Re-energizing the IPO Market[1]

Jay R. Ritter
University of Florida

To be published in RESTRUCTURING TO SPEED ECONOMIC RECOVERY,
edited by Martin Bailey and Richard Herring, forthcoming Brookings Press, 2013

November 6, 2012

Introduction

From 1980-2000, an annual average of 310 operating companies went public in the U.S. During 2001-2011, on average only 99 operating companies went public.[2] This decline occurred in spite of the doubling of real gross domestic product (GDP) during this 32-year period. The decline has been even more severe for small company initial public offerings (IPOs), for which the average volume has dropped from 166 IPOs per year during 1980-2000 to only 29 per year during 2001-2011, a drop of 83%. Figure 1, reproduced from Gao, Ritter, and Zhu (2012), illustrates the pattern on a year-by-year basis, with small company volume in front and big company volume in back. Small and big companies are defined on the basis of inflation-adjusted ($2009) annual sales in the 12 months prior to going public, using a cutoff of $50 million to define small and big.

Many commentators have been alarmed at this prolonged drop in small company IPOs, since it is the conventional wisdom that companies going public create many jobs. The *Wall Street Journal* editorial page has bought into this argument, as has Congress, culminating in the April 2012 passage of the Jumpstart Our Business Startups (JOBS) Act.

---

[1] Some of the content of this article overlaps with my testimony before the U.S. Senate Banking Committee on March 6, 2012. The analysis of this paper draws heavily on my joint work with Xiaohui Gao and Zhongyan Zhu (2012), Martin Kenney and Don Patton (2012), Silvio Vismara and Stefano Paleari (2012), and Andrea Signori and Silvio Vismara (2012). I wish to thank Leming Lin for research assistance. For comments on an earlier draft, I wish to thank François Degeorge, David Weild, and participants at the Brookings/Nomura/Wharton Reconstructing and Revitalizing Japan's Financial Sector conference on October 26, 2012 and the Kellogg School Security Market Auctions and IPOs conference on November 2-3, 2012.

[2] "Operating company" IPOs exclude closed-end funds, Real Estate Investment Trusts (REITs), Special Purpose Acquisition Companies (SPACs) and other blind-pool offers, oil & gas limited partnerships, American Depositary Receipts (ADRs), unit offerings, penny stocks (IPOs with an offer price below $5 per share), small best efforts offers, bank and S&L IPOs (most of which are conversions of mutual into stock companies), and stocks not listed on Nasdaq or the American or New York Stock Exchanges. Table 15 of "Initial Public Offerings: Statistics Updated Through 2011" on my website gives the year-by-year number of IPOs excluded for each of these reasons.

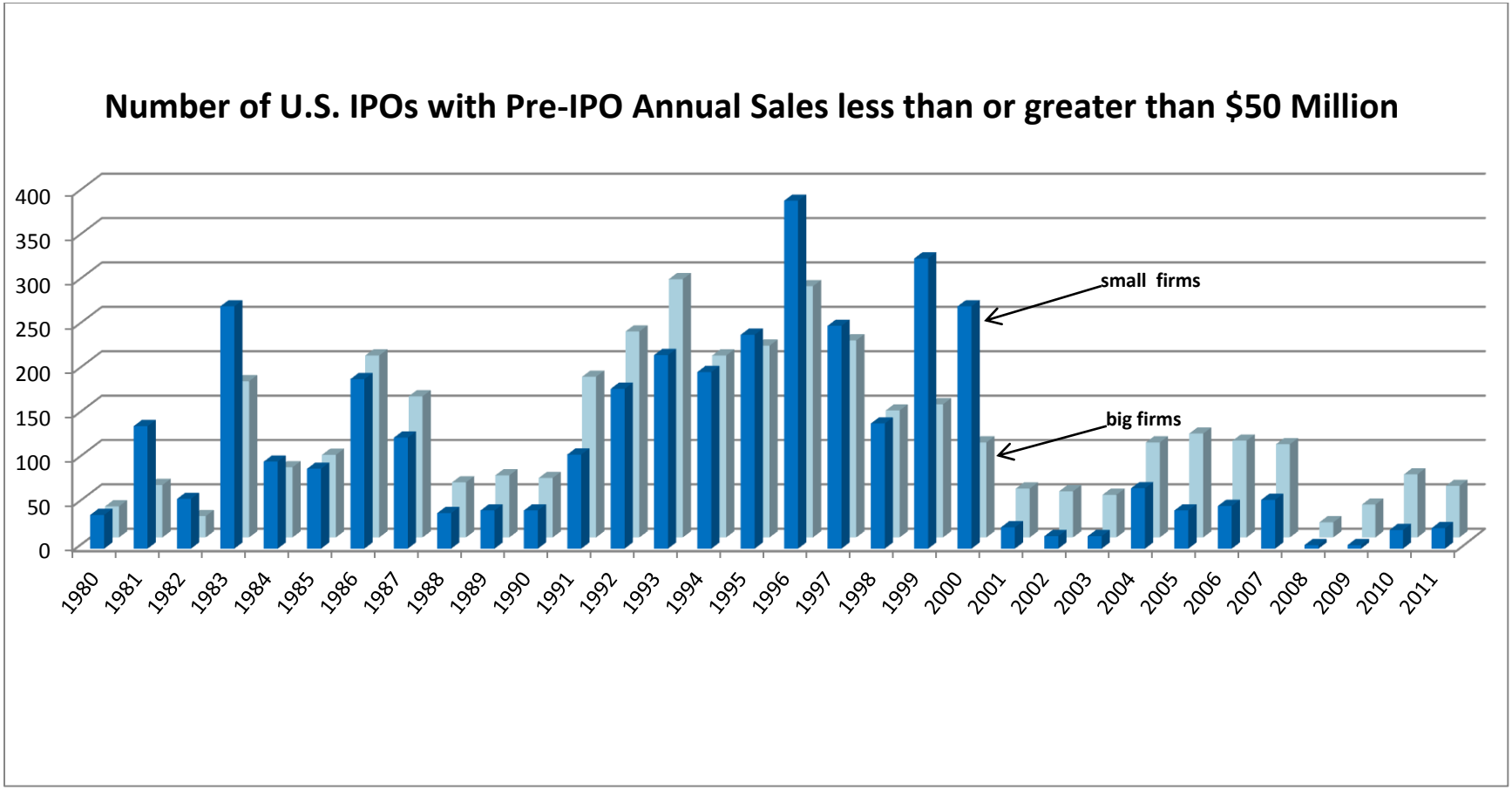

Figure 1. The number of U.S. IPOs by year, 1980-2011, with pre-IPO last twelve months sales less than (small firms) or greater than (big firms) $50 million (2009 purchasing power). Reproduced from Gao, Ritter, and Zhu (2012).

The JOBS Act is intended to encourage the funding of small businesses, primarily by easing various securities regulations. The JOBS Act, among other things, 1) encourages crowd-funding, 2) eliminates restrictions on general solicitation (i.e., permits advertising securities offerings to the general public), 3) creates a category of firms, emerging growth companies, defined as firms with less than $1 billion in annual sales, and exempts them from certain regulations, including some of the SOX regulations, for their first five years as public companies, 4) increases the number of shareholders of record from 500 to 2,000 before public disclosure requirements are triggered, 6) eliminates "quiet period" restrictions that had prohibited the analysts working for underwriters from publicly making buy and sell recommendations at the time of an IPO, 7) raises the Regulation A limit on securities offerings for which there are fewer regulatory requirements from $5 million to $50 million, and 8) requires the S.E.C. to conduct a study on "…the impact that decimalization has had on the number of initial public offerings."

In this article, I will address why IPO volume, and especially small company IPO volume, has been so depressed for more than a decade. The conventional wisdom is that the main culprits are a combination of heavy-handed regulation, especially the Sarbanes-Oxley Act of 2002, a decline in analyst coverage of small firms, and lower stock prices since the 2000 technology bubble burst. I will present an alternative explanation, the economies of scope hypothesis, that has very different policy implications. I will also discuss the effect of tick sizes on the IPO market, as this is the current focus of policy recommendations from the S.E.C.'s Advisory Committee on Small and Emerging Companies. I will then discuss the number of jobs created by companies going public, and the effect of alternative venues for cashing out and raising capital, SecondMarket and SharesPost. Lastly, I will offer some thoughts on what can and should be done to reenergize the market.

Heavy-handed Regulation

The most common explanation for the decline in IPO activity is a series of regulatory changes, with the Sarbanes-Oxley (SOX) Act of 2002 shouldering the greatest blame. Motivated by the securities frauds perpetrated by WorldCom and Enron, Section 404 of SOX requires external audits of the internal systems ensuring accurate financial reports of publicly traded

companies.[3] Following complaints that the Section 404 compliance costs were excessively high for small firms, at the end of 2007 small firms were exempted from many of the requirements.

If SOX costs were a major impediment to being public for small companies, I would expect that there would have been a rebound in small company IPOs after 2007. Of course, the Panic of 2008 would have delayed this rebound, but 2010 and 2011 saw fewer, not more, small company IPOs than in each year from 2004-2007. Furthermore, evidence from Europe suggests that heavy-handed regulation has not been the prime deterrent of small company IPOs.

Following the success of London's exchange-regulated Alternative Investment Market (AIM), all of the major continental European stock exchanges have created second markets for small companies that are exchange-regulated (i.e., unregulated). Companies going public on these second markets have been exempt from many investor-protection regulations, as discussed in my papers with Silvio Vismara and Stefano Paleari entitled "Europe's Second Markets for Small Companies"(2012) and with Andrea Signori and Silvio Vismara entitled "Economies of Scope and IPO Activity in Europe" (2012). In these papers, we document that public market investors have earned very low long-run returns on second market IPOs in Europe, that new listing volume on these markets has been very low during 2008-2011, and that few of these companies have been reporting positive earnings per share, in spite of being exempt from many regulations applying to companies traded on the main markets.[4]

This evidence suggests that SOX has not been the primary reason that small company IPO volume has been low for more than a decade in the U.S., but that does not mean that heavy-handed regulation has had no effect on IPO volume. It is difficult for regulators to strike the right balance between investor protection and efficient capital raising.

Analyst Coverage and IPO Activity

Many people have argued that the S.E.C.'s Regulation FD in 2000 and the Global Settlement in 2003, along with other regulatory and technological changes, have contributed to

[3] At their peaks, Enron's market capitalization was over $60 billion and WorldCom's was over $180 billion. Enron declared bankruptcy in December 2001 and WorldCom declared bankruptcy in July 2002, with equity investors wiped out.

[4] IPO activity in Europe during 2011-2012 has been depressed partly by the Eurozone crisis, which has been associated with low stock returns on many European markets.

the decline in analyst coverage for small stocks that has occurred.[5] The implicit assumption, which I find to be very plausible, is that analyst coverage results in greater awareness of a stock's existence. The resulting increase in the number of potential investors leads to greater demand and a higher price relative to that of other stocks that receive less attention.[6]

If there was more analyst coverage, what would the effect be on the IPO market? To quantify this, there are two steps. First, how much does analyst coverage boost a stock's price? Second, what is the sensitivity of IPO volume to increases in public market valuation?

Demiroglu and Ryngaert (2010) analyze 549 initiations of coverage of Nasdaq, Amex, and NYSE-listed stocks that had no reported sell-side analyst coverage prior to the initiation. These initiations occurred during 1997-2005, and 88% of the stocks had a market capitalization of below $250 million. They report an average announcement effect of 5%. Assuming that this is a permanent increase (conditional on continued coverage by an analyst after the original initiation of coverage), we can take this as the valuation effect of analyst coverage.[7]

In Gao, Ritter, and Zhu (2012, Table 8), we report the results of a regression that has the quarterly number of IPOs scaled by real GDP (in trillions of dollars per year using 2009 purchasing power) as the dependent variable, and, among other variables, the lagged market-to-book ratio for small firms as an explanatory variable. The coefficient on the market-to-book ratio is 3.02. This coefficient implies that an increase in the market-to-book ratio by 5%, for example from 2 to 2.10, would result in 3.02×0.10 = 0.30 more IPOs per quarter per trillion dollars of GDP. With 2012 real GDP of approximately $15 trillion, this calculation predicts that 4.5 more IPOs per quarter, or 18 per year, would occur if small company stock prices were 5% higher due to more analyst coverage.

[5] Reg FD refers to Fair Disclosure, and mandates that companies disclose material information to all recipients simultaneously, rather than leaking the information to favored analysts.

[6] For analyst coverage to boost the market value of all stocks, at least some investors would have to decide to move a higher proportion of their assets into stocks from other asset classes as a result of analyst coverage.

[7] Several considerations must be kept in mind when interpreting this number. First, initiations are typically "buy" recommendations, in that an analyst that evaluates an uncovered firm and is not enthusiastic is likely to not initiate coverage, rather than initiate with a negative recommendation. Thus, the announcement effect may overstate the effect of coverage itself. Second, one would expect a decreasing impact from additional coverage. For example, for a firm that is already covered by 22 other analysts, the 23rd analyst is likely to have little impact. Third, the 5% announcement effect for a sample of primarily very small firms is likely to be higher than for a larger company.

Market Conditions

As discussed in the prior paragraph, IPO volume is higher when stock prices are higher. During the eleven years from 1990-2000, the quarterly average market-to-book ratio was 2.51. During the nine years from 2001-2009, the quarterly average market-to-book ratio was 2.41. Using the coefficient of 3.02 on the market-to-book ratio as discussed above, the drop in the average market-to-book ratio implies 3.02×(2.51-2.41) = 0.30 fewer IPOs per quarter per trillion dollars of real GDP, or 18 fewer IPOs per year. A full unit drop in the market-to-book ratio, i.e., from 3.0 to 2.0, implies a drop of 181 IPOs per year in an economy with real GDP of $15 trillion per year. Thus, the market conditions hypothesis can partly explain why IPO volume in 2001-2011 has been lower than in 1996-2000, but has trouble explaining why IPO volume has been lower than in 1980-1995, when both P/E and market-to-book ratios were relatively low in comparison with 2001-2011.

The Nasdaq index peaked in March 2000 and has not come close to this peak since then. 2000 was not the peak of IPO activity, however. Inspection of Figure 1 shows that 1996 had more small company IPOs than any other year during 1980-2011, and only 1993 had more large company IPOs than 1996. Yet 1996 was not the peak year for valuations. Indeed, one measure of market valuations, the "Shiller price-earnings (P/E)" ratio, computed as the ratio of the level of the S&P 500 index divided by a ten-year moving average of inflation-adjusted earnings of the S&P 500, shows a surprisingly low correlation with scaled IPO activity, as shown in Figure 2.

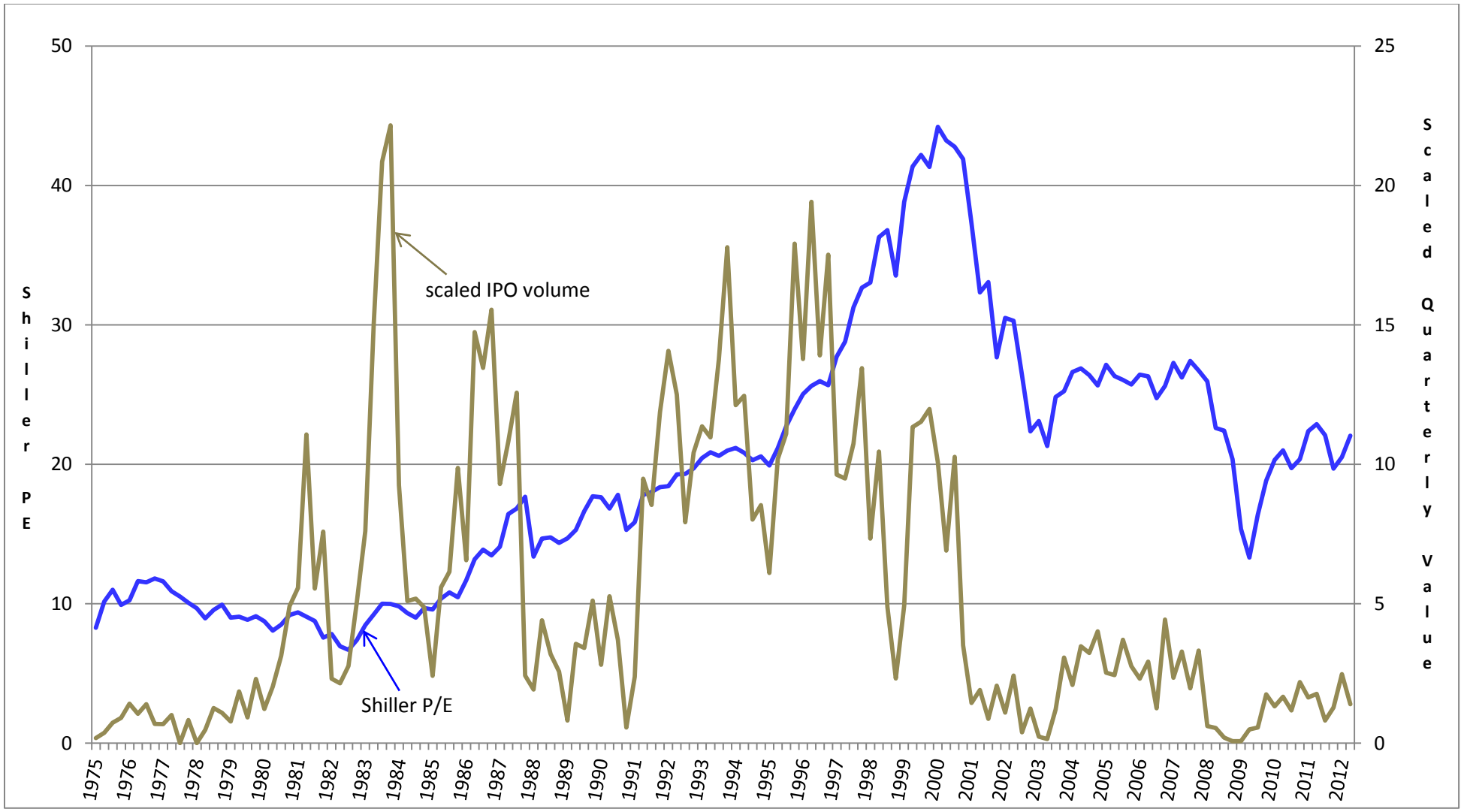

Figure 2: The Shiller P/E ratio is taken from Robert Shiller's website and is computed as the ratio of the S&P 500 index divided by the inflation-adjusted ten-year moving average of S&P 500 earnings. Scaled IPO volume is quarterly IPO volume divided by annual real GDP, in trillions of 2009 dollars. The period plotted is the first quarter of 1975 through the second quarter of 2012.

Inspection of Figure 2 shows that market upturns (increases in the P/E ratio) are typically accompanied by increases in IPO volume, and market downturns are immediately followed by a drop in IPO activity. Yet the level of the market, as measured by the Shiller P/E ratio, has very little correlation with IPO activity. Indeed, starting in 1997, IPO activity has been much lower than might be suggested by market valuations. In unreported results, a very similar pattern to that of the Shiller P/E ratio is displayed if the market-to-book ratio on small stocks is graphed. So whether M/B or P/E ratios are used, there has been a fifteen year drought in IPO activity relative to what might be expected.

The Economies of Scope Hypothesis

In "Where Have All the IPOs Gone?", Xiaohui Gao, Zhongyan Zhu, and I posit that there has been a gradual structural change going on for the last few decades that favors big firms at the expense of small firms. We argue that getting big fast is more important than it used to be in at least some industries, such as the technology industry. We argue that globalization and improvements in communication technology are behind the change. The implication is that being a small independent company and growing organically (i.e., internal growth) is increasingly an inferior business strategy compared to an alternative strategy of growing big fast, which frequently can be accomplished most efficiently through mergers and acquisitions (M&A). This hypothesis implies that young firms are more likely to make acquisitions than used to be the case, and young firms are more likely to sell out in a trade sale rather than go public than used to be the case.

In our working paper, we present a body of facts consistent with our hypothesis, which we term the economies of scope hypothesis. We show that small companies, whether recent IPOs or more seasoned firms, are increasingly unprofitable. We show that the frequency of being acquired within three years of going public has increased over time, with the uptrend starting in the early 1990s. Other authors have shown that there has been an uptrend in the frequency of acquisitions by companies that have recently gone public. We also show that small company IPOs have produced low stock returns for public market investors in the last three decades, including within each of four subperiods that we examine. In a companion 2012

paper, "Economies of Scope and IPO Activity in Europe," Andrea Signori, Silvio Vismara, and I show that these patterns have also been present in Europe in the 1995-2011 period.

If the U.S. IPO market is broken for small companies, but being a small independent firm is still attractive, we might expect to see many small U.S. firms going public abroad. In fact, as documented by several studies, only a few U.S. firms per year have gone public abroad in recent years.[8] In "Europe's Second Markets for Small Companies," my co-authors and I document that European public market investors have earned low returns on European IPOs from 1995-2009 that listed on Europe's markets that cater to emerging growth companies.[9] Furthermore, we document that 95% of the listings on London's Alternative Investment Market (AIM) have been "placings," restricted to qualified institutional buyers (QIBs). Most of these IPOs have been for very small amounts, and no liquid market ever developed. The reality is that very few of the AIM IPOs would have qualified for Nasdaq listing.

The economies of scope hypothesis predicts a gradual drop in small company IPO activity over time, rather than the abrupt fall that occurred between 2000 and 2001. In my paper with Gao and Zhu, we show that the abrupt fall can largely be explained by the collapse of the internet bubble. Market valuations during 2001-2011 have not been sufficiently depressed, however, to be able to explain the long-term downward trend in small company IPO volume. Figure 2, where the Shiller P/E ratio is graphed, illustrates the inability of market valuations to explain the low IPO volume in the last decade.

Excessive Direct and Indirect Costs of Going Public

One issue that has gotten very little attention in the U.S. is the high direct and indirect cost of going public associated with high investment banking fees and the underpricing of IPOs. As noted in a recent *Journal of Finance* article, almost all moderate-size IPOs in the U.S. pay investment banking fees of 7%, whereas in Europe the fees would typically be in the vicinity of

[8] See Craig Doidge, G. Andrew Karolyi, and René M. Stulz, "Has New York Become Less Competitive than London in Global Markets? Evaluating Foreign Listing Choices over Time," *Journal of Financial Economics* (March 2009) Vol. 91, No. 3, pp. 253-277.

[9] See Silvio Vismara, Stefano Paleari, and Jay R. Ritter, "Europe's Second Markets for Small Companies," *European Financial Management* (June 2012), Vol. 18, No. 3, pp. 352-388.

4%.[10] There are additional legal, auditing, and prospectus printing costs, as well as the opportunity cost of management time, which add several percent to the costs, although these other costs have a large fixed-cost component and are smaller in percentage terms for larger offerings. Furthermore, there is the indirect cost of selling stock for less than its subsequent market price. In the last decade, the average U.S. IPO has had a first-day return of 11%, measured from the offer price to the first-day closing price. For a moderate size IPO with an offer price of $10 per share, the firm has thus netted at most $9.30 for a share that trades at, on average, $11.10 in the market. This $1.80 gap is 16% of the expected market price of $11.10. Since a typical IPO sells 30% of the shares to be outstanding, at least 0.16×30% = 4.8% of the post-issue market value of the firm is lost in the process of going public.

Now, I am not arguing that the costs of going public should be zero, nor am I arguing that issuing firms receive nothing in return for the fees that investment bankers receive. But the costs of going public do seem to be higher than they need to be. I continue to be puzzled by why more companies do not hire WRHambrecht + Co to conduct an IPO auction. WRHambrecht + Co is willing to charge lower fees, and auctions can result in less expected underpricing.[11]

Perhaps one of the reasons that issuing firms are fairly complacent about the opportunity cost of underpricing is that they are unaware that with bookbuilding the economic incentives of underwriters are misaligned with that of issuers. Specifically, although the gross spread and other direct costs are required to be disclosed as underwriter compensation, the S.E.C. has never insisted that soft dollar revenue received by underwriters in return for allocating underpricing IPOs to hedge funds and other clients be disclosed. If this underwriter compensation was disclosed, it would be more transparent. As Supreme Court Judge Louis Brandeis stated, “Sunlight is said to be the best of disinfectants.”

Once a company is public, it is subject to not only Sarbanes-Oxley requirements, but there is also the threat of shareholder class-action lawsuits, which result in higher Directors and Officers insurance premiums than if the company was private. As many commentators have

[10] See Mark Abrahamson, Tim Jenkinson, and Howard Jones, “Why Don’t U.S. Issuers Demand European Fees for IPOs?” *Journal of Finance* (December 2011) Vol. 66, No. 6, pp. 2055-2082. The authors calculate that differences in legal costs can account for approximately 0.5% of the 3.0% gap in underwriting fees between the U.S. and Europe.
[11] See Degeorge, François, François Derrien, and Kent L. Womack, “Auctioned IPOs: The U.S. Evidence,” *Journal of Financial Economics* (November 2010), Vol. 98, No. 2, pp. 177-194.

noted, the current legal system in which a company pays for the misdeeds of company executives hits shareholders twice—from both the effect of correcting an accounting misstatement, for example, and from either higher D&O payments or money that the company pays in a settlement. In general, the executive or executives who are responsible for the misdeed bear only part of these costs, reducing the deterrence effect of lawsuits. Furthermore, there is a cost associated with discovery and lawsuit defenses whether or not a company has engaged in a misdeed.

Although the direct and indirect costs of going public are high, and public firms have higher ongoing legal costs, it is not clear that those costs have been higher in the last decade than in the 1990s. Thus, these costs are not good candidates to explain the drop in IPO volume in the last decade.

Minimum Tick Sizes

Section 106(b) of Title 1 of the JOBS Act mandated that the S.E.C. conduct a study of the impact of low tick sizes on the IPO market, resulting in the July 2012 *Report to Congress on Decimalization*. The study concluded that there was insufficient existing evidence to recommend mandating a minimum tick size. In David Weild, Edward Kim, and Lisa Newport's September 2012 Grant Thornton white paper "The Trouble with Small Tick Sizes," the authors state that a minimum tick size "… in sub-$2 billion market value stocks will bring life back to capital formation and with it, innovation, job growth and U.S. competitiveness." They propose that a minimum tick size, perhaps ten cents per share, should be mandated for small cap stocks.

Tick size is the minimum increment in which a security can trade. Until 1997, when stocks started trading in sixteenths, the tick size for U.S. stocks had been one eighth of a dollar, with prices such as $12.00, $12.125, $12.25, etc. Consequently, the minimum bid-ask spread was one-eighth. Until May 1994, however, many Nasdaq stocks had bid-ask spreads of 25 cents because market makers colluded and avoided "odd eighth" prices such as $12.125, 12.375, $12.625, etc. Following the move to decimalization in 2001, the tick size fell to one cent.

A higher minimum tick size than the size that market participants would otherwise voluntarily arrive at is equivalent to a transaction tax, with one important caveat. Instead of the

government receiving the revenue from an explicit tax, the revenue from a higher tick size is received by market makers, and can create economic incentives to market a stock, boosting the price. It should be kept in mind, however, that a higher tick size would generate more revenue only if the increase in revenue per transaction more than offset the reduced number of transactions associated with a higher cost of transacting.

Weild and Kim, in both their 2012 white paper with Lisa Newport and in their previous white papers listed in the references, make a distinction between tick sizes, bid-ask spreads, and what they term the "bankable spread." On page 6 of the 2012 white paper, they define the bankable spread as "the portion of a spread that market makers can reasonably rely upon to compensate themselves for their investment in capital, research and sales support. In today's electronic-order driven market, as a rule of thumb, the bankable spread is generally equivalent to the tick size."[12]

The Grant Thornton white papers argue that a major reason for the decline in small company IPO volume has been a change in market structure that has resulted in a decline in bankable spreads, which in turn has reduced the economic incentive for equity salespeople to market a stock and has caused the collapse of the IPO "ecosystem" composed of, among other parts, boutique underwriters and regional investment banks. The decline in bid-ask spreads started with the end of collusion by Nasdaq market-makers in 1994. The decline in bankable spreads has been facilitated by technological changes, the U.S. Securities and Exchange Commission's (S.E.C.) Order Handling Rules in 1997, Regulation ATS in 1998, the move to decimalization in 2001, and Regulation NMS in 2005.[13]

Weild and Kim, however, make no effort to quantify how much a higher tick size would boost the market price of small cap stocks. Their papers merely provide selected facts, such as a reduction in the number of investment banks since 2000 and the decrease in tick sizes in the

[12] The quoted spreads on small cap stocks, however, are typically larger than the tick size of a penny per share. Table 1, Panel B of Hendrik Bessembinder's "Trade Execution Costs and Market Quality after Decimalization" (2003) reports that the volume-weighted average quoted spread for large cap Nasdaq stocks declined from 7.01 cents per share to 1.62 cents per share between the pre-decimalization period January 8-26, 2001 and the post-decimalization period April 9-August 31, 2001, with the average quoted spread declining for small cap Nasdaq stocks from 12.70 cents to 7.98 cents per share.

[13] Reg ATS refers to Alternative Trading Systems, which are non-exchange venues for matching buyers and sellers, and NMS refers to National Market System.

last fifteen years, that loosely coincide with the decrease since 1996 in the number of small company IPOs. The Grant Thornton white papers do not discuss other facts that could also have a causal effect on small company IPO volume, such as the decline in the profitability of small companies and the low returns earned by public market investors on small company IPOs.

What evidence would support the claim that the decrease in small company IPO activity is due to a decrease in tick sizes and the decline in the IPO ecosystem? I can think of two testable predictions. First, if low public market valuations are behind the drought in small company IPO activity, I would expect a decrease in venture capital funding of startups due to the lack of this attractive exit path. Second, I would expect to see a decrease in public market small company valuation multiples relative to large company valuation multiples.

The evidence from the venture capital industry is unambiguous: during 1980-1994, according to the National Venture Capital Association (NVCA) yearbooks, VC investment never exceeded $4.5 billion per year in nominal terms, or $10 billion per year in terms of 2012 purchasing power. During 1995-2011, inflation-adjusted VC investment per year was greater than $10 billion every year, peaking at over $100 billion in 2000 and exceeding $20 billion per year in almost every year since then.[14] In the last decade, most VC exits have been via trade sales. It appears that VCs are willing to continue funding new technology and biomedical startups even without an active IPO market for small company IPOs.

The evidence from public market valuation multiples is illustrated in Figure 3, which shows the price-earnings (PE) ratios for publicly traded small firms (less than $1 billion in inflation-adjusted annual sales) and big firms. The ratios are computed using only firms with positive earnings before extraordinary items, and are calculated for each year as the sum of market values divided by the sum of earnings.[15] Inspection of Figure 3 shows that for 29 out of

[14] Dow Jones VentureOne reports slightly different numbers from year-to-year, but the patterns are the same. For example, VentureOne reports $32.6 billion of new commitments in 2011. In general, when a fund is raised, limited partners make commitments to invest capital when it is requested, and most of the money is then invested over the following five years.

[15] The Appendix Table reports the number of companies with positive EPS each year, and reports the time-series of PE ratios using two different calculations: the ratio of aggregate market value divided by aggregate earnings, as reported in Figure 3, and the median PE ratios. Similar patterns are present when the definition of small and large firms is changed from using a $1 billion cutoff (2011 purchasing power) to a $250 million cutoff (2009 purchasing power) as used in Gao, Ritter, and Zhu's "Where Have All the IPOs Gone?". The patterns are also similar when earnings after extraordinary items are used. The patterns are different, however, when the sample includes all

32 years, the small firm PE ratio is higher than the big firm PE ratio. Importantly, there is no deterioration of the small firm PE ratio relative to the big firm PE ratio since 1996, in spite of the decrease in tick sizes and a decrease in the number of analysts covering small-cap stocks.[16] Thus, the evidence in Figure 3 offers no support for the Grant Thornton hypothesis that small company IPO volume has dropped due to declining tick sizes, since the implied drop in small company valuations did not occur.

firms, rather than just firms with positive EPS. In some years, the median small firm has negative earnings, and in other years the aggregate earnings numbers are either negative or near zero. As a result, the ratios jump from positive to negative or to extremely high ratios in some years when the denominator is positive but near zero.

[16] One might expect an increase in small firm PE ratios after 2001 due to the change in the expensing of employee stock options. This increase in reported expenses would, everything else the same, lower reported earnings, even though this accounting change did not affect cash flows. The conventional wisdom is that small companies, and especially tech companies, were more intensive in the granting of employee stock options.

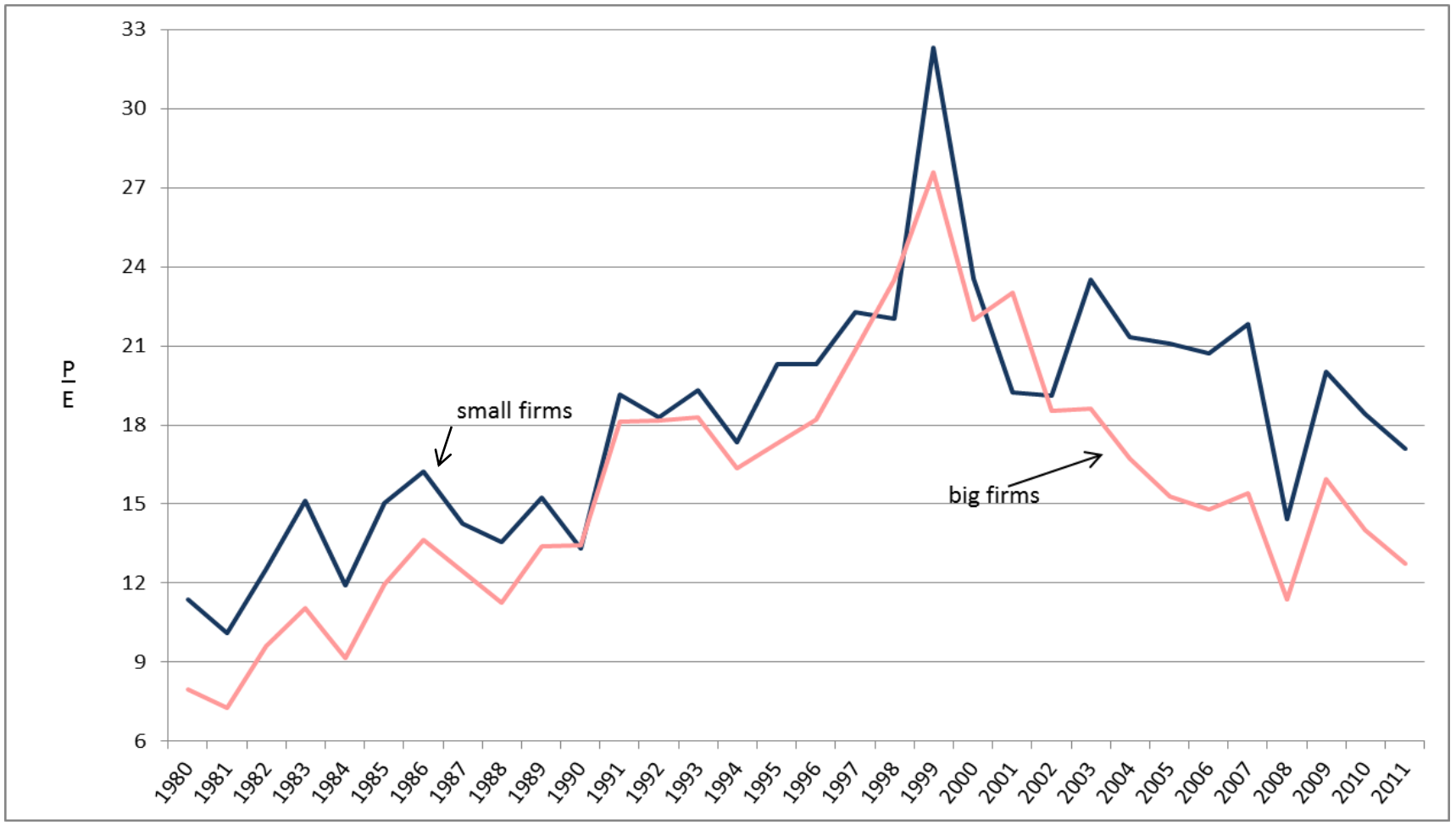

Figure 3. Price-earnings ratio of small company (annual sales less than $1 billion, 2011 purchasing power) and big company stocks with positive EPS (before extraordinary items) traded on the Amex, Nasdaq, or NYSE with Compustat EPS data available. The price-earnings ratios are computed as the sum of the market values divided by the sum of the earnings for, respectively, small and big companies with positive EPS.

That said, the decline of the IPO ecosystem has undoubtedly had some effect on small company IPO volume. Quantifying the effect is difficult because causality goes in both directions: fewer small company IPOs has resulted in a smaller infrastructure, and a smaller infrastructure has resulted in fewer IPOs. If smaller investment banks were earning economic profits on trading IPOs in the aftermarket due to higher bankable spreads, they would have an economic incentive to take more companies public, i.e., there would be a lower threshold for taking a company public and providing analyst coverage. Given the low long-run returns on small company IPOs that public market investors have earned, however, public market investors might not be willing to pay a sufficiently high price to make it attractive for a firm to go public rather than sell out in a trade sale.

The Effect of SecondMarket, SharesPost, and Crowdfunding on IPO Activity

In the last few years, two markets for private companies have sprung up, SecondMarket and SharesPost. Both of these markets attempt to bring together buyers and sellers of stock in private companies, including companies, venture capitalists, and employees on the sell side, and investors (individual and institutional) on the buy side of the market.[17] As with most illiquid markets where there is private information, buyers have had to worry about adverse selection.[18] For some stocks, however, notably Facebook before its May 2012 IPO, there have been many transactions, and the ability of pre-IPO investors and employees to cash out some or all of their stakes before the company is listed has been present.

The JOBS Act clarified several legal uncertainties regarding the operation of these secondary markets, and also increased from 500 to 2,000 the number of shareholders of record that triggers public reporting requirements. Furthermore, the JOBS Act exempted employees from the count. By making these changes, many private companies that did not want to allow

[17] In 2007, Goldman Sachs set up a private marketplace for unregistered shares (Rule 144a securities), Goldman Sachs Tradable Unregistered Equity trading platform, or GSTrUE. After quickly attracting two large private companies that each issued close to $1 billion in shares, the venue failed to attract additional issuers and liquidity dried up. GSTrUE appears to have been supplanted by the Portal Alliance, a marketplace formed in 2009 by NASDAQ OMX, Goldman Sachs, and other Wall Street firms that has failed to attract issuers.

[18] SecondMarket requires that the company must give approval to allow its shares to trade, and requires that the company provide financial statements to buyers and sellers. SecondMarket allows the company to limit who is permitted to view the financial statements.

existing shareholders to sell shares to other investors because of the fear of triggering the public reporting requirements are now far from the threshold level of investors. These regulatory changes and the development of these secondary markets have reduced the benefits of going public, and thus, everything else the same, may result in a reduction in the number of IPOs.

The JOBS Act also encouraged crowdfunding, the concept that a large number of investors should be able to each invest a small amount of money in a company that is, hopefully, early in its lifecycle. I say hopefully, because some companies that are early in their lifecycle end up having very short lifecycles before they subsequently go out of business. Crowdfunding has obvious collective action problems, since each investor has little incentive to devote substantial resources into doing due diligence. It appears likely, however, that a number of intermediaries will be created to do some screening. I am of the opinion that it is unlikely that investors will earn high average returns on crowdfunding investments, although the returns may be higher than the -30% earned on purchases of state lottery tickets.

IPOs and Job Creation

In a recent Kauffman Foundation report, Martin Kenney, Donald Patton, and I document the employment and revenue growth for U.S. companies that went public from June 1996-December 2010.[19] For the 2,766 domestic operating company IPOs from this period, we find that the average company added 822 employees since its IPO. In the ten years after going public, the average company increased employment by 60%, amounting to a 4.8% compound annual growth rate (CAGR).[20]

One can use these numbers to calculate the number of jobs that would have been created if the average annual volume of domestic operating company IPOs from 1980-2000 had continued during 2001-2011, rather than collapsing. In 1980-2000, an average of 297 domestic

[19] Martin Kenney, Donald Patton, and Jay R. Ritter, May 2012 Kauffman Foundation Report *Post-IPO Employment and Revenue Growth for U.S. IPOs, June 1996-December 2010*.

[20] The 60% cumulative average growth in employment and 4.8% CAGR numbers are based on the 1,857 IPOs from June 1996-December 2000. The numbers are computed as the increase in the aggregate employment of the 1,857 firms relative to their aggregate employment at the time of the IPO. The average company had 1,303 employees at the time of the IPO. Because of the lack of small company IPOs during 2001-2010, the average pre-IPO employment for the full population of 2,766 IPOs is 1,830 employees.

operating companies per year went public, whereas an average of only 90 domestic operating companies per year have gone public since then, a difference of 207 IPOs per year.[21] Over the eleven year period 2001-2011, this amounts to a shortfall of 2,277 IPOs. Multiplying 2,277 missing IPOs by 822 jobs per IPO results in a figure of 1.87 million jobs that were not "created" after the IPO due to the IPO shortfall. This calculation assumes that these employees would have been sitting at home watching TV if they weren't hired by the recent IPO firm, and that the roughly $100 million raised per IPO would not have been invested in anything else. But, in a mechanical sense, 1.87 million jobs have been "lost."

In the lead-up to the passage of the JOBS Act, a widely-reported statistic was that companies going public create huge numbers of jobs after the IPO, with only 8-10% of a company's subsequent number of employees on the payroll before a company goes public. For example, slide 11 of the IPO Task Force presentation to the Senate Banking Committee on October 11, 2011 reported that "92% of Job Growth in a Company Occurs Post-IPO." This number, sometimes rounded off to 90%, was repeated in several *Wall Street Journal* articles and op-ed pieces.[22]

The 92% job growth number comes from reports paid for by the National Venture Capital Association (NVCA), an industry trade group. The annual reports, entitled *Venture Impact: The Economic importance of Venture Capital-Backed Companies in the U.S. Economy*, are produced by consulting firm IHS Global Insight. The 92% (or 90%) number has been used with statements that if the IPO volume of 1996 had continued in the years since then, rather than the lower number of IPOs that actually occurred, as many as 22.7 million more jobs would

[21] During 2001-2011, an average of 9 foreign non-ADR IPOs occurred in the U.S. each year, which is why there are an average of 99 operating company IPOs and 90 domestic operating company IPOs. During 1980-2000, 286 foreign company non-ADR IPOs occurred, an average of 14 per year, which is why there is an average of 311 operating company IPOs and 297 domestic operating company IPOs per year. In the Kauffman Foundation report, we calculate 1.88 million jobs lost because we use a number of 298 domestic IPOs during 1980-2000 rather than 297, since we assumed that there were zero non-ADR foreign IPOs during 1980-1987. Here, I have identified 16 foreign non-ADR IPOs during 1980-1987.

[22] See, for example, the April 7, 2012 *Wall Street Journal* interview with Kate Mitchell, IPO Task Force chairperson and former chairman of the National Venture Capital Association trade group, entitled "How Silicon Valley Won in Washington." The article states, without questioning, "To sell politicians on the benefits of allowing start-ups to grow into public companies, the task force pointed to research showing that when such firms go public, more than 90% of job creation happens *after* the IPO." Also, in his March 1, 2012 *WSJ* opinion piece "Restarting the U.S. Capital Machine," Delaware Governor Jack Markell states "In fact, 92% of a typical company's employment growth occurs after the IPO."

have been created. For example, in the IPO Task Force report presented to the U.S. Treasury and the U.S. Senate Banking Committee in late 2011 by task force chairwomen Kate Mitchell, the 22.7 million jobs figure is used. Where did this number come from?

The 22.7 million jobs lost number comes from pages 26-27 of a 2009 Grant Thornton white paper, "A Wake-up Call for America," by David Weild and Edward Kim. Weild and Kim make four different assumptions than my coauthors and I do when we calculate 1.87 million jobs lost. Weild and Kim also report other, lower numbers based upon alternative employee growth rate and benchmark number of IPOs assumptions, but their high-end estimate is the number that has typically been repeated, without qualifications.

First, Weild and Kim make the reasonable assumption that IPO volume should be proportional to real GDP, and since the US economy has grown over the last thirty years, one would expect IPO activity to rise rather than be flat. Thus, our number, which assumes that IPO activity would be constant over time, is conservative in comparison.

Second, Weild and Kim assume that each IPO that didn't occur would have had 1,372 employees before going public, and that post-IPO employment would grow at a CAGR of 17.8%, a number that implies employment growing by 415% in the ten years after an IPO (and approximately 900% in 14 years). The 17.8% per year number is justified based on a "select" group of 25 IPOs from 1996 and later in the IHS Global Insights reports. In other words, they assume that thousands of companies that didn't go public would have grown as fast as a select group of highly successful venture capital-backed companies such as Google if they had! This assumption, which I would categorize as completely ridiculous, has a huge impact on their calculations.

Third, on page 26 Weild and Kim make the assumption that the normal level of IPO activity is that of 1996, the peak of the IPO market, and that the volume should grow from this level. The assumption that the peak year of 1996 is normal biases their number upwards. Furthermore, their count of 803 IPOs in 1996 apparently includes 110 penny stock and unit IPOs, as well as 64 foreign company IPOs.[23] Thus, they are implicitly assuming that the average

[23] See Tables 14 and 15 of "Initial Public Offerings: Tables Updated Through 2011" on my website for a decomposition of how many IPOs there are in the U.S. every year. For 1996, my count is 675 operating company

penny stock IPO had 1,372 pre-IPO employees and grew its employment by 415% in the following decade. In other words, that it would be just as big and successful as the average "select" venture capital-backed IPO.

Fourth, they assume that there was an IPO shortfall starting in 1997, rather than 2001, and that more than 1,500 additional firms would have gone public in 1997-2000 and then grown their employment by 17.8% per year for more than a decade. This 1997-2000 shortfall assumption, combined with the 17.8% CAGR assumption, adds at least 9 million lost jobs to their 22.7 million total.[24]

In sum, the 22.7 million jobs lost number is based on one reasonable assumption and three indefensible assumptions.[25] The exact number of jobs lost through a shortfall in IPO activity, however, is not something that can be calculated though mechanical computations. If one company goes public and raises capital that is used to hire new employees, capital is taken from some other activity in the economy, and, unless the company only hires people who would otherwise be unemployed, the net number of jobs created in the economy is less than the number added by this firm. Incidentally, to the best of my knowledge, none of the sources quoting the 22.7 million jobs lost number has pointed out that with a civilian labor force of 154.5 million and 12.8 million unemployed in August 2012, any number above 12.8 million would create a negative unemployment rate unless the labor force expanded.[26]

IPOs, including 32 non-ADR foreign listings, for a total of 643 domestic operating IPOs that are not penny stock or unit IPOs.

[24] Exhibit 27 of Weild and Kim 's report computes 36 separate numbers for job creation based upon alternative assumptions regarding the pre-IPO number of employees, the CAGR of employment, and the benchmark number of IPOs (1998 actual, 1991-1995 average, and 1996 actual), resulting in estimates varying from 1.1 million jobs to 22.7 million jobs. On page 27 they then state "Though 22 million may seem to be a staggering number on its own, we believe it is a reasonable estimate in the context of long-term historical employment growth in this country."

[25] Weild, Kim, and Newport's "The Trouble with Small Tick Sizes," (2012, page 26) backs away from the extreme number of 22.7 million jobs and states "We estimate that this dearth of IPOs has cost the United States as many as 9.4 million additional jobs that might have been created after companies go public. If we add the private market effect (our best estimate of the multiplier effect in the private market when more companies go public), the number of additional jobs increases to 18.8 million (see Exhibit 6)." The 9.4 million jobs number is based on an assumption of annual 2.57% U.S. real GDP growth and 822 post-IPO jobs created per IPO, with the 822 jobs number coming from my Kauffman Foundation report.

[26] The civilian labor force and unemployment numbers are in Table 1 at http://www.bls.gov/news.release/laus.htm.

What Should Be Done

Well-functioning labor markets and capital markets can help allocate resources to their highest-valued uses, and thus boost standards of living. A strong case can be made that the private returns for investments that lead to technological advances underestimate the social returns. A well-functioning IPO market can facilitate the financing of young growth companies, partly by being a conduit for raising capital, but also by providing an exit for pre-IPO investors who invested with the anticipation of eventually having a liquid market in which to sell some or all of their stock. Not all IPOs are the same, however. I would argue that a restaurant chain adding employees is largely just taking business away from competing restaurants, with little effect on the economy. On the other hand, a biotechnology company that devolops a drug that cheaply prevents diabetes, and thus results in fewer workers taking early retirement and/or incurring large medical costs or reduced productivity, would have large social benefits.

IPOs are merely one way in which pre-IPO shareholders achieve either immediate or future liquidity and by which private companies raise money. Thus, public policy towards IPOs should be determined as one element of policies for well-functioning capital markets that, in the absence of externalities, fund positive net present value (NPV) investments and do not fund negative NPV-investments. Tax policy and investor protection policy cannot be separated from policies aimed at the efficient raising of capital. If venture capitalists and their limited partners had been earning very high rates of return during the last decade and there was very little money being invested by venture capitalists, or if public market investors had been earning very high returns on investments in small company IPOs, I would be more concerned than I am about a shortage of capital being a problem for emerging growth companies. Instead, it is the lack of profitability of these companies that is my biggest concern.

If the reason that many small companies are not going public is because they will be more profitable as part of a larger organization, then policies designed to encourage companies to remain small and independent have the potential to harm the economy, rather than boost it. Not all emerging growth companies should stay private or merge, however, and to the degree that excessive burdens associated with going public, and being public, result in less capital being raised and wisely invested, standards of living are lowered.

In thinking about the JOBS Act, one should keep in mind that the law of unintended consequences will never be repealed. It is possible that, by making it easier to raise money privately, creating some liquidity without being public, restricting the information that stockholders have access to, restricting the ability of public market shareholders to constrain managers after investors contribute capital, and driving out independent research, the net effect of the JOBS Act might be to reduce the flow of capital into young high technology companies and/or the number of small emerging growth company IPOs. I do not think that the JOBS Act will result in a flood of companies going public, because I think that the main reason why fewer small companies have been going public is because of the increased difficulty of small companies to earn profits, and the JOBS Act does little to solve this problem. Nor do I think that noticeably higher economic growth and job creation will result from the JOBS Act.

I also do not see any reason to set minimum tick sizes for firms with sales or market caps below some threshold. Indeed, the evidence from other countries that have created second markets with less stringent criteria than Nasdaq and the NYSE impose is not promising. As documented in my co-authored papers "Europe's Second Markets for Small Companies" and "Economies of Scope and IPO Activity in Europe," investors in these markets have earned very low returns.[27]

What should be done? I would suggest three policy changes that, I suspect, would have a modest effect on encouraging more IPOs. More importantly, I think that these proposed changes would improve standards of living by encouraging innovation and more efficiently allocating capital and labor.

First, I would lower the costs of going public by encouraging the use of auctions rather than the use of bookbuilding. If the costs of going public eat up 5% of firm value, on average, quantitatively these costs are of the same order of magnitude as is the lower level of share prices from a lack of analyst coverage. The specific suggestion that I am making is for the S.E.C. to interpret its existing regulations on the disclosure of underwriter compensation less narrowly, and require the disclosure of soft dollar commission revenue that is generated when

[27] In the United States, the American Stock Exchange's Emerging Company Marketplace (ECM) was created in 1992 but failed to attract many new listings before it closed in 1995. See Aggarwal and Angel (1999) for a discussion of the ECM.

underwriters use bookbuilding. I think that the average level of IPO underpricing would decrease. Investment bankers are opposed to reforms that might lead to lower gross spreads or less underpricing. Investment bankers have a lot of political influence, especially with Republicans.

Second, I would reform the legal system to discourage class-action lawsuits that do not have solid grounds, and I would shift the defendants from companies (and their shareholders) to the individuals who are responsible for the actions. Plaintiff attorneys, and many defense attorneys and consultants, are opposed to this change, for they not only benefit from the existing system, but they do not want to reduce the amount of malfeasance to zero, for then they would make no money. These attorneys have a lot of political influence, especially with Democrats.

Third, I would reform the copyright and patent system. A book by Adam Jaffe and Josh Lerner (2004) provides a cogent analysis of the problems with our current system of patenting. Patents and copyrights are designed to create temporary monopoly power so that a creator can capture part of the benefits of an innovation. But current copyright law in the United States gives exclusive rights to receive royalties for 70 years after the death of the creator. The great-grandchildren of dead authors and musicians, and the owners of many existing patents, are opposed to this proposed change. At the other extreme, intellectual property rights are not effectively enforced in China and many other countries, with the result that firms based in the U.S. and other countries are unable to capture economic returns on their investments.

In summary, I do not know what the optimal level of IPO activity is in the United States or any other country, nor do I think that it should necessarily be the same now as it once was. I believe that a long-term change has been occurring in which getting big fast is now more important than was once the case, at least in certain industries. Because merging is sometimes the most efficient way of getting a successful new technology to market quickly, I do not view the increase in trade sales and the decrease in IPO activity as necessarily alarming.

References:

Abrahamson, Mark, Tim Jenkinson, and Howard Jones, "Why Don't U.S. Issuers Demand European Fees for IPOs?" *Journal of Finance* (December 2011) Vol. 66, No. 6, pp. 2055-2082.

Aggarwal, Reena, and James J. Angel, "The Rise and Fall of the Amex Emerging Company Marketplace," *Journal of Financial Economics* (May 1999), Vol. 52, pp. 257-289.

Bessembinder, Hendrik, "Trade Execution Costs and Market Quality after Decimalization," *Journal of Financial and Quantitative Analysis* (December 2003) Vol. 38, pp. 747-777.

Degeorge, François, François Derrien, and Kent L. Womack, "Auctioned IPOs: The U.S. Evidence," *Journal of Financial Economics* (November 2010), Vol. 98, No. 2, pp. 177-194

Demiroglu, Cem, and Michael Ryngaert, "The First Analyst Coverage of Neglected Stocks," *Financial Management* (Summer 2010), Vol. 39, No. 2, pp. 555-584.

Doidge, Craig, G. Andrew Karolyi, and René M. Stulz, "Has New York Become Less Competitive than London in Global Markets? Evaluating Foreign Listing Choices over Time," *Journal of Financial Economics* (March 2009), Vol. 91, No. 3, pp. 253-277.

Gao, Xiaohui, Jay R. Ritter, and Zhongyan Zhu, 2012, "Where Have All the IPOs Gone?" unpublished University of Florida working paper.

Jaffe, Adam B., and Josh Lerner, 2004, *Innovation and Its Discontents: How Our Broken Patent System is Endangering Innovation and Progress, and What to Do About It* Princeton, NJ: Princeton University Press.

IHS Global Insight, 2011, *Venture Impact: The Economic importance of Venture Capital-Backed Companies in the U.S. Economy*.

Kenney, Martin, Donald Patton, and Jay R. Ritter, 2012, *Post-IPO Employment and Revenue Growth for U.S. IPOs, June 1996-2010* Kauffman Foundation Report, Kansas City, MO.

Markell, Jack, "Restarting the U.S. Capital Machine," *Wall Street Journal* March 1, 2012.

Ritter, Jay R. "Equilibrium in the IPO Market," *Annual Review of Financial Economics* (2011), Vol. 3, pp. 347-374.

Ritter, Jay R. "U.S. Senate Testimony" March 6, 2012 before the Senate Committee on Banking, Housing, and Urban Affairs.

Ritter, Jay R., Andrea Signori, and Silvio Vismara, 2012, "Economies of Scope and IPO Activity in Europe," forthcoming in *Handbook of Research on IPOs*, edited by Mario Levis and Silvio Vismara, Edward Elgar.

U.S. Securities and Exchange Commission, 2012, *Report to Congress on Decimalization*.

Vismara, Silvio, Stefano Paleari, and Jay R. Ritter, 2012, "Europe's Second Markets for Small Companies," *European Financial Management*, Vol. 18, No. 3 (June 2012), pp. 352-388.

Weild, David, 2011, "How to Revive Small-Cap IPOs," *Wall Street Journal*, October 27, 2011, A17.

Weild, David, and Edward Kim, 2008, "Why Are IPOs in the ICU?" Grant Thornton LLP white paper.

Weild, David, and Edward Kim, 2009, "A Wake-up Call for America," Grant Thornton LLP white paper.

Weild, David, Edward Kim, and Lisa Newport, 2012, "The Trouble with Small Tick Sizes," Grant Thornton LLP white paper.

Appendix Table

Number of Publicly Listed Firms with Positive EPS and the Median and Aggregate PE Ratios, 1980-2011

Sample firms are Amex, Nasdaq, and NYSE firms listed on CRSP with positive earnings per share (EPS before extraordinary items) on Compustat. Firms with SIC codes between 6000-6199 (banks and S&Ls) and 6700-6799 (closed-end funds and REITs) are excluded. Small firms are defined as those with fiscal year sales of less than $1 billion in 2011 dollars, using the U.S. Consumers Price Index, and big firms are those with more than $1 billion in sales. PE1 is the median price-earnings (PE) ratio, and PE2 is the ratio of the aggregates, calculated as the sum of undiluted earnings divided by the sum of market values for, respectively, small or big firms. For companies with multiple classes of shares outstanding, all share classes are used. Market values are calculated as of the end of the fiscal year, so, for example, the 1999 numbers reflect the prices for Dec. 31 for companies with a Dec. 31 fiscal year, but June 30 for companies with June 30 fiscal years.

Year	No. of Small Firms	Median Small Firm PE1	Aggregate Small Firm PE2	No. of Big Firms	Median Big Firm PE1	Aggregate Big Firm PE2
1980	2365	9.62	11.38	953	7.89	7.98
1981	2493	9.70	10.12	899	7.38	7.28
1982	2306	12.74	12.55	809	9.76	9.61
1983	2565	15.31	15.13	820	11.38	11.07
1984	2587	12.74	11.92	848	9.97	9.17
1985	2410	15.73	15.04	785	13.04	11.94
1986	2491	16.43	16.22	783	14.52	13.64
1987	2625	14.05	14.27	875	12.17	12.46
1988	2508	13.35	13.57	906	11.57	11.25
1989	2367	14.42	15.26	884	13.01	13.40
1990	2342	12.87	13.30	855	12.66	13.44
1991	2405	17.77	19.16	819	17.23	18.14
1992	2668	18.09	18.31	798	17.68	18.15
1993	2995	18.65	19.31	903	18.54	18.27
1994	3199	16.07	17.34	1071	15.11	16.35
1995	3192	18.23	20.31	1115	16.28	17.31
1996	3354	18.71	20.31	1256	17.19	18.20
1997	3256	19.48	22.28	1325	19.26	20.83
1998	2868	16.35	22.04	1291	18.61	23.52
1999	2590	16.21	32.31	1338	16.39	27.60
2000	2200	13.97	23.54	1317	16.32	22.00
2001	1783	19.10	19.23	1113	20.65	23.00
2002	1734	16.79	19.12	1101	16.94	18.54
2003	1813	22.40	23.49	1300	19.12	18.63
2004	1936	22.12	21.34	1459	18.49	16.74
2005	1877	21.89	21.08	1463	17.51	15.29
2006	1837	21.75	20.70	1523	17.76	14.78
2007	1673	21.06	21.84	1406	16.68	15.42
2008	1308	14.14	14.41	1178	12.34	11.38
2009	1329	19.28	20.03	1193	16.70	15.93
2010	1564	19.20	18.40	1348	16.61	14.00
2011	1437	17.22	17.08	1342	15.14	12.73