Growth Capital-backed IPOs

Jay R. Ritter
Warrington College of Business Administration
University of Florida
jay.ritter@warrington.ufl.edu

September 15, 2015

forthcoming, The Financial Review

Abstract

Growth capital investing is the financing of growing businesses that are investing in tangible assets and the acquisition of other companies. Growth capital is common in retailing, restaurant chains, and health care management, and represents 12% of all venture capital (VC)-backed initial public offerings (IPOs). Since 1980, investing in growth capital-backed IPOs has produced mean 3-year style-adjusted buy-and-hold returns of +25.2%, in contrast to style-adjusted returns of approximately zero for other VC-backed and buyout-backed IPOs. One-third of growth capital-backed IPOs are rollups, and these have produced much higher returns for investors than rollups without a financial sponsor.

Keywords: Buyouts, growth capital, growth equity, initial public offerings, long-run performance, reverse LBOs, rollups, venture capital

JEL Codes: G14, G24, G32

Acknowledgements: I want to thank Dan Bradley (the referee), Rob Cousin, Harry DeAngelo, Chris James, Jerry Hoberg, Po-Hsuan Hsu, Marc Lipson, Jim Parrino, and Ivo Welch for useful comments, as well as seminar participants at the Chinese University of Hong Kong, the University of Hong Kong, the University of Maryland, the 2014 Private Equity Research conference, and the 2015 New Trends in Entrepreneurial Finance conference in Trier, Germany. Leming Lin and Diana Shao provided very able research assistance. I want to thank Jennifer Bethel and Laurie Krigman, as well as Junming Hsu, for providing lists of rollup IPOs, and Ninon Sutton for providing a list of IPOs that made acquisitions within a year after the IPO.

Growth Capital-backed IPOs

1. Introduction

Private equity investing is normally divided into two categories, venture capital (VC) and buyout investing, but there is a substantial category of investments that do not fit cleanly into either of these two categories. The early stage investment in Facebook by Accel Partners is easy to classify as a VC investment, and the leveraged buyout in 1988 of tobacco and food company RJR Nabisco by Kohlberg Kravis and Roberts is easy to classify, but what about the minority investment by Bain Capital in big box office supply chain Staples early in its life cycle? What about the investment of Welsh, Carson, Anderson & Stowe and GTCR Golder, Rauner, LLC in Select Medical Corp., where the business plan described in the April, 2001 initial public offering (IPO) prospectus is "we operate specialty acute care hospitals for long term stay patients and outpatient rehabilitation clinics. We began operations in 1997 under the leadership of our current management team and have grown our business through strategic acquisitions and internal development." I classify both Staples and Select Medical Corp. as growth capital-backed.

I define a growth capital-backed IPO on the basis of three criteria: 1) the issuing company has a financial sponsor that provides equity capital and actively invests; 2) the financial sponsor is not necessarily taking a controlling position, unlike a buyout; and 3) the issuer has been investing in tangible assets as a material part of its business and/or making significant acquisitions, unlike pure venture capital. A more detailed discussion is contained in Section 2.

This paper is primarily descriptive, and focuses on the 344 growth capital-backed U.S. IPOs from 1980-2012 that I have identified. The first contribution of this paper is to define and identify growth capital-backed IPOs, and document how large a fraction of the venture capital-backed IPO universe they are. When just two categories of financial sponsors are used, growth capital is a subset of venture capital. Among IPOs from 1980-2012, I classify 12% of VC-backed firms as growth capital-backed, and will refer to the others as "pure" VC-backed. The growth capital-backed IPOs are almost entirely in industries that are normally not associated with venture capital investing. Alternatively stated, investors in VC and growth equity funds have exposure to industries outside of the tech and biotech sectors, and the returns reported for this asset class are not exclusively from those sectors. The conventional view is that venture

capitalists only fund tech and biotech companies. Thus, a contribution of this paper is to show that this assumption is not valid.

The growth capital-backed companies tend to be moderate in size. I would speculate that firms that are financed with growth capital are more likely to go public than sell out in a trade sale, compared to pure VC-backed companies, so this 12% number may be an overestimate of the importance of growth capital to the limited partners (LPs) of VC funds.[1]

The second contribution of this paper is that it documents the long-run returns on financial sponsor-backed IPOs from 1980-2012, and for the three categories of financial sponsor-backed IPOs. I find that growth capital-backed IPOs have had high long-run returns, outperforming both VC-backed and buyout-backed IPOs, as well as outperforming IPOs that did not have a financial sponsor. To be specific, the average growth capital-backed IPO produced a style-adjusted 3-year buy-and-hold return (BHAR) of 25.2%, measured from the closing market price on the day of the IPO until the earlier of its third year anniversary, delisting date, or December 31, 2014. For other IPOs, the average style-adjusted 3-year BHAR is -2.6% for VC-backed IPOs, 0.7% for buyout-backed IPOs, and -14.2% for IPOs without a financial sponsor. For style adjustments, I control for both size (market capitalization) and the book-to-market ratio. Ideally, I would also like to analyze the returns earned by LPs on growth capital investing. Unfortunately, many funds invest in two out of the three categories of private equity, making it difficult to clearly identify the realized returns without information at the transaction level.

In addition to reporting buy-and-hold returns, I also report the results from Fama-French (1993) 3-factor time-series regressions. In these regressions, the abnormal returns on portfolios of VC-, growth capital-, and buyout-backed IPOs are economically and statistically indistinguishable from zero, while an equally weighted portfolio of IPOs without a financial sponsor underperforms by 40 basis points per month. The difference in results for the growth capital-backed IPOs between the high style-adjusted BHARs and insignificantly small 3-factor model alphas is primarily attributable to the different portfolio strategies that are implicit. With equally weighted buy-and-hold returns, each IPO is being weighted equally and not rebalanced as gains are compounded, whereas the time-series regression results equally weight each calendar month and rebalance each portfolio on a monthly basis.

[1] On the other hand, I would conjecture that growth capital investing is less risky than the financing of startups, where many investments are written off with no exit via an IPO or a trade sale. I do not know which of these offsetting effects dominates.

The third contribution of this paper is to report the nonstationarity of the outperformance of VC-backed IPOs. When subperiods are analyzed, growth capital-backed IPOs have outperformed the market in all subperiods when 3-year buy-and-hold returns are used. The outperformance of VC-backed IPOs that has been documented by other authors for the 1980s and 1990s, however, is not present for VC-backed IPOs from 1999-2000 or 2001-2012. Indeed, VC-backed IPOs from 1999-2012 have done substantially worse than IPOs with no financial sponsor, reversing the pattern documented by Brav and Gompers (1997) and others using IPOs from earlier periods. These findings, however, are sensitive to the portfolio strategy that is used. In Fama-French 3-factor calendar time-series regressions, most categories of IPOs, including VC-backed deals, have produced higher alphas (albeit without statistical reliability) during the 1999-2013 period than they did from 1983-1998.

The fourth contribution of the paper is to report the long-run returns on a large sample of rollup IPOs. Rollups are companies whose growth is primarily accomplished by acquisitions within an industry, rather than through internal (organic) growth. Not all rollups have a financial sponsor. I classify 54% of rollup IPOs as financial sponsor-backed. Of the growth capital-backed IPOs from 1980-2012 analyzed here, one-third are classified as rollups. Thus, there is an overlap between rollup IPOs and growth capital-backed IPOs.

For rollup IPOs, those without a financial sponsor have an average style-adjusted 3-year BHAR of -24.0%, whereas the average for those with a financial sponsor is +27.4%. The average style-adjusted 3-year BHR of 3.8% is in contrast to the findings of prior authors, who report much worse average long-run performance for rollup IPOs.

2. What Are Growth Capital-Backed IPOs?

In the introduction, a very cursory definition of what qualifies an IPO as growth capital-backed was given. This section discusses the nuances.

The *first criterion* that qualifies a company as growth capital-backed is that the issuing company must have a financial sponsor among its pre-IPO shareholders. A financial sponsor is an intermediary that provides equity capital and actively invests. Active investment involves providing money that is bundled with advice or control (as measured by a seat on the board of directors), with the financial sponsor frequently taking convertible preferred shares that have a mandatory conversion feature in which the shares convert into common equity conditional on an

IPO or sale occurring.[2] The financial intermediary is typically organized as a partnership with general partners providing "sweat equity" and some capital, and limited partners (LPs) supplying capital.[3] The financial sponsor requirement does not distinguish between venture capital, growth capital, and buyout investors.

The *second criterion* is that the financial sponsor is not necessarily taking a controlling position, as with a buyout, and that equity capital is being invested in the firm. In a buyout, a financial sponsor purchases shares from existing owners. With venture capital and growth capital investing, the financial sponsor purchases shares issued by the company, with the proceeds being used to fund a company's growth. Although the financial sponsors may indeed wind up with a controlling position, this occurs as a result of the dilution of the ownership percentage of management and other investors, rather than as a goal in itself.

The *third criterion* is that a material fraction of the issuing company's growth is coming from the addition of tangible assets or through acquisitions. Thus, financial sponsors that fund technology and biotechnology companies are VC investors. In contrast, financial sponsors that fund the construction of new restaurants and retail stores or the purchase of small companies in a fragmented industry are growth capital investors. In addition to the equity capital provided by growth capital investors, many growth capital-backed companies also use debt financing. In contrast, VC-backed companies, with a lack of tangible assets, frequently are all-equity. This asset tangibility and/or acquisition criterion distinguishes venture capital from growth capital. Investing in distressed companies is not growth capital investing because the funds are not financing growth.

Some deals are difficult to categorize as growth capital because, although the money may be used to finance tangible assets, the viability of the enterprise is highly uncertain. All airlines and restaurant chains with a financial sponsor are classified as growth capital-backed or buyout-backed, no matter how risky or unprofitable, because of the tangibility of assets. All software firms, unless they are rollups (sometimes called buildups), are classified as VC-backed because of the paucity of tangible assets. Perhaps most subjectively, telecom companies (SIC=4812 and 4813) with a financial sponsor are usually classified as VC-backed unless they are buyout-

[2] See Dudley and James (2015) for an analysis of the use of mandatory convertible preferred stock in pre-IPO companies.

[3] Corporate strategic investors, insurance companies, and angel investors are not classified as either VC or growth capital investors because they are not intermediaries.

backed or a rollup, even though they are usually investing in tangible assets. As with computer hardware firms financed by VCs, many telecom companies incur large losses early in their history, and these losses must be financed. Four examples of telecom IPOs are included in Panel C of Appendix Table A1.

Growth capital investing is correlated with the industry that the company operates in: funding retail operations or the consolidation of funeral homes, dental offices, or medical offices is generally growth capital investing, as is hospital operation. The motivation for growth capital investing is the same as for venture capital financing: the general partners are trying to create value by financing positive net present value investment opportunities, offering advice, and in some cases taking control through seats on the board of directors, and then exiting either via an IPO or a trade sale.

In general, I do not classify mezzanine financing as growth capital, although mezzanine financing is an alternative type of growth capital financing. Mezzanine financing is the term used to describe financing that is done in anticipation of an IPO or other exit in the near future. In recent years, the preferred terminology has become "growth equity" investing.[4] In other words, there are two definitions of growth capital: 1) funding tangible assets and/or acquisitions, and 2) funding growth for companies, frequently in the technology sector, that are beyond the start-up stage. Sometimes this second type of growth capital is pre-IPO bridge financing. Both definitions of growth capital investing share the feature that the financing usually focuses on allowing a company to expand its sales without needing to worry about short-term profitability. This paper is only about the first type of growth capital, the financing of tangible assets and/or acquisitions, although there is clearly some overlap in that a growing company may make acquisitions or invest in tangible assets as it matures.

Growth capital-backed companies would be easy to identify if there was a specialist category of financial intermediary that made only growth capital investments, but did not invest in startup biotech or technology companies or in buyouts. Many financial sponsors, however,

[4] Page 85 of the NVCA 2014 Yearbook states "The definition of a growth equity company: Company's revenues are growing rapidly. Company is cash flow positive, profitable or approaching profitability. Company is often founder-owned and/or managed. Investor is agnostic about taking a controlling position and usually purchases minority ownership position. Industry investment mix is similar to that of earlier stage venture capital investors. Capital is used for company needs or shareholder liquidity. Additional financing rounds are not usually expected until exit. Investments are unlevered or use light leverage at purchase. Investment returns are primarily a function of growth, not leverage." Although the NVCA Yearbook terms this a definition, parts of it seem to be more a description of common characteristics.

invest in two or all three of these categories. For example, the Warburg Pincus website states "The firm emphasizes growth investing and has successfully built companies at all stages, from conceiving and creating venture capital opportunities, to providing capital to meet the needs of existing businesses, to investing in later-stage buyout transactions and special situations with unique characteristics."

Metrick and Yasuda (2011, 2nd edition, page 3) define a venture capitalist as

1. A VC is a financial intermediary, meaning that it takes investors' capital and invests it directly in portfolio companies.
2. A VC invests only in private companies.
3. A VC takes an active role in monitoring and helping the companies in its portfolio.
4. A VC's primary goal is to maximize the financial return by exiting through a sale or an IPO.
5. A VC invests to fund the internal growth of companies.

The Metrick and Yasuda characterization is fairly broad, with the first four criteria applying to both buyouts and early stage investing. The fifth criterion would seem to rule out investing in rollups or funding acquisitions. Furthermore, if taken literally, any portfolio company that made an acquisition would not qualify as VC-backed, and any VC fund that made a PIPE (private investment in public equity) transaction, including buying shares in the IPO of a portfolio company at the offer price, would not qualify as a VC fund.[5]

3. Data

This paper uses 7,697 U.S. IPOs from 1980-2012 after excluding those with an offer price below $5.00 per share, unit offers, small best efforts offers, American Depositary Receipts (ADRs), closed-end funds, natural resource limited partnerships, special purpose acquisition companies (SPACs), real estate investment trusts (REITs), bank and S&L IPOs, and firms not listed on the Center for Research in Security Prices (CRSP) returns files within six months of the IPO, thus restricting the sample to NYSE-, Nasdaq-, and Amex- (now NYSE MKT) listed stocks. The primary data source is the Thomson Reuters (also known as Securities Data

[5] Furthermore, investments in which a VC fund purchases existing shares from a prior investor would not be considered venture capital nor growth capital. My impression is that these secondary transactions are not a large part of any VC fund's portfolio. Furthermore, from the IPO prospectus it is usually not possible to identify whether a shareholder purchased stock directly from the company or not.

Company) new issues database. Missing and incorrect numbers are replaced with numbers from direct inspection of prospectuses on EDGAR, information from Dealogic for IPOs after 1989, Howard and Co.'s *Going Public: The IPO Reporter* from 1980-1985, the Howard-Huxster collection of IPO prospectuses for 1975-1996, and other sources.[6]

Table 1 reports the number of IPOs with a financial sponsor by subperiod. Financial sponsor-backed IPOs are further categorized by the type of financial sponsor: venture capital, growth capital, or buyout firm investor. Figure 1 shows the annual numbers, with the year-by-year numbers reported on my website's IPO Data page (https://site.warrington.ufl.edu/ritter/ipo-data/). Corporate VC-backed IPOs are not classified as financial sponsored.[7]

To identify growth capital-backed IPOs, I inspected the prospectuses of more than 800 IPOs, focusing on companies in the health care management (SIC 8011-8099), restaurant (5812), retailing, non-tech manufacturing, and waste management (4953) industries. For IPOs from June 1996 and later, the prospectuses were accessed on the SEC's EDGAR website. For IPOs from 1980-May 1996, the printed prospectuses in the Howard-Huxster collection were accessed.

Inspection of Figure 1 shows that the highest number of growth capital-backed IPOs occurred in 1995-1997. Although these years had a high level of IPO activity in general, these years also had a large number of rollup IPOs, as documented by Brown, Dittmar, and Servaes (2005).

Appendix Table A1gives some examples of growth capital-backed IPOs, as well as some examples of other IPOs that are difficult to classify. The names of the financial sponsors are listed for eight growth capital-backed companies in Panels A and C. On my website is a listing of the 344 growth capital-backed IPOs identified in Table 1, as well as a listing of the 264 rollup IPOs. Examples of other firms that were backed by growth capital, but did not go public, can be found on various websites. For example, the private equity firm TA Associates does a lot of growth capital investing, and has a listing on its website of all of the firms that it has invested in

[6] For almost all companies that went public in the U.S. between 1975 and 1996, Graeme Howard and Todd Huxster collected the prospectuses and, in 2008, gave them to me, and I keep these 5,000+ prospectuses in storage boxes in my garage. I have used these prospectuses to fill in missing information and correct suspicious information in the Thomson Reuters new issues dataset. A few remaining observations from the 1980s with missing information were filled in using the microfiche collection at Stanford GSB's library, resulting in 100% coverage of founding dates, pre-IPO sales, assets, earnings, etc.

[7] Somewhat more problematic is how to classify investments made by financial institutions such as the investment of Jefferies & Co in the February 5, 1999 IPO of Vialog (a pre-IPO 7.6% equity stake). I have chosen to classify this IPO as neither growth capital- nor VC -backed, although one could arguably classify it as growth capital-backed if one is willing to assume that Jefferies was an active investor.

since 1987. Although it is changing now, a lot of venture capital investing in China has been growth capital investing, rather than financing technology startups.

Table 2 reports descriptive statistics for 344 growth capital-backed IPOs from 1980-2012. Not surprisingly, VC-backed IPOs tend to be young and have low sales, and are profitable only 41% of the time. Zero percent of VC-backed IPOs are rollups, since a strategy of growth through acquisitions is a criterion for classifying a firm as growth capital-backed. Growth capital-backed IPOs are profitable 68% of the time. Most growth capital-backed IPOs are larger, as measured by sales and assets, than the median IPO, but not as large as the typical buyout-backed IPO.[8]

4. Short-run and Long-run Returns on IPOs

4.1 Returns on financial sponsor-backed IPOs

Table 3 reports the first-day and long-run returns on IPOs from 1980-2012. The top three rows of Panel A report the first-day and long-run returns for the three categories of VC-, growth capital-, and buyout-backed IPOs. In all of the tables, unless otherwise noted, VC-backed IPOs do not include growth capital-backed IPOs. This is in contrast to other papers that use just two categories of financial sponsor and include growth capital-backed as VC-backed IPOs. The bottom row of Panel A reports that the average first-day return for the 7,697 sample IPOs is 17.9%. Inspection of Panel A shows that the average first-day return of 13.7% on growth capital-backed IPOs is similar to the average of 13.5% on IPOs without a financial sponsor, but is substantially lower than the average of 29.4% on VC-backed IPOs, and higher than the average of 8.9% on buyout-backed IPOs. As shown below in Table 5, the difference in the average first-day return on growth capital-backed vs VC-backed IPOs is largely attributable to the effect of the internet bubble of 1999-2000 on the overall averages.

In an informationally efficient market, if abnormal returns are measured correctly, there should be on average zero long-run abnormal performance. In any given sample, actual abnormal performance may be positive or negative due to random factors.

The bottom row of Panel A of Table 3 reports that the average 3-year buy-and-hold abnormal return (BHR) is 22.3% for the 7,697 sample IPOs from 1980-2012. Buy-and-hold

[8] In general, sales and assets are measured using pro forma numbers, as reported in the prospectus. If a company has merged with another company in the 12 months prior to the IPO, or if there is a merger scheduled to coincide with the IPO, pro forma numbers are created measuring what the sales and earnings would have been if the merger had occurred more than 12 months earlier. In other words, the pro forma numbers reflect what the combined company would have looked like.

returns are measured from the first closing market price to the earlier of the third year anniversary, the delisting date, or Dec. 31, 2014. Consistent with the findings in other studies, the equally weighted average market-adjusted 3-year BHAR is a negative -18.8%. The T-year buy-and-hold abnormal return $BHAR_{i,T}$ for stock i over horizon T, when market-adjusted returns are calculated, before multiplying by 100 to convert it to a percentage, is

$$BHAR_{i,T} = \prod_{t=1}^{\min(T,\,\text{delist})} (1+R_{i,t}) - \prod_{t=1}^{\min(T,\,\text{delist})} (1+R_{M,t}), \qquad (1)$$

where $R_{i,t}$ is the net return in period t on stock i, and $R_{M,t}$ is the net return in period t on the CRSP value-weighted market. Style-adjusted returns are computed for each IPO by matching the IPO with the company in the same book-to-market decile that has the closest market capitalization, rather than using a market index.[9] The matching firms are chosen from the merged CRSP-Compustat universe of operating companies that have been listed on CRSP for at least five years, and that have not conducted a seasoned equity offering during the prior five years.[10] IPOs have historically overrepresented small growth firms, which have generally had low returns. Thus, it is not surprising that the average style-adjusted 3-year BHAR is not as negative, at -6.9%.

The 2,426 VC-backed IPOs have an average style-adjusted 3-year BHAR of -2.6%, which is probably not significantly different than zero at conventional levels, although I do not conduct any formal statistical tests using BHRs or BHARss. The 344 growth capital-backed IPOs, in contrast, have an average style-adjusted 3-year BHAR of +25.2%. The 987 buyout-backed IPOs have an average style-adjusted 3-year BHAR of +0.7%, which is also unlikely to be significantly different from zero. When all 3,757 financial sponsor-backed IPOs are aggregated, the average style-adjusted 3-year BHAR is essentially zero, at 0.8%. In contrast, the 3,940 nonfinancial sponsor-backed IPOs have an average style-adjusted 3-year BHAR of -14.2%.

[9] For dual-class firms, market value is computed by summing the market values of all share classes. If a share class is not publicly traded, it is assumed that the price per share is the same as for the publicly traded share class. If a matching firm is delisted before an IPO during the 3-year holding period, at the time of delisting it is replaced on a point-forward basis with the next best matching firm, based on the ranking at the time of the IPO. For example, if a matching firm has a -20% return before delisting and is then replaced with a second matching firm that has a subsequent return of +15.0%, the combined matching firm return would be 100%×[0.8×1.15 – 1] = -8.0%.

[10] The requirement for a 5-year CRSP listing is important for IPOs. On average, CRSP reports roughly 200 new listings per year that do not show up in the standard databases of IPOs. Many of these are in fact IPOs of banks that converted from mutual to stock companies or are small companies that moved from the pink sheets to Nasdaq. These non-IPO new listings have very low average returns. If they are not screened out by the 5-year CRSP-listing requirement, many of them will be chosen as matching firms for small growth company IPOs, and their low returns will make the low returns on small growth company IPOs appear to be "normal." Brav and Gompers (1997), who do not impose this screen, report abnormal performance on IPOs in their Tables 1 and 2 that is about 100 basis points per year less negative than if the screen is imposed.

Figure 2 illustrates the numbers reported in Table 3, showing the average 3-year BHRs on IPOs, categorized by financial sponsor, and the average 3-year BHRs for the style-matched firms. The difference between them is the style-adjusted return that is reported in Table 3.

The high average 3-year buy-and-hold return for growth capital-backed IPOs is partly attributable, in a mechanical sense, to the six IPOs with the highest BHRs in this subsample: The March 28, 1984 IPO of restaurant chain This Can't Be Yogurt (4,076.6%); the April 10, 1997 IPO of middleware software developer and distributor BEA Systems (2,562.2%); the November 15, 1989 IPO of original equipment manufacturer Solectron (944.0%); the April 24, 1996 IPO of outdoor advertising (billboards) operator Outdoor Systems (935.1%); the February 9, 1983 IPO of health care provider United States Health Care (636.6%); and the September 19, 1989 IPO of health care provider Vencor (635.8%). Of IPOs from 1980-2012 with 3-year BHRs in excess of 1,000%, 17 are VC-backed (out of 2,426), 2 are growth capital-backed (out of 344), 0 are buyout-backed (out of 987), and 13 have no financial sponsor (out of 3,940). The median 3-year BHRs are -40.3% for VC-backed IPOs, +1.3% for growth capital-backed IPOs, +7.9% for buyout-backed IPOs, -25.0% for those without a financial sponsor, and -23.7% for all IPOs. All buy-and-hold return distributions are right-skewed, with the skewness greater when there are small and young firms involved. Thus, it is not surprising that buyout-backed IPOs have the smallest difference between the mean and median 3-year BHRs.

Panel B of Table 3 reports the long-run returns on VC-backed IPOs conditional on whether growth capital-backed IPOs are included in the VC-backed classification or not. Inspection of Panel B shows that the high long-run returns on growth capital-backed IPOs have a material effect on raising the long-run average return for VC-backed IPOs, and increasing the spread between VC-backed vs nonVC-backed IPOs. Specifically, when growth capital-backed IPOs are included in the VC-backed category, VC-backed IPOs outperform other IPOs by 12.1% (style-adjusted 3-year BHARs of 0.9% versus -11.2%), but when growth capital-backed IPOs are not included as VC-backed, the spread narrows to only 6.3% (-2.6% vs. -8.9%).

This is not the first paper to document the long-run returns on IPOs backed by financial sponsors. Brav and Gompers (1997) report that an equally weighted portfolio of VC-backed IPOs from 1975-1992 has a Fama-French 3-factor regression intercept of approximately zero, whereas the portfolio of nonVC-backed IPOs underperforms by 52 basis points (bp) per month. Chan, Cooney, Kim, and Singh (2008) report the long-run returns on VC-backed IPOs from

1980 to 2000. They report Fama-French-Carhart 4-factor regression intercepts of +45 bp per month on VC-backed IPOs and -37 bp per month on other IPOs, after excluding reverse LBOs and spinoffs. Krishnan, Ivanov, Masulis, and Singh (2011) report Fama-French-Carhart 4-factor intercepts of +85 basis points per month on VC-backed IPOs and -90 bp per month on nonVC-backed IPOs from 1996-2002. All three studies include growth capital-backed IPOs in the universe of VC-backed IPOs.

Cao and Lerner (2009, Table 6) report the long-run returns on 437 buyout-backed IPOs from 1981-2003. They report 3-year raw and market-adjusted BHRs of, respectively, 42.2% and 7.3%. Cao (2011, Table 4, Panel D and 2013, Table 18.4, Panel D) reports 3-year raw and market-adjusted BHRs of, respectively, 43.4% and 13.7% for 594 reverse LBO IPOs from 1981-2006. Tables 3-5 of this paper, which use a slightly longer sample period and a slightly broader definition of what constitutes a buyout-backed IPO, show long-run abnormal performance closer to zero for buyout-backed IPOs than these prior studies.

The patterns that have been documented for financial sponsored-backed IPOs are not completely independent of other patterns. For instance, IPOs backed by a financial sponsor are more likely to use a high-prestige underwriter, as shown in Table 4. Table 4 confirms the results originally reported by Carter, Dark, and Singh (1998) and confirmed by Chan, Cooney, Kim, and Singh (2008) that IPOs with a prestigious underwriter have higher long-run abnormal returns. Table 4 also shows that the higher returns on financial sponsor-backed IPOs are not merely due to the correlation with underwriter prestige. In other words, there is an independent effect of financial sponsorship. Indeed, the average 3-year BHR of 65.6% for the 70% of growth capital-backed IPOs using a top tier underwriter is only slightly higher than the unconditional average of 61.2% reported in Table 3.

4.2 The reversal of the outperformance of VC-backed IPOs

Table 5 splits the sample into the periods before, during, and after the internet bubble of 1999-2000. Figure 3 illustrates the Table 5 results graphically. Panel A shows that all three categories of financial sponsor-backed IPOs from 1980-1998 had positive average style-adjusted 3-year BHARs, and panels B and C show that all three categories of IPOs from 1999-2000 and 2001-2012 had negative average style-adjusted 3-year BHARs. In all three subperiods, however, the growth capital-backed IPOs beat the market. Specifically, in 2001-2012, the average raw 3-year BHR on growth capital-backed IPOs was 45.6%, beating the market by 24.0% but

underperforming style-matched firms by -11.4%. The poor style-matched performance is largely attributable to a small sample size (59 IPOs) and the luck of three matching firms having unusually high BHRs of, respectively, 745.8%, 446.2%, and 330.8%. In both of the first two subperiods, the IPOs without financial sponsor-backing had negative average style-adjusted 3-year BHARs, but for IPOs from 2001-2012, this number changed to a slightly positive +2.9%. A possible reason for the change is the lower fraction of small company IPOs, where underperformance has historically been concentrated (see Table 7 of Gao, Ritter, and Zhu, 2013).

Inspection of the buy-and-hold returns in Table 5 shows that VC-backed IPOs from 1980-1998 did well, but those from the internet bubble years did very poorly, and this underperformance has continued since then as well. Cao, Jiang, and Ritter (2014), using a sample of 2,254 VC-backed IPOs from 1981-2006 that excludes growth capital-backed IPOs, also report that the long-run outperformance of VC-backed IPOs has reversed for cohorts from 1999 and later. Thus, the pattern of VC-backed IPOs outperforming other IPOs, documented by Brav and Gompers (1997), Chan et al (2008), and Krishnan et al (2011), has subsequently reversed when buy-and-hold returns are used.

4.3 Time-series regression results

Tables 3-5 report average style-adjusted 3-year BHRs, but the tables do not report any measures of statistical significance. In Table 6, I report the results of Fama-French 3-factor model time-series regressions, with t-statistics in parentheses. Using percentage monthly excess returns as the dependent variable, for equally weighted and value-weighted portfolios of IPOs from the prior three years, the regression intercepts are insignificantly different from zero for VC-backed, growth capital-backed, and buyout-backed IPOs. In these time-series regressions, each of the 372 calendar months from January 1983 until December 2013 is weighted equally. For equally weighted and value-weighted portfolios of IPOs with no financial sponsor, the intercepts are, respectively, -40 basis points per month (t-stat of -2.14) and -29 basis points per month (t-stat of -1.75). On an annualized basis, the IPOs with no financial sponsor underperform by 4.8% per year on an equally weighted basis and by 3.5% per year on a value-weighted basis. The factor loadings (slope coefficients) are in line with expectations and are consistent with other studies: for instance, the returns on VC-backed IPOs covary negatively with the value minus growth factor (HML). It is worth noting that the factor loadings for HML on the growth capital-backed IPOs are much closer to those on buyout-backed IPOs than VC-backed IPOs.

In Table 3, where style-adjusted 3-year BHRs are used, there is economically important positive abnormal performance for the growth capital-backed IPOs, but this becomes insignificantly positive in Table 6 when Fama-French 3-factor regression intercepts are used as the measure of abnormal performance, with alphas of only 5 and 7 basis points per month for, respectively, equally weighted and value-weighted portfolios of recent IPOs. There are at least three reasons for the difference in results using the two different methodologies.

First, because of the factor contamination problem discussed in Loughran and Ritter (2000), the intercepts are biased towards zero. The small and growth portfolios are more likely to have recent IPOs in them than the big and value portfolios, so SMB (small minus big) will covary positively with the returns on IPOs, and HML will covary negatively. When IPOs underperform, therefore, the SMB factor return will be low and the HML factor return will be high. Because some of the underperformance of a portfolio of IPOs will be attributed to the factor returns, the alpha in a Fama-French 3-factor time series regression will be biased towards zero due to this factor contamination.

Second, the difference in abnormal performance is partly due to the fact that the Fama-French time series regression weights each month equally, whether the growth capital portfolio has four IPOs in it (early 2011) or more than 90 IPOs in it (late 1997 and early 1998). In other words, whether one weights each observation equally or weights each calendar month equally affects the estimate of abnormal performance. If there is worse performance after high volume, as has been documented empirically by Loughran and Ritter (2000, Table 5) and is predicted theoretically by Schultz (2003), a time-series regression will fail to capture this covariance.

Third, the positive difference in abnormal performance for growth capital-backed IPOs using style-adjusted 3-year BHARs is partly due to very high compounded returns on a few big winners among the growth capital-backed IPOs. Although it is easier to calculate statistical significance for 3-factor time-series regression coefficients than for buy-and-hold abnormal returns, it is not clear which procedure corresponds to a more realistic portfolio strategy.[11] Average 3-year BHRs implicitly assume investing an equal amount in every IPO with no rebalancing for the next three years. Three-factor regression alphas implicitly assume investing an equal amount every calendar month, irrespective of how the portfolio is weighted or how

[11] Barber, Lyon, and Tsai (1999) and Brav (2000) present methodologies for computing significance levels for buy-and-hold returns that are clustered by industry and time, and that have right-skewed distributions. The growth capital and venture capital samples have extreme clustering by industry.

many stocks are in it. For the equally weighted 3-factor regressions, the portfolio is rebalanced every month to equal weights, with net selling of prior winners. Thus, as discussed in Loughran and Ritter (2000), neither procedure for measuring returns is right or wrong. Instead, they reflect different portfolio strategies.

In Table 7, a dummy variable for the January 1999-December 2013 period is added to the 3-factor time-series regressions. In other words, the Table 7 specification is identical to the Table 6 specification except that the intercept is allowed to be different from January 1983-December 1998 than from January 1999-December 2013. The sum of the alpha and the dummy variable coefficient represents the alpha during the second subperiod.

A comparison of the alphas in Tables 6 and 7 shows that, with the exception of buyout-backed IPOs, the alphas become more negative in the first subperiod, and are higher in the second subperiod. In general, the results are not consistent with the conclusions from the style-adjusted buy-and-hold returns reported in Tables 3 and 4. For the VC-backed IPOs, the high market beta attributes much of the runup of tech stocks in 1996-1999 and their collapse in 2000-2002 to market movements. Indeed, as first shown in Ritter and Welch (2002, Table V), Fama-French 3-factor regressions with IPO portfolio returns as the dependent variable have the bizarre result of showing positive alphas for internet IPOs, many of which were VC-backed, during the collapse of the internet bubble period, partly because this period has a high factor loading on the market excess return ($r_{mt} - r_{ft}$) and a highly negative factor loading on the value minus growth factor HML. In Tables 5 and 6, for VC-backed IPOs, the factor loadings (slope coefficients) on the market return are approximately 1.3 for the equally weighted regressions and 1.5 for the value weighted regressions (betas above 1), and approximately +1.0 on SMB and -1.1 on HML. Thus, a value weighted portfolio that had a return of -30% in 2002, when the market excess return was -22.8%, SMB was +3.6%, HML was +10.5%, and the risk-free rate was +1.65% (annual factor returns are from Ken French's web site), would have a positive alpha of +10.5% for the year, computed as (-30%-1.65%) – (1.5×-22.8%) – (1.0×3.6%) – (-1.1×10.5%) = 10.5%!

5. Returns on Rollup IPOs

Some companies are created to acquire firms in a fragmented industry, and are known as rollups. Other rollups involve an existing firm that goes on an acquisition binge within its industry. In general, I have classified an IPO as a rollup if the intended use of proceeds, as stated

in the prospectus, 1) suggests that the company plans to make multiple acquisitions in one industry, 2) that this is an important part of its business strategy, and 3) that recent and planned acquisitions will substantially expand the company's sales in percentage terms. Frequently, references to a "fragmented" industry are included in the prospectus of a rollup IPO. A large company that is planning on making a few acquisitions that will modestly expand its size, a company that is making one large acquisition, or a company that has made acquisitions but is not committed to making additional acquisitions, are not classified as rollups. In Appendix Table A1, I have classified four of the12 examples in Panels A and B as rollups. The sample of 264 rollup IPOs can be downloaded from my website.

As mentioned previously, the average abnormal long-run return should be zero in an informationally efficient market. If events (such as going public) are the outcome of endogenous decisions, however, and a sample is drawn from a nonstationary series, the average abnormal performance may have a negative expected value, as posited by Schultz (2003). His logic is that as long as long-run abnormal returns are positive, more and more companies are likely to undertake an action. Once performance becomes negative, however, volume is likely to dry up. A researcher, when conducting a study in which each observation is weighted equally, would then find a small number of observations with subsequent positive abnormal performance, and a large number of observations at the peak with subsequent negative abnormal performance, resulting in an equally weighted average that is negative.

Schultz focuses on U.S. IPOs in his article, where the nonstationarity assumption is unlikely to hold when a 33-year sample period is being used. For example, as shown in Table 1 of this paper, 1996 had the most IPOs of any year, whereas Schultz assumes that positive abnormal returns on technology stock IPOs in the late 1990s should have resulted in an explosion of IPO activity in 1997-2000 instead of the rather average level of activity that actually occurred for these years. When a particular type of IPO, such as rollups, is being studied, however, the Schultz (2003) critique may have merit.

Among the 264 rollup IPOs during 1980-2012, Table 8 shows that in spite of the Schultz critique, the average style-adjusted 3-year BHAR is +3.8%. The table also shows that rollup IPOs have produced much higher long-run returns for investors if they have had a financial sponsor. The average style-adjusted 3-year BHAR for the rollup IPOs with a financial sponsor is 27.4%, as contrasted with -24.0% for those rollups without a financial sponsor.

The positive average style-adjusted 3-year BHAR of 3.8% on rollup IPOs is inconsistent with the results in Brown, Dittmar, and Servaes (2005, Table 6), who report negative average raw long-run returns and very negative market-adjusted long-run returns for their sample of 47 rollup IPOs from 1994-1998. They use a more restrictive definition of rollups, defining a rollup IPO as one in which "small, private firms merge into a shell company, which goes public at the same time." This definition largely eliminates IPOs with a financial sponsor, and only 5 out of their 47 sample IPOs (11%) have a financial sponsor, unlike the 143 out of 264 in my sample (54%). As shown in Table 8, rollups without a financial sponsor have delivered much lower returns to public market investors than rollups with a financial sponsor. Thus, much of the difference between the long-run performance results in their paper versus this paper is due to the different definition of what constitutes a rollup IPO.

Bethel and Krigman (2005, Table 2) use a sample of 185 rollup IPOs from 1991-1999 and report an average 2-year BHR of -26.9% and an average size-adjusted 2-year BHAR of -41.1%. In unreported results, for these sample years I find an average 2-year BHR of +21.9%, but a negative size-adjusted BHAR.[12] In general, the size-adjusted returns are lower than the style-adjusted returns that I report.

Panel B of Table 8 shows that when growth capital-backed IPOs are categorized by whether they are a rollup or not, both groups have high returns, but the rollups do best, with style-adjusted 3-year BHARs of 46.1%, which is higher than for financial sponsor-backed rollup IPOs in general, as reported in Panel A. In other words, the 28 buyout-backed rollup IPOs did not do as well, with an average 3-year BHR of 30.7% and a style-adjusted 3-year BHAR of -47.5%, neither of which is tabulated.[13]

Panel C of Table 8 reports the distribution across industries of growth capital-backed IPOs and rollup IPOs. For both groups of IPOs, healthcare operations (dental and doctor office management and hospital management) are heavily represented, and for growth capital, restaurants and retailing are heavily represented. Although not shown, for pure venture capital-

[12] My sample contains 231 rollup IPOs from those years, with 17 of their 185 not included in my list and 63 of my rollups from 1991-1999 not included in their list. I exclude approximately 10% of their rollups because they do not meet my criteria. My larger number is apparently due to inspecting a greater variety of candidate IPOs.

[13] Of the 28 buyout-backed rollups, one company, Hines Horticultural, was style-matched with a company that had a 1,907.7% 3-year BHR, lowering the average style-adjusted 3-year BHAR by 68.1% relative to if the matching firm's return was zero.

backed IPOs, software, computer hardware, and biotechnology dominate; for buyouts, manufacturing and retailing dominate.

The superior performance of rollup IPOs documented in Table 8 is surprising not only because it is at odds with prior papers on the topic, but also because of the findings in Brau, Couch, and Sutton (2012).[14] They document that IPOs from 1985-2003 that made an acquisition in the year after the IPO subsequently underperform relative to other IPOs. Since rollups are very likely to make an acquisition in the year after the IPO, their results would also suggest that rollups should underperform.

Brau, Couch, and Sutton (2012) have supplied me with their classifications of IPOs from 1985-2003, and I use these data in Table 9 to document the long-run returns on IPOs conditional both on their financial sponsorship and on whether one or more acquisitions were made in the 12 months after the IPO. To avoid a look-ahead bias, I use the same procedure as in Table 3 of Brau, Couch, and Sutton, and calculate 3-year buy-and-hold returns starting on the one-year anniversary of the IPO, at which point it is known whether the company has made an acquisition or not.

In Table 9, I report long-run performance using raw returns, style-adjusted returns, and wealth relatives. Wealth relatives are calculated as the ratio of the average gross return on the IPOs divided by the average gross return on the matching firms. Wealth relatives, introduced by Ritter (1991), are identical to the public market equivalent measure that is used in the private equity literature.

Table 9 shows that in every category (VC-backed, growth capital-backed, buyout-backed, and no financial sponsor), IPOs that make an acquisition in their first year subsequently have worse performance than IPO firms that don't. In unreported results, I also find that the 18% of rollups that don't make an acquisition have better subsequent returns than those that do. Thus, growth capital-backed IPOs have outperformed in spite of their higher incidence of making acquisitions in the year after the IPO.

6. Conclusions

[14] Both Brau, Couch, Sutton (2012) and Celikyurt, Sevilir, and Shivdasani (2010) document a very high propensity to make acquisitions among firms that have recently gone public.

Growth capital investing is a subset of venture capital investing characterized by financial sponsor investment in a portfolio company that is used to finance tangible assets and acquisitions. Most growth capital-backed companies do not fit the popular perception of VC-backed companies. Relatively few of these companies are in the technology industry, and none are in the biotech industry. Instead, many of the companies are in health care administration, retailing, the restaurant chain business, waste management, and broadcasting. One-third of growth capital-backed IPOs are rollups, in which an important component of a company's growth strategy is making multiple acquisitions in a fragmented industry.

I have identified 344 growth capital-backed IPOs in the United States from 1980-2012, representing about 4% of all IPOs. The average style-adjusted 3-year buy-and-hold abnormal return (BHAR) on these IPOs is 25.2%, substantially higher than the average of -2.6% on other VC-backed IPOs, the 0.7% on buyout-backed IPOs, and the -14.2% on IPOs with no financial sponsor. As with VC investing, a small number of deals with very high returns account for the high average. When performance is measured using Fama-French 3-factor time-series regressions, for which each calendar month is weighted equally, the intercepts for all three categories of financial sponsor-backed IPOs are indistinguishable from zero.

Growth capital-backed IPOs are usually lumped together with VC-backed IPOs, and growth capital-backed deals represent 12% of the combined number of VC-backed deals. The high average long-run returns on the growth capital-backed IPOs boost the average style-adjusted 3-year BHAR for the VC category from -2.6% without including these deals to +0.9% when they are included. In addition to reporting the average performance, I document that the long-run style-adjusted abnormal performance of VC-backed IPOs is strongly positive for IPOs from 1980-1998, but strongly negative for IPOs from 1999-2012. VC-backed IPOs from 1980-1998 outperformed other IPOs, but this pattern has reversed for IPOs from 1999-2012.

I also report the long-run performance of rollup IPOs, and document that those that are financial sponsor-backed have done much better, on average, than those without a financial sponsor: style-adjusted 3-year BHARs of +27.4% vs -24.0%, respectively. On average, rollup IPOs have had negative market-adjusted long-run returns but positive style-adjusted 3-year BHARs averaging 3.8%. The prior literature has reported much worse performance for rollup IPOs.

References

Barber, Brad, John Lyon, and Chih-Ling Tsai, 1999. "Improved Methods for Tests of Long-run Abnormal Stock Returns," *Journal of Finance* 54, 165-201.

Bethel, Jennifer E., and Laurie Krigman, 2005. "A Rational Incentives-Based Explanation for Booms and Busts: The Case of Rollups," unpublished working paper.

Brau, James C., Robert B.Couch, and Ninon K. Sutton, 2012. "The Desire to Acquire and IPO Long-Run Underperformance," *Journal of Financial and Quantitative Analysis* 47, 493-510.

Brav, Alon, 2000. "Inference in Long-horizon Event Studies: A Bayesian Approach with Application to Initial Public Offerings," *Journal of Finance* 55, 1979-2016.

Brav, Alon, and Paul Gompers, 1997. "Myth or Reality? The Long-Run Underperformance of Initial Public Offerings: Evidence from Venture and Nonventure Capital-backed Companies," *Journal of Finance* 52, 1791-1821.

Brown, Keith C., Dittmar, Amy, and Servaes, Henry, 2005. "Corporate Governance, Incentives, and Industry Consolidations" *Review of Financial Studies* 18, 241-270.

Cao, Jerry X., 2011, "IPO Timing, Buyout Sponsors' Exit Strategies, and Firm Performance of RLBOs." *Journal of Financial and Quantitative Analysis* 46, 1001-1024.

Cao, Jerry X., 2013. "Private Equity, RLBOs, and IPO Performance" *Handbook of Research on IPOs* edited by Mario Levis and Silvio Vismara pp. 375-399. Cheltenham: Edward Elgar.

Cao, Jerry X., Fuwei Jiang, and Jay R. Ritter, 2014. "Patents, Innovation, and Performance in Venture Capital-backed IPOs," unpublished working paper.

Cao, Jerry X., and Josh Lerner, 2009. "The Performance of Reverse Leveraged Buyouts," *Journal of Financial Economics* 91, 139-157.

Carter, Richard B., Frederick H. Dark, and Ajai K. Singh, 1998. "Underwriter Reputation, Initial Returns, and the Long-Run Performance of IPO Stocks," *Journal of Finance* 53, 285-311.

Celikyurt, Ugur, Merih Sevilir, and Anil Shivdasani, 2010. "Going Public to Acquire? The Acquisition Motive in IPOs," *Journal of Financial Economics* 96, 345-363.

Chan, Konan, John W. Cooney, Joonghyuk Kim, and Ajai K. Singh, 2008. "The IPO Derby: Are There Consistent Losers and Winners on This Track?" *Financial Management* 37, 45-79.

Dudley, Evan, and Christopher M. James, 2015. "Capital-Structure Changes Around IPOs," unpublished working paper.

Fama, Eugene F., and Kenneth R. French, 1993. "Common Risk Factors in the Returns on Stocks and Bonds." *Journal of Financial Economics* 33, 3-56.

Gao, Xiaohui, Jay R. Ritter, and Zhongyan Zhu, 2013. "Where Have All the IPOs Gone?" *Journal of Financial and Quantitative Analysis* 48, 1663-1692.

Krishnan, C.N.V., V. I. Ivanov, Ronald Masulis, and Ajai Singh, 2011. "Venture Capital Reputation, Post-IPO Performance, and Corporate Governance." *Journal of Financial and Quantitative Analysis* 46, 1295-1333.

Loughran, Tim, and Jay R. Ritter, 2000. "Uniformly Least Powerful Tests of Market Efficiency," *Journal of Financial Economics* 55, 361-389.

Loughran, Tim, and Jay R. Ritter, 2004. "Why Has IPO Underpricing Changed Over Time?" *Financial Management* 33 (3), 5-37.

Metrick, Andrew, and Ayako Yasuda, 2011. *Venture Capital and the Finance of Innovation*, 2nd edition Wiley.

Ritter, Jay R., 1991. "The Long-Run Performance of Initial Public Offerings," *Journal of Finance* 46, 3-27.

Ritter, Jay R. and Ivo Welch, 2002. "A Review of IPO Activity, Pricing, and Allocations," *Journal of Finance* 57, 1795-1828.

Schultz, Paul H., 2003. "Pseudo Market Timing and the Long-Run Underperformance of IPOs" *Journal of Finance* 58, 483-517.

Table 1

VC-backed, Growth Capital-backed, and Buyout-backed IPOs, 1980-2012

There are 7,697 IPOs after excluding those with an offer price below $5.00 per share, unit offers, ADRs, closed-end funds, natural resource limited partnerships, special purpose acquisition companies (SPACs), REITs, bank and S&L IPOs, small best efforts offers, and firms not listed on CRSP within six months of the IPO. Growth capital-backed IPOs are IPOs with financial sponsors that, unlike a buyout-sponsored deal, typically own far less than 90% of the equity prior to the IPO. Furthermore, many growth capital-backed IPOs have debt in their capital structure. The main criteria for classifying an IPO as growth capital-backed rather than venture capital-backed are whether the company is investing in tangible assets (e.g, stores or hospitals), or is growing primarily through acquisitions. Many growth capital-backed IPOs are involved in rollups of a fragmented industry, where the financial sponsor has provided capital to make acquisitions, such as funeral homes. Jerry Cao has provided information on which IPOs are buyout-backed. 344 growth capital-backed IPOs are not classified as VC-backed in this table. A year-by-year breakdown of the number of IPOs by category is available on Jay Ritter's website.

		Financial sponsor-backed		VC-backed		Growth capital-backed		Buyout-backed	
Year	Number of IPOs	No.	%	No.	%	No.	%	No.	%
1980-1989	2,043	653	32%	440	22%	73	4%	140	7%
1990-1994	1,720	883	51%	529	31%	69	4%	285	17%
1995-1998	1,893	793	42%	536	28%	124	7%	133	7%
1999-2000	858	580	68%	498	58%	19	2%	63	7%
2001-2012	1,183	848	72%	423	36%	59	5%	366	31%
1980-2012	**7,697**	**3,757**	**49%**	**2,426**	**32%**	**344**	**4%**	**987**	**13%**

Table 2

Summary Statistics on IPOs from 1980-2012 Categorized by VC-, Growth Capital-, or Buyout Fund-backing

The sample is composed of 7,697 IPOs from 1980-2012. IPOs with an offer price below $5.00 per share, unit offers, small best efforts offerings, ADRs, REITs, closed end funds, natural resource limited partnerships, banks and S&Ls, and IPOs not listed on CRSP within six months of the offer date are excluded. Growth capital-backed IPOs are classified separately from VC-backed IPOs. Medians in [.] are reported below the means. EPS (earnings per share) is for the last twelve months prior to the IPO (or fiscal year if LTM EPS is missing). Sales and Assets are expressed in 2014 purchasing power. The age of the company is Winsorized at 80 years before computing the mean. Age is calculated as the calendar year of the IPO minus the founding year, with founding dates from Jay Ritter's website. Book-to-market is calculated as the post-issue book value of equity divided by the post-issue market value of equity using all share classes, valued at the first closing market price. If the post-issue book value is missing (83 firms from 1980-1986), the proceeds raised by the firm is added to the pre-IPO shareholders equity. For the 133 IPOs with a negative post-issue book value of equity, the book-to-market ratio is set equal to zero for computing the means.

	Number of IPOs	% with EPS>0	Age, years	Book-to-market	Rollups, %	Mean Values, 2014 purchasing power	
						Sales, $m	Assets, $m
VC-backed	2,426	41.3%	7.7 [6]	0.251 [0.237]	0.0%	$58.2 [$27.2]	$87.4 [$36.4]
Growth capital-backed	344	68.0%	12.3 [7]	0.376 [0.331]	33.4%	$228.2 [$114.5]	$206.3 [$91.4]
Buyout-backed	987	69.6%	32.4 [24]	0.324 [0.302]	2.8%	$940.0 [$359.0]	$1,180.2 [$348.2]
Financial sponsored	3,757	51.2%	14.6 [7]	0.282 [0.258]	3.8%	$305.4 [$54.1]	$385.4 [$56.8]
Non-financial sponsored	3,940	75.9%	15.8 [9]	0.345 [0.298]	3.0%	$435.5 [$60.7]	$1,154.3 [$47.2]
All	7,697	63.9%	15.2 [8]	0.314 [0.277]	3.4%	$372.0 [$57.0]	$779.0 [$52.0]

Table 3

Long-run Returns on IPOs Categorized by VC-, Growth Capital-, or Buyout Fund-backing

7,697 IPOs from 1980-2012 are used, with returns calculated through the end of December, 2014. Buy-and-hold returns are calculated from the first closing price until the earlier of the three-year anniversary or the delisting date (Dec. 31 of 2014 for IPOs from 2012). Market-adjusted returns subtract the compounded return on the CRSP value-weighted index. All returns include dividends and capital gains. Style adjustments subtract the buy-and-hold return on firms matched by market cap and book-to-market ratio with at least five years of CRSP listing and no follow-on equity issues in the prior five years. For the 3-year buy-and-hold returns on IPOs, medians are reported in brackets.

Panel A: IPOs from 1980-2012 categorized by financial sponsorship

	Number of IPOs	Average First-day Return	Average 3-year Buy-and-hold Return		
			IPOs	Market-adjusted	Style-adjusted
VC-backed	2,426	29.4%	20.2% [-40.3%]	-14.9%	-2.6%
Growth capital-backed	344	13.7%	61.2% [+1.3%]	14.7%	25.2%
Buyout-backed	987	8.9%	33.5% [+7.9%]	2.7%	0.7%
Financial Sponsored	3,757	22.6%	27.4% [-22.6%]	-7.5%	0.8%
Non-Financial Sponsored	3,940	13.5%	17.5% -25.0%]	-29.6%	-14.2%
All	7,697	17.9%	22.3% [-23.7%]	-18.8%	-6.9%

Panel B: IPOs with venture capital including or excluding growth capital-backed deals

VC-backed (GC included)	2,770	27.5%	25.3% [-36.0%]	-11.2%	0.9%
Non VC-backed (GC excluded)	4,927	12.6%	20.7% [-17.6%]	-23.1%	-11.2%
VC-backed (GC excluded)	2,426	29.4%	20.2% [-40.3%]	-14.9%	-2.6%
Non VC-backed (GC included)	5,271	12.7%	23.3% [-16.4%]	-20.7%	-8.9%
All	7,697	17.9%	22.3% [-23.7%]	-18.8%	-6.9%

Table 4

Long-run Returns on IPOs Categorized by Sponsorship and Underwriter Prestige

7,697 IPOs from 1980-2012 are used, with returns calculated through the end of December, 2014. An IPO is classified as having a top tier underwriter if at least one of its lead underwriters has an updated Carter-Manaster ranking of 8.0 or higher, on a 1-9 scale, with 9 being the highest. Underwriter rankings are downloaded from Jay Ritter's web site. Buy-and-hold returns are calculated from the first closing price until the earlier of the three-year anniversary or the delisting date (Dec. 31 of 2014 for IPOs from 2012). Market-adjusted returns use the CRSP value-weighted index. All returns include dividends and capital gains. Style adjustments use firms matched by market cap and book-to-market ratio with at least five years of CRSP listing and no follow-on equity issues in the prior five years.

	Number of IPOs	Average First-day Return	Average 3-year Buy-and-hold Return		
			IPOs	Market-adjusted	Style-adjusted
VC-backed					
Non-Top Tier Underwriter	629	13.9%	8.3%	-37.2%	-16.9%
Top Tier Underwriter	1,797	34.8%	24.3%	-7.0%	2.5%
Growth capital-backed					
Non-Top Tier Underwriter	104	10.0%	51.2%	2.4%	13.2%
Top Tier Underwriter	240	15.2%	65.6%	20.0%	30.3%
Buyout-backed					
Non-Top Tier Underwriter	133	7.7%	15.2%	-18.2%	-11.7%
Top Tier Underwriter	854	9.0%	36.3%	6.0%	2.6%
Non-Financial Sponsored					
Non-Top Tier Underwriter	2,040	12.5%	6.1%	-44.2%	-20.6%
Top Tier Underwriter	1,900	14.6%	29.7%	-14.0%	-7.3%
All					
Non-Top Tier Underwriter	2,906	12.5%	8.6%	-39.8%	-18.2%
Top Tier Underwriter	4,791	21.2%	30.6%	-6.1%	0.0%
All	7,697	17.9%	22.3%	-18.8%	-6.9%

Table 5
Long-run Returns Categorized by VC-, Growth Capital-, or Buyout Fund-backing, by Subperiod

The sample is composed of 7,697 IPOs from 1980-2012. Buy-and-hold returns are calculated until the earlier of the three-year anniversary or the delisting date (Dec. 31 of 2014 for IPOs from 2012). Market-adjusted returns use the CRSP value-weighted index. Style adjustments use firms matched by market cap and book-to-market ratio with at least five years of CRSP listing and no follow-on equity issues in the prior five years.

Panel A: IPOs from 1980-1998 categorized by financial sponsor backing

	Number of IPOs	Average First-day Return	Average 3-year Buy-and-hold Return		
			IPOs	Market-adjusted	Style-adjusted
VC-backed	1,505	15.3%	49.2%	-8.2%	20.4%
Growth Capital-backed	266	11.9%	66.6%	10.4%	35.9%
Buyout-backed	558	6.7%	48.6%	3.6%	9.6%
Financial Sponsored	2,329	12.8%	51.1%	-3.2%	19.6%
Non-Financial Sponsored	3,327	11.5%	21.4%	-34.3%	-12.5%
All	5,656	12.1%	33.6%	-21.5%	0.7%

Panel B: IPOs from 1999-2000 categorized by financial sponsor backing

VC-backed	498	83.5%	-65.8%	-43.7%	-64.5%
Growth Capital-backed	19	25.3%	34.6%	46.2%	-11.5%
Buyout-backed	63	26.6%	-43.0%	-17.9%	-47.2%
Financial Sponsored	580	75.4%	-60.1%	-38.0%	-60.9%
Non-Financial Sponsored	278	41.8%	-39.2%	-19.2%	-55.2%
All	858	64.5%	-53.3%	-31.9%	-59.0%

Panel C: IPOs from 2001-2012 categorized by financial sponsor backing

VC-backed	423	16.0%	18.0%	-4.6%	-11.3%
Growth Capital-backed	59	17.7%	45.6%	24.0%	-11.4%
Buyout-backed	366	9.1%	23.6%	4.9%	-4.6%
Financial Sponsored	848	13.2%	22.3%	1.5%	-8.5%
Non-Financial Sponsored	335	10.0%	25.0%	7.9%	2.9%
All	1,183	12.3%	23.1%	3.3%	-5.2%

Table 6

Fama-French 3-factor Regressions for VC-backed, Growth Capital-backed, Buyout-backed, and Other IPOs, 1983-2013

The table reports the results of the Fama-French 3-factor model time-series regressions:

$$R_{pt} - R_{f,t} = \alpha + \beta_1\left(R_{m,t} - R_{f,t}\right) + \beta_2 SMB_t + \beta_3 HML_t$$

For each calendar month t, R_{pt} is the equally-weighted or value-weighted percentage monthly return of a portfolio that consists of firms that went public from $t-36$ to $t-1$. For value-weighted returns, the weight is the market value of the stock on the first trading day of the month. An intercept of 0.05 per month is +5 basis points per month. The monthly portfolio returns are created from 7,697 IPOs from 1980-2012, of which 7,687 are still trading as of January 1983 and later. The 372 monthly returns from January 1983 to December 2013 are used in the regressions. The t-statistics are reported in parentheses.

	Venture capital-backed		Growth capital-backed		Buyout-backed		No financial sponsor		All IPOs	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Alpha	0.05	0.19	0.05	0.07	-0.07	-0.11	-0.40	-0.29	-0.22	-0.20
	(0.20)	(0.59)	(0.19)	(0.26)	(-0.45)	(-0.59)	(-2.14)	(-1.75)	(-1.30)	(-1.18)
Market	1.32	1.49	1.14	1.19	1.27	1.32	1.17	1.25	1.24	1.33
	(25.27)	(20.31)	(18.74)	(19.08)	(33.31)	(31.01)	(26.99)	(33.04)	(31.53)	(34.29)
SMB	1.21	1.00	0.85	0.85	0.79	0.66	0.92	0.52	1.04	0.71
	(15.95)	(9.37)	(9.66)	(9.38)	(14.28)	(10.61)	(14.57)	(9.49)	(18.28)	(12.64)
HML	-0.89	-1.13	-0.02	-0.12	0.21	-0.03	-0.12	-0.10	-0.35	-0.43
	(-11.13)	(-10.13)	(-0.27)	(-1.26)	(3.58)	(-0.41)	(-1.86)	(-1.79)	(-5.88)	(-7.29)
R^2	0.822	0.732	0.621	0.633	0.816	0.792	0.784	0.809	0.849	0.848
No. of IPOs	2,423	2,423	343	343	987	987	3,934	3,934	7,687	7,687

Table 7

Fama-French 3-factor Regressions for VC-backed, Growth Capital-backed, Buyout-backed, and Other IPOs, 1983-2013

The table reports the results of the Fama-French 3-factor model time-series regressions:

$$R_{pt} - R_{f,t} = \alpha + \beta_1\left(R_{m,t} - R_{f,t}\right) + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 Dummy\ for\ Post - 1998$$

For each calendar month t, R_{pt} is the equally-weighted or value-weighted percentage monthly return of a portfolio that consists of firms that went public from $t-36$ to $t-1$. For value-weighted returns, the weight is the market value of the stock on the first trading day of the month. An intercept of -0.20 per month is -20 basis points per month. The monthly portfolio returns are created from 7,687 IPOs from 1980-2012 that are traded in January 1983 and later. The 372 monthly returns from January 1983 to December 2013 are used in the regressions. The t-statistics are reported in parentheses. The subperiod dummy =1 for January 1999-December 2013.

	Venture capital-backed		Growth capital-backed		Buyout-backed		No financial sponsor		All IPOs	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Alpha	-0.20	-0.19	-0.08	-0.20	-0.04	0.02	-0.68	-0.43	-0.46	-0.36
	(-0.64)	(-0.44)	(-0.21)	(-0.55)	(-0.16)	(0.09)	(-2.62)	(-1.90)	(-1.95)	(-1.53)
Market	1.33	1.50	1.14	1.18	1.27	1.32	1.17	1.26	1.24	1.33
	(25.26)	(20.35)	(18.77)	(19.38)	(33.10)	(30.80)	(27.03)	(32.93)	(31.59)	(34.25)
SMB	1.20	0.99	0.84	0.82	0.79	0.67	0.91	0.52	1.03	0.71
	(15.67)	(9.17)	(9.50)	(9.24)	(14.17)	(10.61)	(14.27)	(9.30)	(17.97)	(12.41)
HML	-0.89	-1.14	-0.03	-0.13	0.21	-0.03	-0.12	-0.11	-0.35	-0.43
	(-11.14)	(-10.16)	(-0.29)	(-1.31)	(3.58)	(-0.40)	(-1.89)	(-1.83)	(-5.91)	(-7.31)
Dummy for Post-1998	0.52	0.80	0.25	0.54	-0.07	-0.27	0.57	0.30	0.49	0.33
	(1.16)	(1.27)	(0.49)	(1.04)	(-0.23)	(-0.73)	(1.55)	(0.91)	(1.46)	(0.98)
R^2	0.823	0.734	0.623	0.640	0.815	0.792	0.785	0.809	0.850	0.848
No. of IPOs	2,423	2,423	343	343	987	987	3,934	3,934	7,687	7,687

Table 8
Long-run Returns on Rollup IPOs Categorized by Financial Sponsorship

Financial sponsors include venture capital, growth capital, and buyout funds (although none of the rollups are categorized as having been VC-backed). There are 264 Rollup IPOs from 1980-2012, with 28 of the 143 with a financial sponsor classified as buyout-backed, and the other 121 classified as growth capital (GC)-backed. Rollup IPOs are defined as IPOs in which the company has made significant acquisitions in the recent past and states intention of using acquisitions as a major source of growth in the future. Frequently the prospectus states that the company was recently created from the merger of several companies in the same industry and/or that part of the company's strategy is to consolidate a fragmented industry. Returns are calculated through the end of December, 2014. In classifying IPOs as rollups, I have benefited from lists provided in Brown, Dittmar, and Servaes (2005, Table 1) and by Jennifer Bethel, Junming Hsu, and Laurie Krigman.

Panel A: Rollup IPOs Categorized by Financial Sponsorship

	Number of IPOs	Average First-day Return	Average 3-year Buy-and-hold Return		
			IPOs	Market-adjusted	Style-adjusted
Financial sponsored	143	11.9%	56.3%	13.7%	27.4%
Non-financial sponsored	121	12.5%	-9.3%	-59.8%	-24.0%
All	264	12.2%	26.2%	-20.0%	3.8%

Panel B: Growth Capital-backed IPOs Categorized by Whether It Was a Rollup

	Number of IPOs	Average First-day Return	Average 3-year Buy-and-hold Return		
			IPOs	Market-adjusted	Style-adjusted
GC-sponsored rollups	115	12.5%	62.6%	15.8%	46.1%
Other GC-sponsored IPOs	229	14.2%	60.5%	14.1%	14.6%
All	344	13.6%	61.2%	14.7%	25.2%

Panel C: Industry Mix for Growth Capital-backed IPOs and Rollup IPOs

Industry	**344 Growth Capital-backed IPOs**		**264 Rollup IPOs**	
Healthcare operations (SIC 8011-8099)	76	22%	56	21%
Retailing (SIC=5021-5399, 5941-5947)	42	12%	20	8%
Restaurants (SIC 5812)	32	9%	2	1%
Software (SIC=7372-7379)	15	4%	17	6%
Airlines (SIC=4512)	12	3%	0	0%
Oil & Gas production, services (SIC 1311-1389)	11	3%	4	2%
Waste management (SIC=4953)	9	3%	12	5%
Clothing stores (SIC=5611-5651)	9	3%	1	0%
Telecommunications (SIC 4812 and 4813)	7	2%	6	2%
Auto dealerships (SIC=5511 and 5521)	3	1%	6	2%
Radio stations (SIC=4832)	3	1%	5	2%
Other industries	125	35%	135	51%

Table 9
Long-run Returns on IPOs from 1985-2003 Categorized by VC-, Growth Capital-, or Buyout Fund-backing, Conditional on Whether the Issuer Made an Acquisition in the First Year after Going Public

The sample is composed of 3,538 IPOs from 1985-2003, the sample period used by Brau, Couch, and Sutton (2012). The screens in the other tables are included here, although unlike the other tables, all foreign issuers are excluded, for comparability with Brau, Couch, and Sutton, although not all financial stocks are excluded (I retain insurance companies, securities brokers, etc.). Buy-and-hold returns are calculated until the earlier of the three-year anniversary or the delisting date. Style adjustments use firms matched by market cap and book-to-market ratio. Wealth Relatives are calculated as the ratio of the average gross return on the IPOs divided by the average gross return on the matching firms. Unlike the other tables, the 3-year buy-and-hold returns start on the one-year anniversary of the IPO, and end three years later (the end of the fourth year), so as to avoid a look-ahead bias. The sample size is also reduced because I only use IPOs for which Brau, Couch, and Sutton have classified the firm as having (or not having) an acquisition in the first year after the IPO.

Panel A: IPOs that acquire in the first 12 months

	Number of IPOs	Average First-day Return	Average 3-year Buy-and-hold Return		
			IPOs	Style-adjusted	Wealth Relative
VC-backed	413	56.4%	17.5%	-10.9%	0.92
Growth Capital-backed	97	14.8%	17.1%	-21.3%	0.85
Buyout-backed	141	13.4%	21.5%	-15.9%	0.89
Financial Sponsored	651	40.9%	18.3%	-15.3%	0.90
Non-Financial Sponsored	528	19.4%	12.6%	-33.6%	0.77
All	1,179	31.3%	15.8%	-22.4%	0.84

Panel B: IPOs that do not acquire in the first 12 months

VC-backed	893	25.9%	65.5%	36.9%	1.29
Growth Capital-backed	90	14.6%	56.4%	22.8%	1.17
Buyout-backed	278	7.2%	58.9%	-2.8%	0.98
Financial Sponsored	1,261	21.0%	63.4%	27.1%	1.20
Non-Financial Sponsored	1,098	14.0%	24.1%	-15.9%	0.89
All	2,359	17.8%	45.1%	7.1%	1.05

Panel C: All 3,538 IPOs for which acquisition information is available

All	3,538	22.3%	35.3%	-2.7%	0.98

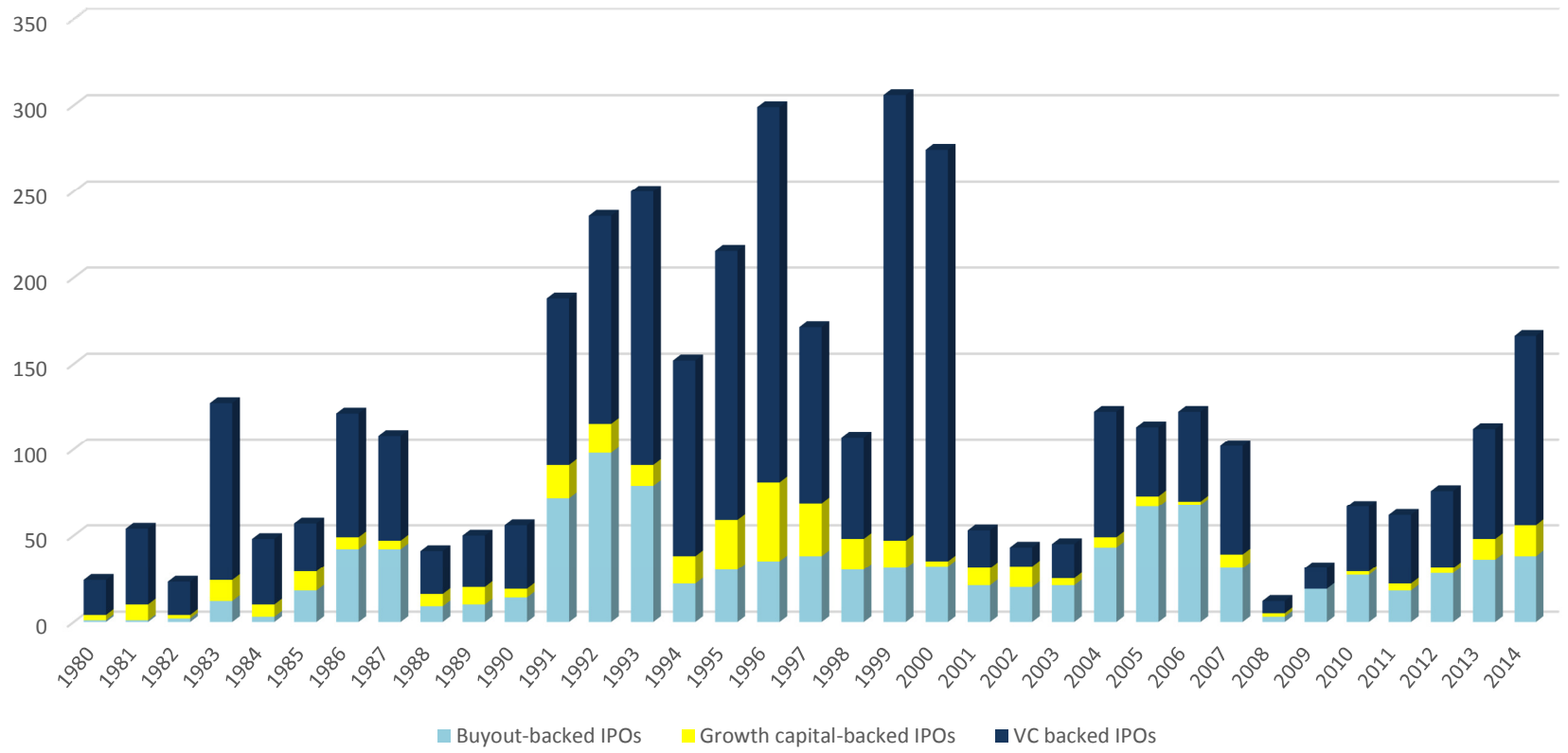

Figure 1: Financial sponsor-backed IPOs, 1980-2014. The numbers that are plotted are available on Jay Ritter's website.

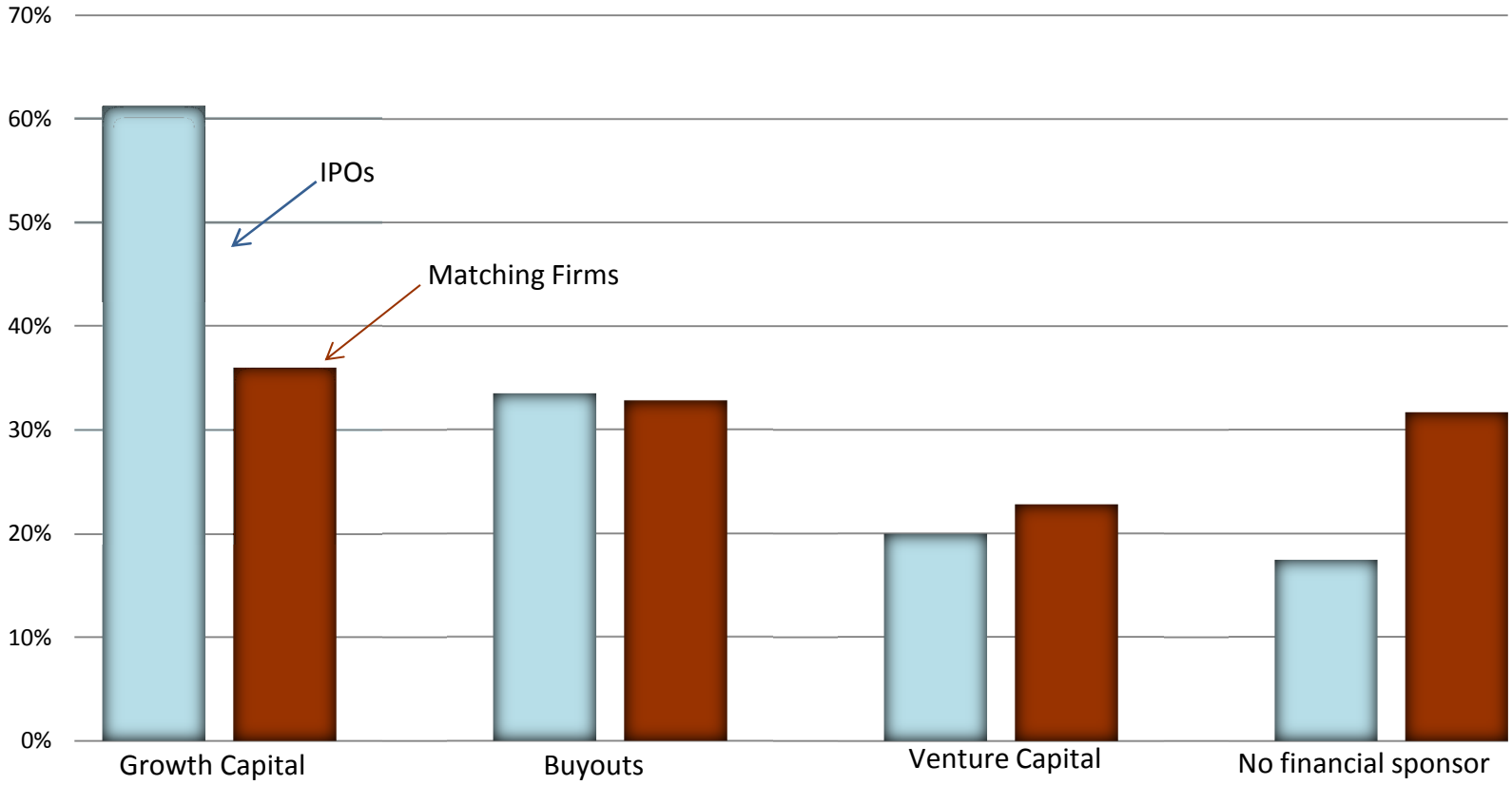

Figure 2: Mean equally weighted 3-year buy-and-hold returns on 7,697 U.S. IPOs (left) from 1980-2012, measured from the first closing price to the earlier of the 3rd anniversary, the delisting date, or December 31, 2014, and their matching firms (right). Matching firms are chosen on the basis of market cap and book-to-market ratio. Source: Table 3 of this paper.

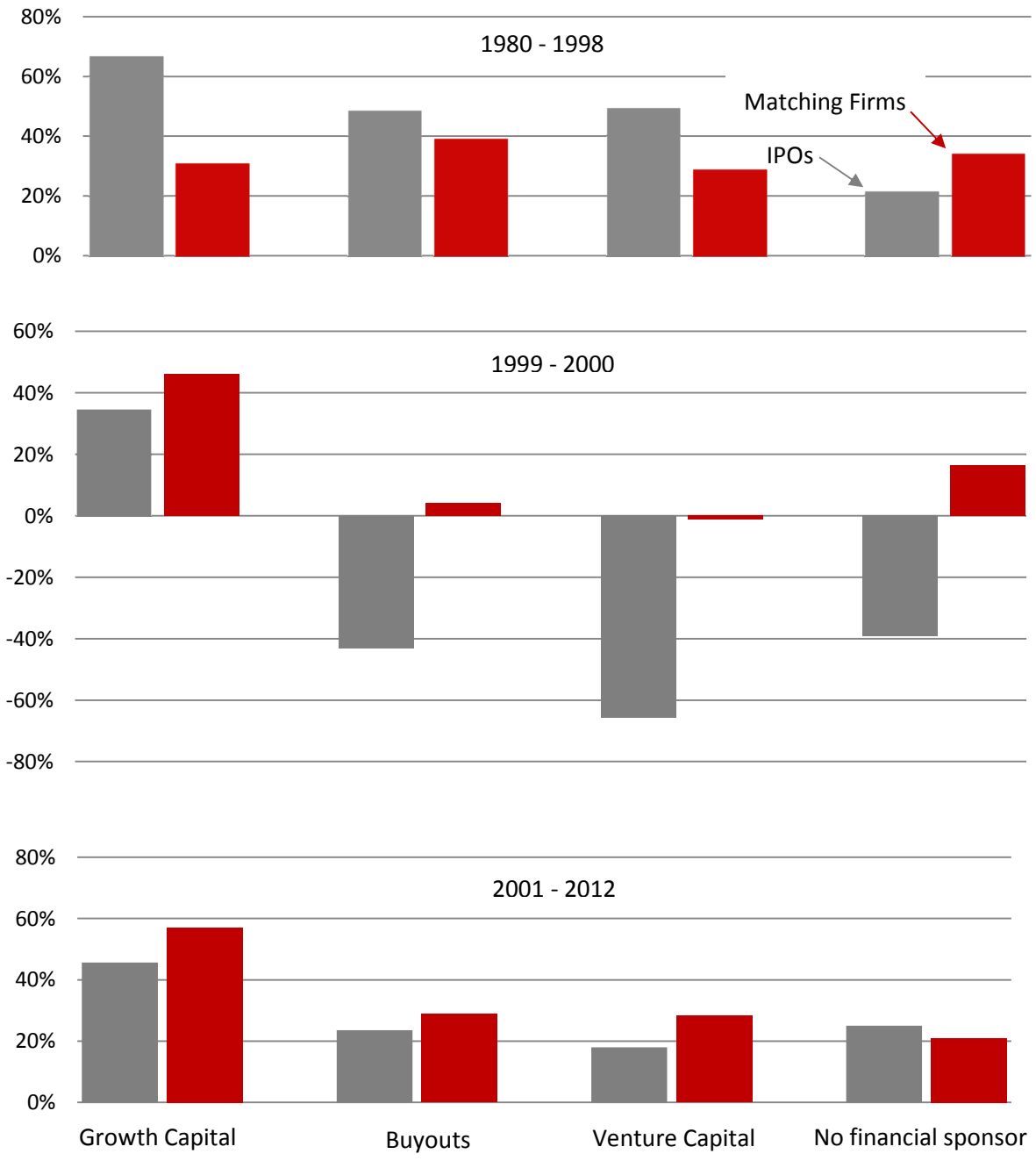

Figure 3: Mean 3-year buy-and-hold returns for IPOs (left) and style-matched (size and market-to-book) matching firms (right) by subperiod, for 7,697 IPOs from 1980-2012. The returns start at the close of the first day of trading, and end at the end of the earlier of three years, the delisting date, or Dec. 31, 2014. Source: Table 5 of this paper.

Appendix Table A1

Panel A: Examples of Growth Capital-backed IPOs

1. Staples (Prospectus dated April 27, 1989): "Staples is the leading specialty discount retailer of office products in the Northeast United States. The Company pioneered the office superstore concept with the opening of its first store in May 1986. It currently operates 23 high volume office superstores... The Company's expansion strategy is to increase its market share in existing markets and to open new stores ..."

1989(Last Twelve Months ended January 28):

Revenue	$105.48 million
Net loss:	$0.68 million
Total assets:	$42.63 million

Principal shareholders (pre-IPO):

Bain Capital	7.3%
Bessemer Venture Partners II, LP	7.7%
TP Venture Capital C.V.	7.0%
Aeneas Venture Corporation	3.7%
William Blair Venture Partners II	2.2%
IDP Industrial Development Partners	2.1%
Hambro International Venture Fund Offshore	1.7%
The Opportunity Fund Limited Partnership	1.6%

2. United Dental Care (Prospectus dated September 21, 1995): "UDC is a managed dental benefits company that operates prepaid dental plans in 19 states and, as of June 30, 1995, provided dental coverage to approximately 773,000 members. ... The Company's objective is to be the leading managed dental benefits company in the United States by both increasing its market share in its current markets and selectively entering new markets with metropolitan areas in excess of one million. The Company believes this objective can be achieved by ... acquiring other managed dental benefits companies. In September 1994, UDC acquired International Dental Health, Inc., ... In addition, on July 19, 1995, the Company entered into a definitive agreement to purchase all of the outstanding capital stock of U.S. Dental Management, Inc. ..."

1995 Pro Forma Last Twelve Months (ending June 30, 1995)

Revenue:	$117.88 million
Net income:	$4.03 million
Total assets:	$35.89 million

Principal Shareholders (pre-IPO):

Citibank (two trusts)	17.7%
South Atlantic Venture Fund, LP	10.2%
Summit Ventures III, LP	6.1%

I classify this deal as a rollup IPO, in addition to being growth capital-backed.

3. Medcath Inc. (Prospectus dated December 6, 1994): "Medcath is a provider of cardiology and cardiovascular services through the operation of specialized facilities and the management of physician practices. … As the consolidation of the fragmented and inefficient delivery systems for cardiology and cardiovascular services increases, MedCath believes, based upon the knowledge and experience of its management, that those providers who become part of integrated delivery systems that incorporate practice and administrative management systems, develop facilities to deliver high quality, cost-effective care and actively market their services to managed care plans will gain market share. Key elements of the Company's strategy are to (i) develop, co-own with local physicians and operate heart hospitals specializing in a full range of cardiology and cardiovascular care, (ii) manage physician group practices that include cardiology and cardiovascular surgeons with leading local positions, and (iii) acquire, develop and operate fixed-site and mobile cardiac diagnostic and therapeutic centers in selected markets."

1994 Pro Forma (fiscal year ended Sept. 30):

Revenue:	$28.93 million
Net income:	$2.44 million
Total assets:	$39.25 million

Principal shareholders (pre-IPO):

Welch, Carson, Anderson & Stowe V, LP	37.2%
Goldman Sachs Group, LP	16.6%
PIA Partners II (GS partners)	
Stone Street Fund 1989, LP	
Bridge Street Fund 1989, LP	

4. Garden Fresh Restaurant Corp. (Prospectus dated May 16, 1995): "The Company was founded in 1983 and currently operates 33 salad buffet restaurants in California, Florida, and Arizona under the names Souplantation and Sweet Tomatoes."

1995 Last Twelve Months (ending March 31, 1995):

Revenue:	$60.42 million
Net loss:	$0.15 million
Total assets:	$30.69 million

Principal shareholders (pre-IPO):

Brentwood Associates	12.6%
Brentwood Associates IV, LP	
Evergreen IV, LP	
Canaan Ventures	6.7%
Canaan Venture Limited Partnership	
Canaan Venture Offshore Limited Partnership C.V.	
St. Paul Venture Capital	17.1%
St. Paul Fire and Marine Insurance Company	
Trinity TVL Partners	5.9%
Trinity Ventures I, LP	
Trinity Ventures II, LP	
Trinity Ventures III, LP	
Trinity Side-by-Side I, LP	

5. BEA Systems (Prospectus dated April 10, 1997): “BEA Systems, Inc. (“BEA” or the “Company”) designs, develops, markets and supports software used by large organizations to enable and support their most critical business processes.”

“The Company was incorporated in January 1995 and, accordingly, has a limited operating history... Revenues generated by the Company to date have been derived primarily from sales of BEA TUXEDO, a product to which the Company acquired worldwide rights in February 1996, and from fees for related services. Since its inception, the Company has acquired a number of other businesses and other products in addition to BEA TUXEDO.”

1997 Last Twelve Months (ending January 31, 1997):

Revenue:	$61.60 million
Net loss:	$88.67 million
Total assets:	$57.97 million

Principal Shareholders (pre-IPO):

Warburg Pincus:	61.7%

Warburg Pincus refers to this as a “build-up”, which I place in the growth capital-backed and roll-up categories.

6. Under Armour (Prospectus dated November 17, 2005): “Under Armour is a leading developer, marketer and distributor of branded performance products for men, women and youth. We endeavor to build each and every Under Armour product with superior fabrication and design innovation utilizing a variety of synthetic microfiber fabrications.”

2005 Last Twelve Months (ending September 30, 2005):

Revenue:	$263.39 million
Net income:	$18.89 million
Total assets:	$144.52 million

Principal Shareholders (pre-IPO):

Rosewood Capital:	9.8%

7. U.S. Auto Parts Network (Prospectus dated February 8, 2007): “We are a leading online provider of aftermarket auto parts, including body parts, engine parts, performance parts, and accessories. ... Our business has consistently grown since we launched our first website in 2000. ...”

2006 Pro Forma Last Twelve Months (ending September 30, 2006):

Revenue:	$109.80 million
Net loss:	$4.66 million
Total assets:	$69.06 million

Principal shareholders (pre-IPO):

Oak Investment Partners XI, LP	30.4%

Panel B: Examples of Non-Growth Capital-backed IPOs that Are Difficult to Classify

1. Pizza Ventures, Inc., an October 15, 1981 IPO, is categorized as neither VC- nor growth capital backed. Pizza Ventures was founded three years before going public, and was funded by David Michael Winton (a 22.0% stake), who is described as "a general partner of two partnerships" although he is not on the board of directors. Pizza Ventures is a franchised operator of Godfather's Pizza restaurants.

Pizza Ventures is not classified as financial sponsor-backed because the partnerships that David Michael Winton represents might be family partnerships, rather than financial intermediaries with professional managers.

2. Tetra Technologies, an April 3, 1990 IPO, "...provides recycling and treatment services for environmentally sensitive byproduct and waste streams and markets chemicals extracted from these streams. ...In its Waste Treatment Division, the company employs proprietary technologies to treat liquid and solid waste streams."

I classify this company as VC-backed because of its use of proprietary technologies.

3. Ugly Duckling, a June 17, 1996 IPO, "...is a fully integrated used car sales and finance company that operates the largest chain of "buy here-pay here" used car dealerships in Arizona. ...Since commencing its used car sales and financing operations in 1992, the Company has pursued an aggressive growth strategy through both internal development and acquisition. Over the next two years, the Company expects to develop or acquire approximately five additional Company Dealerships and to open 15 to 20 additional Branch Offices in various states."

SunAmerica Life Insurance Co. owned convertible preferred stock before the IPO, but because SunAmerica does not have LPs, I am not classifying this firm as growth capital-backed, although SunAmerica provided growth capital. I classify this company as a rollup.

4. NationsRent, an August 7, 1998 IPO, had 39.8% ownership by H. Family Investments, Inc., a Florida corporation controlled by H. Wayne Huizenga.

I do not classify this rollup IPO as growth capital-backed because the financial sponsor was not a financial intermediary with multiple limited partners.

5. Capstar Broadcasting, a May 26, 1998 IPO. "R. Steven Hicks, an executive with over 30 years of experience in the radio broadcasting industry, and Hicks Muse, a Dallas-based private equity firm, formed Capstar to capitalize on the consolidation opportunities produced by the Telecommunications Act of 1996 (the "Telecom Act"). R. Steven Hicks and Hicks Muse recognized that the Telecom Act created a unique opportunity to consolidate stations in mid-sized markets and, accordingly, created a company that was designed specifically to address this market opportunity."

I could have classified this IPO as growth capital-backed, but the company was created jointly by Hicks Muse and R. Steven Hicks, the brother of Hicks Muse co-founder Thomas O. Hicks, and Hicks Muse owned almost all of the stock. I classify this IPO as buyout-backed, and a rollup.

Panel C: Examples of Telecom Stocks classified as VC-backed or Growth Capital-backed (4812 is Radiotelephone Communications and 4813 is Other Telephone Communications)

1. McLeod (SIC 4812), a June 10, 1996 IPO, "...is provider of integrated local and long distance telecommunications services to small and medium-sized businesses primarily in Iowa and Illinois. The Company derives its telecommunications revenue from (i) the sale of 'bundled' local and long distance telecommunications services to end users, (ii) telecommunications network maintenance services and (iii) competitive access services, including special access and private line services.... In addition, the Company provides network maintenance services for the State of Iowa's fiber optic network."

1996 Pro Forma Last Twelve Months (ending March 31, 1996):

Revenue:	$37.60 million
Net loss:	$11.64 million
Debt:	$3.60 million
Total assets:	$38.28 million

Principal shareholders (pre-IPO):

IES Investments, Inc.	30.0%
MWR Investments, Inc.	22.5%
Allsop Venture Partners III, LP	11.5%

McLeod is classified as VC-backed because it is not asset-intensive.

2. Concentric Network Corp. (SIC 4813), an August 1, 1997 IPO "...provides tailored, value-added Internet Protocol ('IP') based network services for businesses and consumers. To provide these services, the Company utilizes its low/fixed latency, high-throughput network, employing its advanced network architecture and the Internet. Concentric's service offerings for enterprises include virtual private networks ('VPNs'), dedicated access facilities ('DAFs') and Web hosting services."

1997 Last Twelve Months (ending March 31, 1997):

Revenue:	$23.27 million
Net loss:	$67.68 million
Debt:	$35.35 million
Total assets:	$61.44 million

Principal shareholders (pre-IPO):

TMI Telemedia International, Ltd.	19.6%
Goldman Sachs Group, LP	14.0%
Softbank Ventures, Inc	13.3%
Kleiner Perkins Caufield & Byers Entities	12.9%
Racal-datacom	12.5%

Concentric Network is classified as VC-backed because it is close to being a high-tech hardware firm.

3. Telecorp PCS (SIC 4812), a November 22, 1999 IPO, is "...the largest AT&T Wireless affiliate in the United States, with licenses covering approximately 16.5 million people. We provide wireless personal communications services in selected markets in the south-central and northeast United States and in Puerto Rico, encompassing eight of the 100 largest metropolitan areas in the United States. Commencing with the launch of our New Orleans market in February 1999, we have successfully launched our services in 21 markets, including all of our major markets, and currently have more than 100,000 subscribers. Our senior management team has substantial experience in the wireless communications industry with companies such as AT&T, Bell Atlantic and Sprint PCS."

1999 Pro Forma Last Twelve Months (ending September 30, 1999):

Revenue:	$48.23 million
Net loss:	$183.88 million
Debt:	$629.75 million
Total assets:	$754.78 million

Principal shareholders (pre-IPO):

Chase Capital Partners	20.7%
Desai Capital Management. Inc.	19.7%
AT&T Wireless PCS	17.8%
Hoak Communications Partners, LP	14.8%
Whitney Equity Partners, LP	12.3%
Media/Communications Partners III, LP	7.9%

Telecorp PCS is classified as growth capital-backed because of its heavy investment in tangible assets.

4. Vonage Holdings (SIC 4813), a May 23, 2006 IPO. "We are a leading provider of broadband telephone services with over 1.6 million subscriber lines as of April 1, 2006. Utilizing our innovative Voice over Internet Protocol, or VoIP, technology platform, we offer feature-rich, low-cost communications services that offer users an experience similar to traditional telephone services. While customers in the United States currently represent over 95% of our subscriber lines, we continue to expand internationally, having launched our service in Canada in November 2004 and in the United Kingdom in May 2005. Since our U.S. launch in October 2002, we have experienced rapid subscriber line growth. For example, we more than tripled our subscriber lines during 2005."

2006 Pro Forma Last Twelve Months (ending March 31, 2006):

Revenue:	$347.37 million
Net loss:	$286.49 million
Convertible notes:	$253.35 million
Total assets:	$378.20 million

Principal shareholders (pre-IPO):

New Enterprise Associates	23%
Meritech Capital Partners	12%
Bain Capital	10%

Vonage Holdings is classified as VC-backed because its heavy spending on technology.