

**RESEARCH ARTICLE**

# Does going global or staying local improve the long-term survival and performance of IPOs?

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**Research Summary:** This empirical study investigates the impact of internationalization on the long-term performance of U.S. IPOs (initial public offerings). We find that internationalized IPOs exhibit higher survival rates, and if an internationalized IPO is subsequently delisted, that delisting is significantly more likely to result in a positive outcome when compared to the delisting outcomes for domestic-only IPOs. In addition, over 5- and 10-year holding periods following the IPO, a portfolio of the internationalized firms exhibits significantly positive risk-adjusted abnormal stock returns, whereas the return for a portfolio of the domestic-only firms was lower and generally not significantly different than zero. In short, we add to the existing literature on factors that influence IPO survival and performance and show that internationalization also is an important firm characteristic.

**Managerial Summary:** We examine the impact of internationalization on the survival and stock return performance of IPO firms. More specifically, we investigate the performance of two categories of U.S. IPOs: companies that go public and have international operations and companies that are purely domestic firms. Our results suggest that IPO firms that are internationalized have higher survival rates than domestic-only firms and also enjoy superior subsequent stock performance. This study provides novel insights and additional descriptive evidence that going global is better for the survival and performance of IPOs.

**KEYWORDS**

initial public offering, internationalization, performance, stock returns, survival

## 1 | INTRODUCTION

Do initial public offering (IPO) firms that have gone global enjoy greater survival rates and generate superior stock returns for investors? Or, to produce better long-term performance, should IPO firms focus first on building unique and strong capabilities domestically before venturing abroad? These are interesting research questions because newly public firms often do not survive, and IPOs (during at least some time periods) have provided investors with low stock returns. In addition, although the impact of internationalization (or geographic diversification) on the value of established multinational (e.g., Contractor, Kundu, & Hsu, 2003; Gande, Schenzler, & Senbet, 2009) and born global (e.g., Efrat & Shoham, 2012; Musteen, Datta, & Francis, 2014) firms has been examined widely in past research, the relationship for nascent IPO firms has received only limited attention. Therefore, our study addresses this gap in the literature by providing an empirical examination of both the survival rates and risk-adjusted abnormal stock returns of global versus domestic-only IPO firms.

The fact that firms, in general, that go public often do not survive is documented by Fama and French (2004). They find that during the 1980–1991 period, 10-year post-IPO survival rates were as low as 38.2%, and the survival rates declined over the sample period examined in their study. Other studies examine factors that affect IPO survival rates and document, for example, that founder-CEOs (Fischer & Pollock, 2004), human resource management systems (Welbourne & Andrews, 1996), and venture capitalist backing (Jain & Kini, 2000) improve company longevity. We build on this strand of research by examining the impact of internationalization on IPO firm survival.

The existing IPO literature presents mixed evidence on post-offering risk-adjusted abnormal stock returns over mid- and long-term investment horizons. For example, early research reports that IPOs underperform relative to benchmarks—“the new issues puzzle”—due to the high investment requirements and poor capital allocation decisions of small, growing firms (Loughran & Ritter, 1995). Recent research, however, suggests that the long-term performance of IPO firms depends on the time period examined. Specifically, Carter, Dark, Floros, and Sapp (2011) show that newly public firms underperform benchmarks during the period 1981–1987, perform similar to benchmarks during 1988–1997, and actually outperform benchmarks during 1998–2005. In addition, although a few studies have jointly examined IPO stock price performance and internationalization, those studies have produced somewhat contrasting results. For example, Al-Shammari, O’Brien, and AlBusaidi (2013) find that internationalization is associated with both IPO underpricing and high first day returns. They conclude that investors have optimistic expectations regarding the firm’s future growth in international markets. Mudambi, Mudambi, Khurshed, and Goergen (2012) examine IPOs in the United Kingdom and report that internationalization results in positive market-adjusted returns during the first 36 months of public trading. They posit that their results are due to the potential “upsides” of international markets. In contrast, however, LiPuma (2012) suggests that internationalized U.S. technology-based firms have lower IPO valuations because of the increased monitoring costs associated with international operations. We build on this literature by providing additional evidence on the post-IPO risk-adjusted abnormal stock returns of U.S. firms that go global and those that stay local.

To examine how going global or staying local affects IPO survival rates, we focus on stock market delistings, while also recognizing that a delisting can represent either a negative or positive event. For example, a delisting due to bankruptcy is a negative firm outcome. In contrast, a delisting that arises because the company has been acquired can be a positive event (Jain & Kini, 1999). Consequently, for the subset of firms that are delisted, we examine whether the delisting is associated typically with a more positive (i.e., acquisition) or negative (i.e., bankruptcy) outcome for

multinational versus domestic-only IPOs.<sup>1</sup> Exploring both survival rates and the reasons why an IPO is delisted should shed further longitudinal insights into the dynamic impact of multinationality on firm performance (Contractor, 2012; Mudambi et al., 2012).

To examine the post-IPO risk-adjusted abnormal stock performance of internationalized and domestic-only firms, we follow a portfolio framework utilized in prior IPO studies (e.g., Carter et al., 2011).<sup>2</sup> This medium- and long-term abnormal return analysis differs from prior studies that primarily examine the impact of multinationality on the IPO date (Al-Shammari et al., 2013; LiPuma, 2012). In addition, we perform analyses to explore whether the relative strength/weakness of the U.S. dollar (compared to other currencies) and the relative performance of the U.S. stock market (compared to foreign stock markets) explains our abnormal stock return findings since the value of foreign operations may increase with a weak U.S. dollar and strong foreign stock market returns.

To briefly summarize our results here, we find that internationalized IPO firms exhibit higher survival rates (fewer delistings) over the subsequent 3, 5, and 10 years. In addition, if and when an internationalized IPO firm is subsequently delisted, that delisting is significantly more likely to result in a positive outcome (acquisition) when compared to the delisting outcomes for domestic-only IPO firms. Finally, in the 5 and 10 years following the IPO, a portfolio of the internationalized firms experienced significantly positive abnormal stock returns, whereas the abnormal returns for a portfolio of the domestic-only firms were lower and generally not significantly different than zero. In short, when considering the post-IPO performance of companies, internationalization is an important firm characteristic.

## 2 | DATA AND SAMPLE STATISTICS

To study the effects of going global versus staying local, we obtained our base sample of IPOs from Jay Ritter's website.<sup>3</sup> Our sample contains U.S. companies that went public during the years 1993–1996. We select this time period because it contains a large number of IPOs and because Carter et al. (2011) report that firms going public during these 4 years experienced, on average, neither positive nor negative risk-adjusted excess return performance compared to IPO underperformance in the 1980s and outperformance in the late 1990s. Selecting a sample group that neither overperformed nor underperformed allows us to focus on the incremental implications of internationalization. Focusing on IPOs during these 4 years also allows us to examine long-term (10-year) stock performance while not having our estimation period overlap with the “black swan” event of the recession and financial market meltdown that began in late 2007. We restricted the sample to include only IPO observations where we were able to obtain both stock return data (including delisting data, if applicable) from CRSP and financial statement data from COMPUSTAT.<sup>4</sup> Our final sample consists of 1,723 unique IPOs where 1,397 companies are purely domestic firms with no foreign operations (*IPOs<sub>dom</sub>*) and 326 went public as multinational corporations (*IPOs<sub>mnc</sub>*).

The information presented in Panel A of Table 1 shows that both types of IPO occur during each month of 1993–1996. Panel B shows that the highest percentage of global IPOs in our sample

<sup>1</sup>Note that positive delisting events (e.g., acquisitions) can be viewed as a form of survival.

<sup>2</sup>Our approach utilizes a Fama and French (1993) four-factor model that includes the Carhart (1997) momentum factor. This approach recognizes that investors perceive (and therefore price) multiple systematic risk factors, and it is more rigorous than the market-adjusted methodology utilized in Mudambi et al. (2012), which incorporates only market returns (i.e., just one of the four Fama-French factors).

<sup>3</sup>See Jay Ritter's website at <https://site.warrington.ufl.edu/ritter/ipo-data/>.

<sup>4</sup>We also deleted observations with missing values for sales and where the foreign sales percentage as reported on COMPUSTAT (foreign sales/total sales) exceeded 100%.

TABLE 1 Number of IPOs by month and year

	IPOs <sub>mnc</sub> (n = 326 firms)		IPOs <sub>dom</sub> (n = 1,397 firms)	
	N	% of total	N	% of total
Panel A: Number of IPOs, by month				
Jan	11	3.4%	55	3.9%
Feb	30	9.2%	108	7.7%
Mar	34	10.4%	122	8.7%
Apr	35	10.7%	94	6.7%
May	33	10.1%	139	9.9%
Jun	27	8.3%	149	10.7%
Jul	39	12.0%	104	7.4%
Aug	27	8.3%	120	8.6%
Sep	11	3.4%	98	7.0%
Oct	32	9.8%	140	10.0%
Nov	25	7.7%	150	10.7%
Dec	22	6.7%	118	8.4%
Panel B: Number of IPOs, by year				
1993	74	22.7%	364	26.1%
1994	54	16.6%	289	20.7%
1995	105	32.2%	311	22.3%
1996	93	28.5%	433	31.0%

TABLE 2 Count of NAICS codes for IPO sample

Code	Industry title	IPOs <sub>mnc</sub> (n = 326 firms)		IPOs <sub>dom</sub> (n = 1,397 firms)	
		N	%	N	%
11	Agriculture, forestry, fishing, and hunting	1	0.3		
21	Mining	10	3.1	31	2.2
22	Utilities			6	0.4
23	Construction			19	1.4
31-33	Manufacturing	168	51.5	497	35.6
42	Wholesale trade	9	2.8	64	4.6
44-45	Retail trade	2	0.6	68	4.9
48-49	Transportation and warehousing	4	1.2	39	2.8
51	Information	80	24.5	221	15.8
52	Finance and insurance	10	3.1	133	9.5
53	Real estate rental and leasing	4	1.2	28	2.0
54	Professional, scientific, and technical services	24	7.4	69	4.9
55	Management of companies and enterprises				
56	Administrative and support and waste management and remediation services	4	1.2	56	4.0
61	Educational services	1	0.3	9	0.6
62	Health care and social assistance	2	0.6	55	3.9
71	Arts, entertainment, and recreation	1	0.3	24	1.7
72	Accommodation and food services	1	0.3	50	3.6
81	Other services (except public administration)	3	0.9	9	0.6
92-99	Public administration	2	0.6	19	1.4
	Total	326		1,397	

TABLE 3 Income statement, balance sheet, and IPO data

	IPOS <sub>mnc</sub> (n = 326 firms)			
	N	Mean	Std dev	Median
Foreign sales %	326	0.298	0.241	0.222
Total assets	326	575.417	3131.160	63.693
Long-term debt	326	171.034	1207.770	1.623
Sales	326	395.603	1421.510	62.183
Advertising expense	63	13.628	47.642	1.475
R&D expense	228	16.539	122.150	4.980
Advertising/sales	63	0.032	0.041	0.018
Advertising/total assets	63	0.039	0.049	0.021
R&D/sales	228	0.191	0.549	0.100
R&D/total assets	228	0.118	0.127	0.087
Long-term debt/total assets	326	0.133	0.224	0.030
IPO proceeds	323	78.404	155.663	37.700
IPO price	313	13.30	5.101	13.000

	IPOS <sub>dom</sub> (n = 1,397 firms)			
	N	Mean	Std dev	Median
Foreign sales %	0	.	.	.
Total assets	1,395	268.233	2241.730	41.927
Long-term debt	1,395	36.442	156.396	0.764
Sales	1,397	137.115	665.920	30.688
Advertising expense	306	4.358	18.737	0.867
R&D expense	737	3.262	5.235	1.512
Advertising/sales	306	0.083	0.411	0.024
Advertising/total assets	305	0.047	0.089	0.022
R&D/sales	737	2.176	10.886	0.102
R&D/total assets	735	0.111	0.183	0.067
Long-term debt/total assets	1,395	0.131	0.210	0.024
IPO proceeds	1,384	44.652	85.626	26.000
IPO price	1,327	11.311	4.959	11.000

occurred during 1995, whereas 1996 was the most active year for the domestic-only group. Table 2 presents the industry membership of our sample firms, as indicated by NAICS code. The greatest number of both  $IPOS_{dom}$  and  $IPOS_{mnc}$  are in the manufacturing and information (or technology) industries. For example, 51.5% of  $IPOS_{mnc}$  are manufacturing firms. For  $IPOS_{dom}$ , the corresponding percentage is 35.6%. Outside of manufacturing and IT, there are no clear patterns because the remaining firms are spread across the other industries in single-digit percentages.

Table 3 contains several key balance sheet, income statement, and IPO statistics for  $IPOS_{mnc}$  and  $IPOS_{dom}$ .<sup>5</sup> The average foreign sales percentage (foreign sales/total sales) of  $IPOS_{mnc}$  is 29.8%, with a corresponding standard deviation of 0.241 (the median amount is 22.2%). In addition, internationalized IPOs tend to be larger than their domestic-only counterparts. The median values for total assets and sales for  $IPOS_{mnc}$  are \$63.693 million and \$62.183 million, respectively, whereas the

<sup>5</sup>The financial statement data are from the company's first annual report filed subsequent to the IPO.

corresponding values for  $IPOs_{dom}$  are \$41.927 million and \$30.688 million. Similarly, the average IPO proceeds and price for the  $IPOs_{mnc}$  are slightly higher than for the  $IPOs_{dom}$ .<sup>6</sup> The table also reveals that only a subsample of companies report data for advertising and R&D expenditures. For example, 19.3% (63 of 326) and 69.9% (228 of 326) of the internationalized firms provide advertising and R&D information, respectively. The corresponding percentages for the domestic-only group are 21.9% (306 of 1,397) and 52.8% (737 of 1,397). For the companies that do report information for these two variables, it is interesting to see that  $IPOs_{dom}$  actually have higher advertising and R&D expenditures as a percentage of sales than  $IPOs_{mnc}$ . This (at least initially) indicates that internationalized IPOs somewhat face a trade-off dilemma and reallocate resources away from advertising and R&D and into developing foreign markets.<sup>7</sup> When compared to total assets, however, R&D expenditures (relative to total assets) are quite similar for the two groups—though the percentage for advertising is still higher, on average, for the domestic-only IPOs. Lastly, it is not surprising that the typical IPO firm utilizes relatively low amounts of long-term debt. For both internationalized and domestic-only companies, the median ratio of long-term debt to total assets is at or below 3%.

### 3 | SURVIVORSHIP OF INTERNATIONALIZED AND DOMESTIC-ONLY IPOs

For IPOs, survival can be the ultimate measure of long-term performance (Welbourne & Andrews, 1996). Firms undertaking an IPO often subsequently disappear, due to events including acquisition or financial distress. This first type of event, acquisition, is a more desirable outcome compared to bankruptcy (Jain and Kini, 200) and can have positive ramifications for shareholders. Negative events including bankruptcy, of course, are not viewed typically as good outcomes. We next explore the post-IPO life cycle of our sample firms by examining the frequency of delistings and the reasons delistings occur.

As shown in Table 4, during the years following the IPO, delistings are not an unusual event. For example, within 36 months after going public, 61 of 326 (18.7%) of our  $IPOs_{mnc}$  and 279 of 1,397

TABLE 4 Number of delistings

	IPO <sub>mnc</sub> (326 firms)			IPO <sub>dom</sub> (1,397 firms)			Chi-square test of equal proportions
	Number delisted	Delisting code 300s and below (survivors)	Delisting code 400s and above (failures)	Number delisted	Delisting code 300s and below (survivors)	Delisting code 400s and above (failures)	
36 months	61	48 78.7%	13 21.3%	279	172 61.6%	107 38.4%	6.364 (0.012)**
60 months	128	103 80.5%	25 19.5%	581	365 62.8%	216 37.2%	14.557 (0.000)***
120 months	210	148 70.5%	52 29.5%	954	562 58.9%	392 41.1%	9.678 (0.002)***

\*, \*\*, \*\*\* = statistically significant at 10%, 5%, and 1%, respectively.

<sup>6</sup>We were not able to obtain IPO proceeds and price statistics from Security Data Corporation (SDC) for a small number of firms in our sample.

<sup>7</sup>It is important to note that both Morck and Yeung (1991) and Mudambi et al. (2012) find that advertising and R&D intensity positively affect performance of internationalized firms but Berry and Kaul (2016) find that R&D intensity does not affect the performance of internationalized firms.

(20.0%) of our  $IPOs_{dom}$  are delisted. Over the 5 and 10 years following the IPO, the percentages increase to 39.3% and 64.4%, respectively, for our  $IPOs_{mnc}$  and 41.6% and 68.3% for our  $IPOs_{dom}$ . Consequently, domestic-only IPOs are somewhat more frequently delisted, and more than six out of ten IPOs (whether they are global firms or a domestic-only firms) disappear as stand-alone organizations within 10 years of their IPOs.

Of course, an important related issue that needs to be explored is the corporate event that results in the delisting. As we have noted, an acquisition can be a positive result for shareholders, whereas events including bankruptcy are the opposite. When a stock stops trading, CRSP employs a three-digit delisting code to categorize the type of delisting—100s for actives, 200s for mergers, 300s for exchanges, 400s for liquidations, and 500s for dropped. Following the approach of Demers and Joos (2007), we divide our delisted companies into positive (or survival) events and negative (or failure) events according to the delisting codes. More specifically, firms with delisting codes in the 300s and below are categorized as positive events. Firms with delisting codes in the 400s and 500s are categorized as negative events.<sup>8</sup>

As reported in Table 4, when  $IPOs_{mnc}$  are delisted, it is most often due to a positive event. For example, during the first 36 months of trading, 48 of the 61 (78.7%) cases have delisting codes in the 300s and below and only 13 of the 61 (21.3%) have codes in the 400s and above. In contrast, the reasons for  $IPOs_{dom}$  delistings are not as positive because 107 of the 279 (38.4%) cases are due to unfavorable events. As shown in the table, similar results are obtained when we extend the period of analysis to the first 60 and 120 months post-IPO. Lastly, the far right column of the table presents results from tests of whether the proportions of positive and negative delisting events are equal for our two categories of IPOs. A chi-square test strongly rejects the null hypothesis of equivalence across all three time periods. For example, the chi-square value is 6.364 ( $p = .012$ ) for delistings that occur during the first 36 months. When an internationalized IPO firm is delisted, it is much more likely due to a positive event.

#### 4 | HOLDING PERIOD AND RISK-ADJUSTED PORTFOLIO RETURNS

In Table 5, we provide some initial summary information on the stock return performance of our sample of IPOs. Shown there are raw (non risk-adjusted) holding period returns for equally weighted portfolios during the first 36, 60, and 120 months following each firm's public offering.<sup>9</sup> These total return data show that  $IPOs_{mnc}$ , on average, exhibit higher returns than  $IPOs_{dom}$ . For example, 36 months post-IPO, the average return of  $IPOs_{mnc}$  is 50.7%, whereas it is only 37.0% for

TABLE 5 Holding period returns—total return over number of months indicated

	IPOs <sub>mnc</sub> (n = 326 firms)				IPOs <sub>dom</sub> (n = 1,397 firms)				t-test
	Mean	Std dev	Min	Max	Mean	Std dev	Min	Max	
36 months	0.507	1.570	-0.998	10.137	0.370	2.184	-1.000	34.231	1.31
60 months	0.920	2.871	-0.999	21.411	0.700	5.963	-1.000	190.896	0.98
120 months	0.985	3.108	-0.999	20.997	0.846	4.048	-1.000	64.187	0.68

<sup>8</sup>Most delistings in CRSP occur because of mergers and acquisition (delisting codes 200–299) or bankruptcy (delisting codes 500–599). In addition, our sample does not include any firms with a delisting code in the 100s.

<sup>9</sup>Monthly returns for each stock are collected starting the first month following the month of the IPO. In addition, for each firm, the return includes the delisting return, if applicable.

$IPOs_{dom}$ .<sup>10</sup> Interestingly, the maximum 36-month total return is for a purely domestic IPO.<sup>11</sup> Although these raw return results are interesting, the more critical issue explored next is the *abnormal return* performance of the two groups after controlling for contemporaneous systematic risk factors.

To examine the risk-adjusted abnormal return performance of our  $IPOs_{mnc}$  and  $IPOs_{dom}$ , we perform rolling calendar time Fama and French (1993) estimations over several time intervals using a specification that includes the Carhart (1997) momentum factor. With this approach, each IPO firm enters an equally weighted portfolio in the month following its IPO and remains in the portfolio for the specified time interval. For example, for the 36-month holding period, a stock enters the portfolio at the start of its first post-IPO month and remains in the portfolio for a maximum of 36 months (subsequent or fewer, if the stock is delisted or acquired, etc.). After 36 months, the stock is removed from the portfolio. More specifically, the specification estimated is:

$$R_{pt} = \alpha_p + \beta_1 RMRF_t + \beta_2 HML_t + \beta_3 SMB_t + \beta_4 MOM_t + \varepsilon_t, \quad (1)$$

where  $R_{pt}$  is the equally weighted return for the portfolio minus the risk-free rate during month  $t$ ;  $RMRF_t$  is the return on the market portfolio minus the risk-free rate during month  $t$ ;  $HML_t$  is the return on value portfolios minus the return on growth portfolios during month  $t$ ;  $SMB_t$  is the return on a portfolio of small stocks minus the return on a portfolio of large stocks during month  $t$ ; and,  $MOM_t$  is the return on high momentum portfolios minus the return on low momentum portfolios during month  $t$ .<sup>12</sup>

Results from estimating specification 1 are presented in Table 6.<sup>13</sup> Standard errors are presented below the parameter estimates in parentheses.<sup>14</sup> In the estimations, the main variable of interest is the intercept term, alpha ( $\alpha_p$ ), which represents the risk-adjusted abnormal return for the portfolio.<sup>15</sup> For example, for  $IPOs_{mnc}$  firms over a 60-month holding period, the monthly risk adjusted excess return is 0.008 (0.8%). Of note, all three alphas for the  $IPOs_{mnc}$  portfolio are positive, with the estimates for the 60- and 120-month periods significant at 5%. Consequently, firms with foreign operations earn significantly positive risk-adjusted returns over extended periods following their IPOs. In contrast, however, none of the alphas in the  $IPOs_{dom}$  estimations are statistically significant.<sup>16</sup>

<sup>10</sup>The three t-test statistics in Table 5 indicate no significant difference in the mean returns of the two groups. However, those results should be interpreted with some caution because the distribution of IPOs across months and years is not identical for the two categories of IPOs (i.e., the two groups are not a perfectly matched sample across time) and those raw returns are not adjusted for systematic risk factors. For example, as shown in Table 1, the largest proportion of  $IPOs_{mnc}$  occurred during 1995, whereas for  $IPOs_{dom}$  it was 1996. Consequently, the raw returns for the  $IPOs_{mnc}$  and  $IPOs_{dom}$  over the 36-, 60-, and 120-months post-IPO holding periods are impacted by different contemporaneous stock market returns. Our risk-adjusted abnormal return analysis, described next, controls for this issue.

<sup>11</sup>Yahoo, Inc., generated a 3,423.1% return for its investors.

<sup>12</sup>Factor return values are obtained from Ken French's website at: [http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data\\_library.html](http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html). Further details on how the factors are constructed are also available on his website.

<sup>13</sup>If a company is delisted during the estimation period, based upon the evidence reported in Beaver, McNichols, and Price (2007), we include the delisting return in the delisting month. Beaver et al. (2007) note that the vast majority (79%) of delisting distributions occur in the month of the delisting (not in a later month).

<sup>14</sup>OLS standard errors are presented because a chi-square test, conducted for each of our Fama-French estimations, failed to reject the null hypothesis that the standard errors are homoskedastic.

<sup>15</sup>Alpha represents the portfolio's abnormal (or excess) return—after controlling for systematic risk factors. Note that systematic risks are not diversifiable, and investors expect to earn (require) return for bearing systematic risks (RMRF, HML, SMB, and MOM). In contrast, investors do not need any expected return for unsystematic risk because it is fully diversifiable.

<sup>16</sup>These results are consistent with Jang, Wang, and Zhang's (2017) study that found higher risk-adjusted, monthly returns using a Fama-French three-factor model (that excludes the momentum factor) for global firms relative to domestic firms in a sample of all public U.S. firms over a 1973–2013 period.



**TABLE 6** Fama-French regression results—OLS regression  $R_{pt} = \alpha_p + \beta_1 \text{RMRF}_t + \beta_2 \text{HML}_t + \beta_3 \text{SMB}_t + \beta_4 \text{MOM}_t + \varepsilon_t$ 

	IPOs <sub>mnc</sub> (n = 326 firms)					IPOs <sub>dom</sub> (n = 1,397 firms)						
	Intercept	RMRF	HML	SMB	MOM	Adj R <sup>2</sup>	Intercept	RMRF	HML	SMB	MOM	Adj R <sup>2</sup>
36 months	0.005 (0.004)	1.144*** (0.110)	-0.047** (0.184)	1.217*** (0.137)	-0.026 (0.124)	0.805	-0.001 (0.003)	1.025*** (0.074)	-0.399*** (0.124)	1.103*** (0.092)	-0.110 (0.084)	0.879
60 months	0.008** (0.004)	1.162*** (0.095)	-0.223* (0.130)	1.022*** (0.097)	-0.346*** (0.066)	0.839	0.005 (0.004)	0.939*** (0.090)	-0.243* (0.123)	0.968*** (0.092)	-0.290*** (0.062)	0.821
120 months	0.006** (0.002)	1.212*** (0.063)	-0.042 (0.087)	0.997*** (0.066)	-0.274*** (0.047)	0.861	0.005 (0.004)	1.016*** (0.094)	-0.156 (0.123)	1.099*** (0.097)	-0.334*** (0.114)	0.836

\*, \*\*, \*\*\* = statistically significant at 10%, 5%, and 1%, respectively. Abbreviations represent the following: HML = return on value portfolios minus the return on growth portfolios; MOM = return on high momentum portfolios minus the return on low momentum portfolios; RMRF = return on the market portfolio minus the risk-free rate; SMB = return on a portfolio of small stocks minus the return on a portfolio of large stocks.

It is also worthwhile to provide a brief summary of the other parameter estimates presented in the table. For example, the market betas (on the RMRF factor) for both types of IPO are, as expected, statistically significant, indicating the influence of market risk on portfolio returns. In addition, the negative betas associated with the HML factor indicate that the returns of our IPOs exhibit characteristics similar (as expected) to growth stocks. Furthermore, the positive betas associated with the SMB factor indicate that the stocks contained in the portfolios are predominantly small cap firms. Lastly, the negative betas associated with MOM indicate that the stocks have higher returns when high momentum stocks are not outperforming low momentum stocks. Note that the negative, positive, and negative betas associated with HML, SMB, and MOM, respectively, are all consistent with the results reported by Carter et al. (2011) in their study examining IPOs in general.

## 5 | SENSITIVITY AND ROBUSTNESS TESTS

We next conduct an additional estimation to address potential sample selection bias and endogeneity concerns related to the univariate delisting results presented above.<sup>17</sup> Following Berry and Kaul (2016), we account for the potential endogeneity of the decision to become a multinational firm by using industry value-to-weight statistics as a predictor for the probability that a company goes global.<sup>18</sup> More specifically, for this analysis, we utilize the full information maximum likelihood (FIML) estimation method to simultaneously estimate a structural and a reduced-form model. For the structural model, we use a probit specification and regress the delisting outcome (where delisting outcome equals 1 for a positive or acquisition delisting event and 0 for a negative or bankruptcy delisting event) on an indicator variable for multinationality (where the variable equals 1 for multinational IPO firm and 0 for a domestic IPO firm) and the following accounting variables of the firm: natural log of assets, advertising expenditures as a percentage of sales, and R&D expenditures as a percentage of sales.<sup>19</sup> We

<sup>17</sup>We perform the endogeneity test only with delistings since the abnormal returns from the Fama-French model take into account systematic risk factors such as firm size (i.e., SMB coefficient).

<sup>18</sup>For this analysis, we calculate the average value-to-weight ratio at the three-digit NAICS level for industries during our 1993–1996 sample period. These data are posted at Peter Schott's website: [http://faculty.som.yale.edu/peterschott/sub\\_international.htm](http://faculty.som.yale.edu/peterschott/sub_international.htm). Note that the statistics are available only for manufacturing industries. Therefore, for this analysis, we restrict our sample to firms in three-digit NAICS manufacturing industries with reported value-to-weight statistics.

<sup>19</sup>In their analysis, Berry and Kaul (2016) use lagged values for their independent variables. In our analysis, the accounting variables are from the year of the IPO, and we drop sample observations where the delisting occurred within 12 months of the IPO. Because the 36-month timeframe includes a limited number of observations, we report results only for the 60- and 120-month periods. Our results are similar if we include the dropped observations.

TABLE 7 Full information maximum likelihood simultaneous estimation of structural model and reduced-form model

Variables	60 months	120 months
<i>Structural model</i>		
Intercept	-1.572*** (0.265)	-1.075*** (0.172)
MNC dummy	1.351*** (0.384)	1.444*** (0.209)
Log of assets	0.451*** (0.093)	0.260*** (0.054)
Advertising/sales	-1.891 (2.111)	-0.263 (1.219)
R&D/sales	0.005 (0.008)	0.006 (0.005)
<i>Reduced-form model</i>		
Intercept	-1.008*** (0.128)	-0.906*** (0.090)
Value-to-weight	0.016*** (0.004)	0.012*** (0.003)
<i>Summary statistics</i>		
Log likelihood	-261.06	-499.37
Rho	-0.713	-0.852
Chi-square (rho = 0)	3.14*	7.14***
Observations	249	435

\*, \*\*, \*\*\* = statistically significant at 10%, 5%, and 1%, respectively.

include log of assets in the specification because larger firms may be more likely to experience a positive (rather than negative) delisting event and advertising and R&D variables because firms that invest in intangible assets may be more likely to experience positive delistings.

For the reduced-form model, we use a probit specification and regress the indicator variable for multinationality on the firm's (industry) average value-to-weight statistic.<sup>20</sup> The results of this analysis are presented in Table 7. The structural model results show that after controlling for endogeneity, being a multinational firm is still a positive and significant predictor of a favorable delisting outcome. This finding is consistent with the univariate results presented in Table 4. In addition, firm size (as measured by log of assets) also positively and significantly predicts a favorable delisting event. Neither advertising expenditures as a percentage of sales nor R&D expenditures as a percentage of sales significantly predicts the delisting outcome. The reduced-form model confirms the Berry and Kaul (2016) finding that value-to-weight positively and significantly predicts multinationality. Lastly, the chi-square that rho = 0 rejects the null hypothesis that the endogenous explanatory variable of multinationality is actually exogenous.

As a robustness check for our abnormal returns analysis, we note that Table 3 shows that IPO proceeds for domestic-only IPOs are typically less than the proceeds for the global IPO sample. As a conjecture, it is possible that the SMB factor in the Fama-French specification does not adequately

<sup>20</sup>Tucker (2010) notes that the Heckman inverse Mills ratio approach is not applicable when using probit for the estimation of both models (i.e., the second-stage model uses a discrete, rather than continuous, dependent variable). Instead, FIML estimation is an appropriate method. For our FIML analysis, we utilized the QLIM procedure in SAS. For further details, see: [http://support.sas.com/documentation/cdl/en/etsug/66840/HTML/default/viewer.htm#etsug\\_qlim\\_details24.htm](http://support.sas.com/documentation/cdl/en/etsug/66840/HTML/default/viewer.htm#etsug_qlim_details24.htm).

control for size-related systematic risk of very small (low IPO proceeds) firms. Consequently, to obtain greater homogeneity across the two IPO groups, we restrict our sample by eliminating the bottom 10% (which is below \$6.1 million) of all firms based upon IPO proceeds.<sup>21</sup> The resulting median proceeds for domestic-only and global IPO firms are \$29.8 million and \$38.8 million, respectively. The corresponding 25th percentiles are \$16.2 million and \$22.0 million. The corresponding 75th percentiles are \$49.2 million and \$70.5 million. This reduced subsample contains 1,224 *IPOs<sub>dom</sub>* and 312 *IPOs<sub>mnc</sub>*, and we reestimate our Fama-French specification using this set of firms. The estimation results obtained are quite similar to the results presented in Table 6. More specifically, for the 60- and 120-month holding periods, the abnormal return coefficients for the *IPOs<sub>mnc</sub>* sample are 0.009 and 0.006, respectively. And, both estimates are statistically significant at 5%. For the *IPOs<sub>dom</sub>* sample, the abnormal return coefficient for the 60-month holding period is still 0.005 and not statistically significant. For the 120-month holding period, the coefficient is 0.004 and is (marginally) significant at 10%. In all cases (36-, 60-, and 120-months), the abnormal return coefficient for the *IPOs<sub>dom</sub>* sample is smaller than the corresponding abnormal return coefficient for the *IPOs<sub>mnc</sub>* sample.

In sum, both of the above robustness tests provide results that are consistent with our initial findings that being global leads to improved long-term performance for IPO firms.

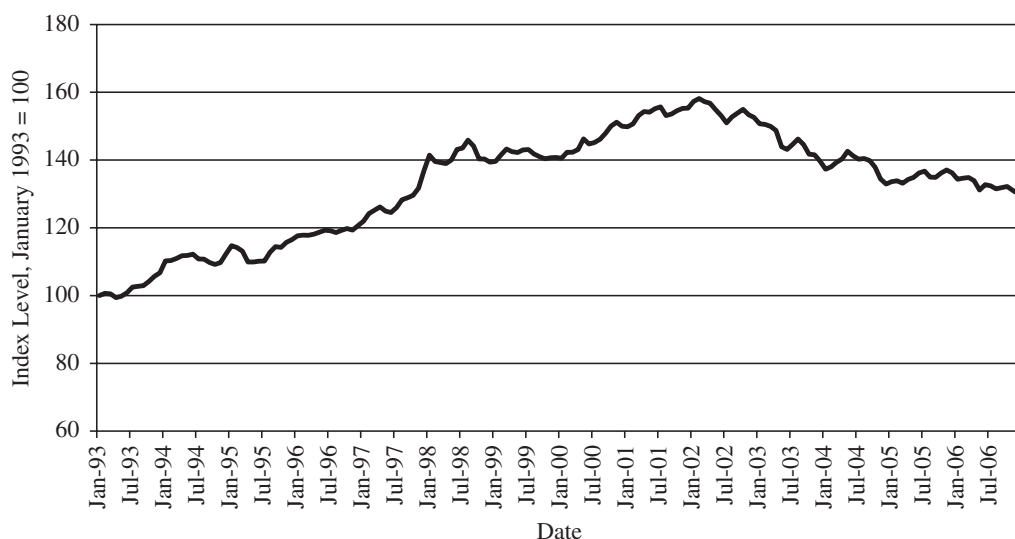
## 6 | MACROECONOMIC AND FOREIGN STOCK MARKET EFFECTS

We perform two final analyses to explore market-wide factors that might explain our stock return results. More specifically, is the superior abnormal return performance of *IPOs<sub>mnc</sub>* due to contemporaneous macroeconomic and/or overall financial market performance? For example, the financial press has noted recently the negative impact of the strong U.S. dollar on the earnings of multinational corporations (Ziobro, Mitchell, & Francis, 2015). Perhaps an opposite effect—a weak U.S. dollar—prevailed during our sample period and contemporaneously boosted the dollar value of earnings from foreign operations and, consequently, the stock price and excess returns of our *IPOs<sub>mnc</sub>*. However, as shown in Figure 1, that is not the case. Instead, during our sample period, the trade weighted value of the U.S. dollar increased generally.<sup>22</sup> For all 36-, 60-, and 120-month periods, the trade weighted value of the dollar was higher at the end of the period than it was at the time of the IPO. Therefore, favorable movements in exchange rates (or a weakening of the dollar) do not explain our results.

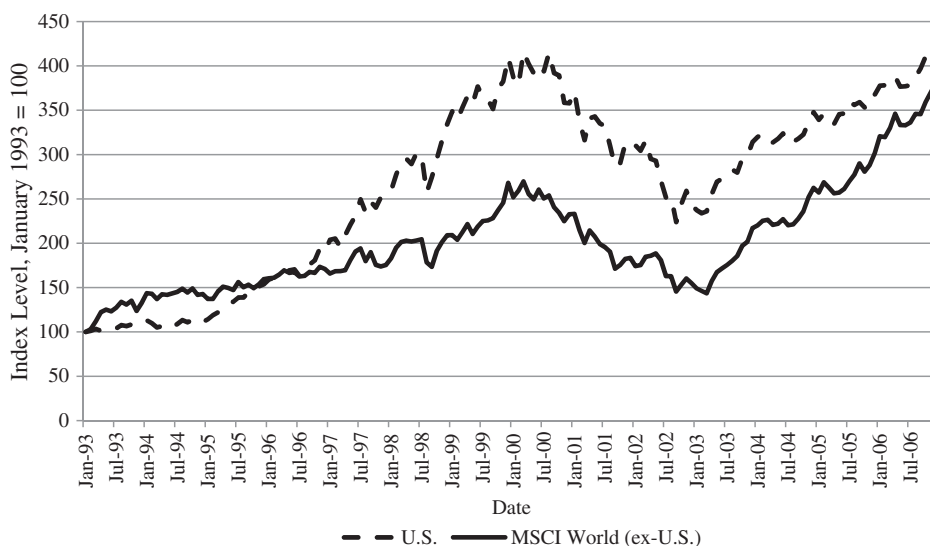
Another possibility is that our *IPOs<sub>mnc</sub>* operated in foreign countries that contemporaneously experienced strong stock market performance, and the stock returns of the *IPOs<sub>mnc</sub>* are correlated with those foreign market returns. To explore this issue, Figure 2 graphs the performance of the U.S. stock market and the Morgan Stanley Capital International (MSCI) World Equity Index (excluding the U.S. market) over the time period January 1993 to December 2006. As the figure shows, the U.S. market actually outperformed the World Equity Index during most of this time period (especially from 1996 and on). Consequently, not only did our sample of *IPOs<sub>mnc</sub>* earn significantly positive excess returns, they attained that performance during a time when both the

<sup>21</sup>IPO proceeds are defined as number of shares offered multiplied by offering price. We could have restricted the sample based upon subsequent year (post-IPO) sales. However, sales are an *ex post* measure that reflects company performance after the IPO. Instead, we believe it is more appropriate to base the restriction on IPO proceeds—which is effectively an *ex ante* measure—and then examine subsequent survivorship and stock performance.

<sup>22</sup>The data used to construct Figure 1 are obtained from the St. Louis Fed at <https://research.stlouisfed.org/fred2/series/TWEXB>.



**FIGURE 1** Trade weighted value of \$US. January 1993 to December 2006



**FIGURE 2** Stock market returns U.S. vs. MSCI world (ex-U.S.). January 1993 to December 2006

U.S. stock market was outperforming other world stock markets and the trade weighted value of the dollar was increasing. These facts make our results especially noteworthy.

## 7 | DISCUSSION AND CONCLUSION

Going global and going public are two of the most important strategic decisions that firms typically face. Prior research has widely examined the relationship between internationalization and performance for established firms and has shown mixed results (Contractor, 2012; Verbeke & Forootan, 2012). But much less attention has focused on how internationalization affects IPO performance,

particularly over the medium and long term. While going global comes with both benefits and costs, for IPO firms that likely face meaningful resource constraints, it also presents a trade-off dilemma (i.e., pursuing international markets at the expense of further developing domestic markets). This study sheds empirical insight into the question of how going global or staying local affects the long-term performance of an IPO. Overall, when compared to domestic-only IPOs, we find that internationalized IPOs experience higher survival rates and, more importantly, if they are delisted, it is significantly more likely to be due to a positive event (e.g., acquisition, rather than bankruptcy). In addition, internationalized IPOs earn positive and statistically significant risk-adjusted excess stock returns over 5- and 10-year investment horizons, whereas domestic-only IPOs generally do not.

Our empirical study has implications for both research and practice. First, we add to the literature on factors affecting IPO survival and abnormal stock returns. For instance, prior studies have shown that founder-CEOs (Fischer & Pollock, 2004), human resource management systems (Welbourne & Andrews, 1996), and venture capitalist backing (Jain & Kini, 2000) improved survival rates of IPOs. In our study, we show that internationalization significantly (and positively) impacts company delisting outcomes. In addition, Carter et al. (2011) find that IPOs, in general, do not generate significantly positive abnormal stock returns during our 1993–1996 sample period. In contrast, however, when we split the IPOs during this time period between those that are globalized versus domestic-only, we reveal that investors earned significantly positive abnormal returns from the internationalized IPOs group. Hence, internationalization is a significant predictor of both long-term survival and risk-adjusted stock return performance.

Second, our results provide insights for investors and managers. Investors may be cautious in investing in IPOs based on the contrasting performance found in prior studies. But we show that investors typically obtain favorable results when they invest in IPOs that have gone global. Furthermore, our results suggest that it could be worthwhile if managers possess a global mind-set or orientation to encourage internationalizing early on in a firm's development (and before pursuing an IPO). Consequently, early-stage investors in a firm, such as venture capitalists, may want to explore the viability of pre-IPO internationalization and may also want to focus on recruiting managers with international experience.

Notwithstanding the contributions, we believe that future research can provide further insights. More specifically, our empirical study does not test the mechanisms that lead to superior performance by internationalized IPOs. There are, however, several potential explanations. For example, prior researchers have noted the importance of flexibility in managing international risk and generating competitive advantage for established multinationals (Kogut, 1989; Miller, 1992). Moreover, operational and financial decisions are often considered separately but, in reality, require coordination to increase IPO success (Babich & Sobel, 2004). Since both operational and financial flexibility are particularly advantageous for IPO firms striving to meet investor expectations for strong growth, we speculate that IPO firms that go global may benefit and, thus, generate better performance for investors relative to IPO firms that stay local.

Operational flexibility permits firms that are global to allocate investments optimally across domestic and international operations (i.e., it provides growth and switching options) in response to changes in factor and product markets, exchange rates, and regulatory barriers (Chang, Kogut, & Yang, 2016; Kogut & Kulatilaka, 1994; Tong & Reuer, 2007). As Tong and Reuer (2007, p. 216) state, "a distinctive advantage of an MNC relative to a purely domestic company lies in the operational flexibility that global operation affords." Financial flexibility permits firms that are global to gain access to financing from foreign sources such as banks and debt markets that may not be available to firms that stay local (Jang, 2017). Firms undertake IPOs primarily to fund growth opportunities (Pagano, Panetta, & Zingales, 1998; Ritter & Welch, 2002), and this additional foreign

financing can be used to invest in not only international, but also domestic, growth opportunities. To test these operational and financial flexibility arguments, future research could investigate changes in investment and production across foreign subsidiaries and level of foreign funding to determine their effects on survival rates and abnormal returns. Similarly, future studies can examine whether operational and financial flexibility allows internationalized IPOs to grow assets, sales, and earnings more quickly than domestic-only IPOs and even industry peers.

Furthermore, our study examines the performance of IPOs that occurred during 4 years and focuses on whether the company was internationalized or purely domestic at the time of the IPO. Future research could examine whether our results persist during other sample periods and whether *post-IPO* internationalization also affects subsequent performance. Another extension would be to examine the distance (e.g., cultural and economic) between the IPO's home market and foreign markets entered and its impact on survival and abnormal returns. Also, this study focuses on U.S. IPOs, and the U.S. presents a relatively large domestic market/economy that newly public firms can potentially exploit. Non-U.S. IPOs in countries with small domestic markets may confront greater incentives to go global and be more influenced by going global. Lastly, future research can examine additional firm-specific attributes, including the international experience of top management and the board of directors, and how that experience impacts the effects of going global on long-term performance.

In conclusion, our study provides empirical evidence that IPOs that go global have better survival rates and generate significantly positive risk-adjusted abnormal returns. That is, internationalization is an important firm characteristic impacting the medium- and long-term performance of IPOs.

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