Unaffiliated		Affiliated	Unaffiliated	P-value
Region	Underwriter Location		(1)	(2)	(3)	(4)	(5)	(4)-(5)
Asia-Pacific	(a)	Same Region	67	247	21.3%	29.5%	55.7%	0.001
	(b)	Different Region	37	84	30.6%	32.6%	35.5%	0.823
		P-value (a)-(b):			0.043	0.811	0.013	
Europe	(c)	Same Region	146	335	30.4%	9.9%	17.5%	0.050
	(d)	Different Region	76	76	50.0%	7.3%	13.1%	0.136
		P-value (c)-(d):			0.001	0.523	0.235	
United States	(e)	Same Region	192	473	28.9%	46.8%	30.4%	0.008
	(f)	Different Region	84	137	38.0%	41.8%	30.7%	0.187
		P-value (e)-(f):			0.011	0.578	0.954	
Whole Sample	(g)	Same Region	407	1,059	27.8%	30.5%	32.1%	0.641
	(h)	Different Region	206	303	40.5%	26.3%	27.4%	0.810
		P-value (g)-(h):			0.001	0.388	0.171	

IPO INITIAL RETURNS, AFFILIATED MUTUAL FUNDS, AND UNDERWRITER LOCATION

IPOs, Affiliated Mutual Funds, and Underwriter Location: Regression Analysis

In this section, we examine IPO initial returns and affiliations between funds and underwriters in a multivariate setting. We estimate regressions using OLS where the dependent variable is an IPO's initial return. The main explanatory variable of interest is an indicator variable that takes a value of 1 if the IPO was allocated to a mutual fund affiliated with the offering's lead underwriter. By using an indicator variable, we forego information about the size of the allocation that each fund receives. On the other hand, we also eliminate noise in the allocation, which is of particular concern because our measure is only a proxy for mutual funds receiving allocations of IPOs. Because we are interested in the impact of underwriter location, we also include an indicator that takes a value of 1 if the underwriter is in the same region as the issuer, as well as an interaction term between underwriter location and the indicator for allocations to affiliated mutual funds.

The model contains control variables employed by existing literature that have been shown to be associated with IPO initial returns. Offering price changes prior to the start of public trading are a strong predictor of IPO initial return (Hanley 1993), so we include pre-offer price adjustment, measured as the percentage difference between the midpoint of the initial filing price and the final offer price (Aggarwal, Prabhala, and Puri 2002). Firm size is measured as the natural log of total assets. We include an indicator variable that takes a value of 1 if the offering is a technology IPO, as in Ritter and Zhang (2007). Underwriter reputation has also been shown to be associated with IPO underpricing (Carter and Manaster 1990, Megginson and Weiss 1991). We employ Megginson and Weiss' (1991) market share-based reputation measure, because it can be computed globally with ease. We also include the holdings of funds not affiliated with the IPO's lead underwriter, as institutional investors may hold some private information about the offering (Aggarwal, Prabhala, and Puri 2002). Cross-country variation in the development of financial markets has been shown to be associated with IPO initial returns, so we include the ratio of stock market capitalization to country GDP as a measure of stock market development (Loughran, Ritter, and Rydqvist 1994). Finally, we include calendar-year indicator variables to control for overall time variation in the IPO market—that is, periods of alternating "hot" and "cold" IPO market conditions. Throughout the paper, statistical significance is estimated using heteroskedasticity- and autocorrelation-robust standard errors clustered at the individual investment bank level to account for the possibility that IPOs underwritten by the same bank may be interrelated.

Results are presented in Table 3. In column 1, the main coefficients of interest for the full sample are not statistically significant; however, region-specific regressions provide more compelling results. Column 2 reports results for the sub-sample of IPOs in the Asia-Pacific region. The coefficient on the indicator for purchase by an affiliated mutual fund is positive and significant, meaning that an IPO's initial return is positively related to the offering's lead underwriter allocating shares to affiliated mutual funds. Specifically, the allocation of an IPO to an affiliated fund is associated with an initial return that is 18.8% higher than an IPO that is not allocated to an affiliate. The coefficient on the indicator for having an underwriter in the same region as the issuer is not significant for the Asia-Pacific region. However, the interaction between the allocation to affiliate indicator and the same region indicator is negative and significant. This negative coefficient suggests that the positive relation between initial returns and allocations to affiliates is nullified if the underwriter is in the same region as the issuer. In other words, affiliated mutual funds do not benefit from nepotism for IPOs from the same region as their investment bank affiliate. Column 3 reports results for the sub-sample of European IPOs. The coefficient on allocations to affiliates is negative and significant in Europe, consistent with the dumping ground hypothesis. Also, the indicator for having an underwriter from the same region as the issuer is positive and significant, suggesting that European IPOs with European underwriters tend to have higher initial returns. However, the interaction term between the indicators for allocations to affiliates and underwriter from the same region is not significant. Thus, we do not observe evidence in Europe that nepotism or dumping is associated with an underwriter's proximity to the issuer. Coefficients on control variables across all sub-samples are generally in line with expectations and consistent with existing literature. Pre-offer price adjustment has a positive association with IPO underpricing, consistent with existing evidence, as does underwriter reputation. Technology IPOs are also associated with higher initial returns.

Similar to Ritter and Zhang (2007), our regression evidence appears mixed. In Asia-Pacific, IPOs allocated to affiliated mutual funds have significantly higher initial returns, but only if the underwriter is from a different region than the issuer. In Europe, IPOs allocated to affiliates have significantly lower initial returns, consistent with the dumping ground hypothesis. An important question is whether mutual funds are worse off for being allocated shares of IPOs from their affiliated investment banks. Despite the fact that IPOs allocated to affiliates are associated with lower initial returns than IPOs not allocated to affiliates in Europe, these affiliated IPOs still tend to have initial returns that are positive. Affiliated IPO first-day returns are positive and significant in all regions outside of Africa (which has very few observations), and mean initial returns are positive and significant at the country level for 17 out 24 countries in our sample. Although the evidence that affiliates are allocated IPOs with only *less positive* (as opposed to negative) initial returns may well be concerning from a policy perspective, it would be

more alarming if affiliated IPO initial returns were negative, which would be evidence consistent with severe IPO dumping that is harmful to mutual fund shareholders. It is precisely these IPOs with negative initial returns where the underwriter is likely to face the greatest challenge in completing the offering and also the greatest incentive to take advantage of mutual fund shareholders as a means to subscribe the IPO. Consequently, these IPOs may be an area of focus for policymakers looking to protect fund investors from IPO dumping. In the next section, we examine whether negative initial returns are associated with IPO allocations to affiliated mutual funds.

TABLE 3
DETERMINANTS OF IPO INITIAL RETURN

	Full Sample	Asia-Pacific	Europe	U.S. Only	Non-U.S.
	(1)	(2)	(3)	(4)	(5)
Affiliate purchases	-0.007	0.188*	-0.096**	-0.024	0.027
	(-0.17)	(1.95)	(-2.17)	(-0.40)	(0.56)
Same region	0.044	0.141	0.103**	-0.059	0.111**
	(1.41)	(1.54)	(2.20)	(-1.45)	(2.41)
(Affiliate purchases) × (Same Region)	-0.052	-0.289**	-0.017	0.040	-0.125**
	(-1.06)	(-2.46)	(-0.32)	(0.53)	(-2.14)
Price adjustment	1.626***	1.830***	0.234	1.692***	0.998***
	(15.89)	(6.10)	(1.62)	(14.76)	(6.07)
Underwriter reputation	4.088***	1.562	1.943*	3.882***	2.925***
	(5.40)	(0.51)	(1.73)	(4.06)	(2.91)
Ln(Assets)	0.001	-0.046***	-0.001	-0.030***	-0.002
	(0.20)	(-2.59)	(-0.09)	(-2.84)	(-0.28)
Technology IPO	0.129***	0.160*	-0.017	0.124***	0.061
	(4.53)	(1.90)	(-0.51)	(3.25)	(1.51)
Unaffiliated ownership	-0.037***	-0.030***	0.006	0.011	-0.038***
	(-6.19)	(-3.01)	(0.56)	(0.83)	(-5.56)
Stock market development	0.056***	-0.022	0.087		0.028
	(2.70)	(-0.63)	(1.23)		(1.29)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	1,975	435	633	886	1,089
Adjusted R-squared	28.23%	25.94%	4.55%	47.55%	18.36%

Determinants of Affiliated IPO Purchases

As described above, we are interested in the allocation process for IPOs with negative initial returns. Such cold IPOs are where evidence of harmful IPO dumping would manifest. Of particular interest is whether the location of an IPO underwriter may be related to the likelihood that a cold IPO will be dumped on affiliated mutual funds. We model a logistic regression where the dependent variable is our indicator variable for IPO allocations to affiliated mutual funds. Our main explanatory variable is an indicator that takes a value of 1 if an IPO has a negative initial return, to see if cold IPOs are associated with allocations to affiliated mutual funds. We also include an indicator for the underwriter being in the same region as the issuer, and an interaction term between the two indicators. Control variables are the same as those in the previous section.

Results are presented in Table 4. The coefficient for cold IPOs is weakly significant for the sub-sample of European IPOs, meaning that an IPO with a negative initial return is more likely to be allocated

to a mutual fund affiliated with the IPO's lead underwriter. This positive relation is consistent with the dumping ground hypothesis. In other regions, the coefficient on the cold IPO indicator is not significant. The location of the underwriter does not appear to have a consistent effect across regions. In the U.S., the same region indicator is negative and significant, consistent with univariate results that show U.S. underwriters are less likely to allocate U.S. IPOs to their affiliated mutual funds. Outside the U.S., the relation is insignificant. Other coefficients are generally in line with expectations. The coefficient on pre-offer price adjustment is positive and significant, suggesting that an IPO that has a price run-up prior to the offering date is more likely to be allocated to an affiliated mutual fund. This relationship has intriguing implications that we discuss in the next section. In addition, technology IPOs are more likely to be purchased by affiliated mutual funds.

Overall, our analysis of the determinants of IPO allocations to affiliated mutual funds shows some support for the dumping ground hypothesis in Europe. From a policy perspective, this is certainly troubling, as regulations are designed to protect mutual fund investors from the abuse of conflicts of interest facing the agents to whom investors have delegated investment authority. Outside of Europe, we find no evidence of severe IPO dumping. Furthermore, underwriter location does not appear to affect an underwriter's propensity to dump cold IPOs.

TABLE 4
DETERMINANTS OF IPO ALLOCATIONS TO AFFILIATES

	Full Sample	Asia-Pacific	Europe	U.S. Only	Non-U.S.
	(1)	(2)	(3)	(4)	(5)
Cold IPO	0.223	-0.028	0.946*	-0.069	0.353
	(0.87)	(-0.05)	(1.88)	(-0.13)	(1.04)
Same region	-0.299**	0.384	0.294	-0.682***	0.276
	(-2.27)	(0.95)	(0.96)	(-3.40)	(1.19)
(Affiliate purchases) × (Same Region)	-0.261	0.306	-0.725	-0.417	-0.046
	(-0.86)	(0.48)	(-1.24)	(-0.71)	(-0.11)
Price adjustment	1.699***	0.718	2.917***	2.084***	1.820***
	(4.84)	(0.58)	(3.18)	(4.29)	(2.67)
Underwriter reputation	9.764***	14.423	21.384***	13.447***	20.724***
	(3.92)	(1.06)	(3.27)	(3.91)	(3.69)
Ln(Assets)	0.224***	0.372***	0.130**	0.137**	0.226***
	(7.00)	(4.53)	(2.51)	(2.36)	(5.70)
Technology IPO	0.376***	0.295	0.888***	0.133	0.748***
	(3.10)	(0.86)	(3.67)	(0.70)	(4.08)
Unaffiliated ownership	0.224***	0.124***	0.403***	0.688***	0.219***
	(7.08)	(3.52)	(6.01)	(7.14)	(7.33)
Stock market development	-0.581***	-0.175	0.000		-0.318***
	(-5.02)	(-1.20)	(0.00)		(-2.97)
Observations	1,975	435	633	886	1,089
Pseudo R-squared	14.30%	15.30%	18.70%	18.70%	16.60%

IPO Pre-Offer Price Adjustments

We further analyze the allocation process by focusing on how an IPO's price changes before the shares are offered to the market. Hanley (1993) finds that pre-offer price adjustments are a strong predictor of IPO initial return, and the positive coefficient on price adjustment in Table 3 agrees with this

contention. Also, underwriters are certainly more likely to have better information about pre-offer price adjustments than outsiders. Because IPO allocations are determined before the offer is finalized, relationships between price adjustments and allocations to affiliated mutual funds may be indicative of whether or not banks try to use their informational advantage to allocate hot IPOs to their affiliated mutual funds. Indeed, in Table 4 we report a positive relation between pre-offer price adjustment and allocations to affiliated mutual funds, and our interpretation is that IPOs with greater pre-offer price run-ups are more likely to be allocated to affiliates, consistent with the nepotism hypothesis. Thus, we re-estimate regressions using pre-offer price adjustment as the dependent variable. Results are presented in Table 5 and show mixed results. In column 2, the indicator for the offering being purchased by an affiliated fund is negative and weakly significant in Asia-Pacific, suggesting that IPOs allocated to affiliates have lower ex ante expected underpricing. However, this negative relation appears to be attenuated by the affiliated underwriter being in the same region as the IPO issuer, because the interaction between the affiliated purchase indicator and the same region indicator is positive and significant. Also, the indicator for the underwriter being in the same region as the issuer is negative and significant, which means Asian IPOs that are locally underwritten tend to have lower price adjustments. In the U.S., the indicator for allocations to affiliates is positive and significant, consistent with the univariate evidence of nepotism from Table 2.

Based on the results in Table 5, it seems that banks attempt to use their informational advantage (knowledge of pre-offer price adjustment) to benefit affiliated fund shareholders in the U.S., as allocations to affiliates are associated with higher pre-offer price adjustments. But it would not appear that banks' efforts are effective, as IPOs allocated to affiliates are not always associated with higher initial returns. More research on investment banks and pre-offer price adjustments could improve our understanding of the allocation process.

TABLE 5
DETERMINANTS OF IPO PRE-OFFER PRICE ADJUSTMENTS

	Full Sample	Asia-Pacific	Europe	U.S. Only	Non-U.S.
	(1)	(2)	(3)	(4)	(5)
Affiliate purchases	0.028**	-0.031*	0.018	0.084***	-0.006
	(2.05)	(-1.65)	(0.91)	(3.29)	(-0.48)
Same region	0.024**	-0.073***	0.017	0.056***	-0.015
	(2.25)	(-3.34)	(1.00)	(3.37)	(-1.20)
(Affiliate Purchases) × (Same region)	0.008	0.046*	0.005	-0.037	0.026*
	(0.48)	(1.95)	(0.25)	(-1.25)	(1.76)
Underwriter reputation	0.855***	-1.807***	0.095	1.029***	-0.154
	(4.35)	(-2.93)	(0.30)	(3.80)	(-0.58)
Ln(Assets)	-0.001	-0.010***	0.002	-0.005	-0.002
	(-0.75)	(-2.93)	(0.72)	(-1.46)	(-0.96)
Technology IPO	0.026***	-0.013	-0.009	0.057***	-0.010
	(3.16)	(-0.95)	(-0.84)	(4.16)	(-1.26)
Unaffiliated ownership	-0.004***	0.001	-0.007***	0.005	-0.003***
	(-4.02)	(1.02)	(-2.93)	(0.99)	(-3.24)
Stock market development	0.029***	0.008	0.020**		0.024***
	(6.11)	(1.29)	(1.99)		(5.20)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	1,975	435	633	886	1,089
Adjusted R-squared	12.61%	16.83%	9.51%	21.43%	9.08%

LONG-RUN PERFORMANCE OF IPOS ALLOCATED TO AFFILIATES

Finally, we examine the long-run performance of IPOs that are allocated to affiliated mutual funds. We calculate the 3-year buy and hold return for IPOs in our sample. We also compare these 3-year returns to two benchmarks: (i) the return on the offering's Fama French size decile portfolio, and (ii) the CRSP value-weighted index. Results are presented in Table 6 and do not show any significant differences in long-run performance for affiliated versus unaffiliated IPOs. The pattern of long-run IPO underperformance appears to be present across all IPOs in our sample, consistent with existing literature (Foerster and Karolyi 2000, Ritter and Welch 2002). However, it does not appear that mutual funds are systematically allocated IPOs with better or worse long-run performance from their underwriter affiliates.

TABLE 6
LONG-RUN PERFORMANCE OF AFFILIATED AND UNAFFILIATED IPOS

	Initial Return		
Variable	Affiliated (1)	Unaffiliated (2)	P-value (1)-(2)
3-year holding period return, unadjusted	-10.0%	-3.5%	0.128
3-year return minus CRSP value-weighted index	-3.6%	-1.8%	0.617
3-year return minus size decile return	-10.9%	-9.4%	0.455
Number of Observations	582	1,503	

CONCLUSION

Financial conglomerates with both equity underwriting and asset management divisions face a potential conflict of interest in how they allocate IPOs to their affiliated mutual funds. The dumping ground hypothesis predicts that banks take advantage of this conflict by allocating cold IPOs to their affiliated mutual funds, preserving investment banking fees at the expense of affiliated fund shareholders. The nepotism hypothesis predicts that banks favor their affiliated funds and allocate better IPOs to them to increase asset management fee income. We analyze this potential conflict globally and find support for both hypotheses, as well as a significant role for the location of the investment bank relative to the IPO issuer. In Europe, we find evidence consistent with the dumping ground: IPOs allocated to affiliates are associated with lower initial returns, and banks are more likely to allocate cold IPOs to affiliated mutual funds. In Asia-Pacific, affiliated IPOs are associated with higher initial returns, but only if the underwriter is not from the same region as the issuing firm. This evidence is consistent with the nepotism hypothesis for the subset of underwriters that are not located in the Asia-Pacific region.

Although results in Europe may seem troubling, it is important to emphasize that IPO initial returns are generally positive and significant for affiliated IPOs. For these IPOs with positive initial returns, any detrimental effect of underwriter-fund affiliation on mutual fund shareholders does not appear to destroy value overall; rather, it may only reduce the gains captured through IPO underpricing. Furthermore, underwriters appear more likely to allocate IPOs to affiliates when pre-offer price adjustment is higher. Given that (i) pre-offer price adjustment is a strong predictor of underpricing, and (ii) underwriters typically have better knowledge of price adjustment before an offering than outsiders, this association

seems consistent with the nepotism hypothesis. However, banks' ability to use their informational advantage to the benefit of affiliated mutual fund shareholders may be limited.

The fact that we find support for both the dumping ground and nepotism hypotheses highlights that some questions are still unanswered. Perhaps most importantly, why do affiliated mutual funds tend to receive IPOs with lower initial returns? Unfortunately, our proxy for affiliated IPO allocations is not fine enough to investigate how the pre-offer allocation process might be working in great detail. Reuter's (2006) study was pioneering in this area, but further research in the context of allocations to affiliates and investor protection could prove very revealing. Our study also emphasizes the importance of underwriter location and the potential conflict of interest between a financial firm's investment banking and asset management divisions. However, there is more work to be done in identifying the specific dimensions of proximity to an issuer that affect this conflict of interest. Future research that addresses this issue would also be illuminating, and more granular data could provide further insight into this issue.

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