"The Role of Accounting in the 21st Century Firm"

January 2, 2015

Jerold L. Zimmerman*
Simon School of Business
University of Rochester

Abstract

I explore the evolving role of accounting information in allocating capital. Accounting arose to control conflicts of interest in organizations (stewardship role). The industrial revolution spawned capital-intensive firms and public capital markets with dispersed shareholders to finance these firms. The regulation of these public capital markets shifted the role of accounting towards providing investors information for making informed investment decisions (valuation role). With the advent of the semiconductor and global competition, emerging and public firms today differ from their predecessors in fundamental ways. Exploiting the information technologies created by the semiconductor, 21st century firms are now more knowledge based, have more intangible assets, are more reliant on their employees' human capital, confront increased competition, and face diverse conflicts of interests and hence different challenges accessing capital than their forerunners. Responding to the demands of 21st century firms, private-equity markets provide a bundled service – capital and governance. To supply this bundle, private equity firms require accounting information to control the conflicts of interest both within the private-equity firm (between the general and limited partners) and within their investees. Controlling these conflicts shifts the role of accounting back towards its original stewardship roots. The valuation role remains important, but there is little to value unless the conflicts of interest are first mitigated.

* Presented at the ICAEW Conference on Information for Better Markets series 'Capital: reporting, regulation and resource allocation' (December 2014). I gratefully acknowledge the financial support provided by the University of Rochester Simon School and the comments from Sanjai Bhagat, Mary Barth, James Brickley, Jeff Collins, Annita Florou, Sudarshan Jayaraman, Jaewoo Kim, Cheryl McWatters, Sugata Roychowdhury, Bryce Schonberger, Brian Singleton-Green, Anup Srivastava, Steven Zeff, and Mark Zupan.

I. Introduction

The organizing committee of the Institute of Chartered Accountants in England and Wales Conference on Information for Better Markets invited me to offer some remarks on "Allocating capital: What information do we need?" Capital is first allocated to firms through diverse debt and equity channels including financial institutions, suppliers, family and friends, employees, retained earnings, private equity and venture capitalists, and government agencies (Thakor, 2011). Financial institutions raise capital from other firms and individuals and make direct investments in firms. Then, managers within firms allocate capital to specific investment projects. All stages require information to inform the various decision makers who supply the capital and invest it. For example, information about the decision maker's prior investment returns affects the amount of capital available to this decision maker for future investments. Information for valuing alternative investments impacts which investments get funding. And, information is used to measure the performance of the decision makers and hence ultimately control their behavior. In general, information performs two roles in capital allocation: it improves decision makers' choices about the value of alternative investments (valuation role) and as a performance measure it provides incentives for the decision makers to choose profitable projects (stewardship/control role).[1] Even in the absence of external capital providers, companies will design their accounting systems for running their business. These internal accounting reports supply information for both decision-making and controlling the behavior of the company's employees.

Addressing the challenging, broad normative question of "What information do we need for allocating capital," provided me the opportunity to explore a number of diverse, yet interconnected themes that I contend are fundamentally changing the "DNA" of many emerging and existing firms, the various stakeholders in these firms, the capital markets that finance these firms, and the role of accounting information in allocating capital to these firms. My conjectures, based on research in economics, finance, and accounting, suggest that fundamental economic forces in the economy are shifting the role of financial accounting back to its stewardship (control) roots from its now dominant valuation (or information) role.

The history of commercial enterprises clearly documents that organizational structures, legal systems, capital markets, and accounting methods adapt concurrently to the changing needs

[1] See Kothari et al. (2010) and Lambert (2010).

of business. Chandler (1962) argues that successful companies adopt organizational structures that match their strategy.[2] As technological and market innovations create new profit-making opportunities (i.e., the invention of the steam engine), and as new and existing firms clamber to monetize these opportunities (i.e., railroads), successful entrepreneurs acquire the needed resources to execute their business strategies designed to exploit the new opportunities. Raising capital to acquire these resources requires corporate governance systems to resolve the inherent conflicts of interests among the resource providers (key stakeholders).

To address the question "Allocating capital: what information do we need?" one must first understand how the "DNA" of firms is changing: the key resource providers, the conflicts of interest among these stakeholders, and the governance mechanisms necessary to mitigate these conflicts. If emerging firms and existing firms have different key stakeholders presenting new conflicts of interests than their predecessors, then the nature of the information used to allocate capital also likely will change. The corporate landscape is shifting. Western economies are now populated by tech companies such as Apple, Amazon, Facebook, Google, Twitter, and Yahoo. Much of traditional manufacturing has moved to Asia. Competition now forces existing firms to restructure by modifying their business models. In 2014, HP split into two separate companies and Sony saw its credit rating cut to junk status as the iconic brand faced stiff competition in its traditional stronghold of consumer electronics.

New firms today involve more "knowledge-based" human capital than physical capital.[3] More of these firms' value is based on their intellectual property rather than physical, tangible property. These human-capital-based firms require different governance structures than physical-capital-based firms because human capital can walk out the door. Since emerging firms and restructuring firms today face different governance challenges than their predecessors, we observe capital markets adapting to finance these firms. Private equity (PE) markets including venture capitalists are now an important source of seed funds and buyout pools that are driving much of the growth in modern economies.[4]

[2] Also see Toms and Wright (2002).

[3] IBM, the quintessential example, shed most of its manufacturing to become a services and software firm. Less than 40% of its 2013 revenue is from hardware sales.

[4] Prior to the rise of public capital markets, capital markets were private. Investors in the early 14th century trading ventures utilized private contracts between the various parties. The rise of public capital markets appears to have eclipsed private investing. But this is in part illusory as data on total private investments are unavailable. Friends and family providing seed money for new ventures goes largely unreported, as does some individual angel investments.

The traditional role of public capital markets is changing as VC funds now finance many of the new startups and PE buyout funds restructure existing companies. Twenty-one percent of US GDP now resides in VC-backed companies.[5] And, since 2011 $600 - $700 billion a year is invested worldwide in PE-backed buyout deals.[6] Large pools of institutional investors, primarily pension funds, insurance companies, and banks, fuel the growth of PE. Moreover, excessive US regulation and litigation of public firms discourages private companies from going public and drives some public companies off organized exchanges.[7] There is now a growing, less regulated private capital market, and the parties in these markets face the challenge of mitigating a host of new governance problems. Accounting in these largely unregulated PE capital markets focuses primarily on stewardship, or what academics call the "efficient contracting" role of accounting.

To briefly summarize my arguments: traditional 19th and 20th century firms relied on large amounts of physical capital. Organized capital markets with liquid shares developed to supply this capital. And accounting and auditing evolved to facilitate the financing of the needed physical capital by mitigating conflicts of interest between debt and equity providers and between the owners and managers. When these organized markets became regulated in the USA in the 1930s, the role of financial accounting shifted away from its stewardship roots and towards providing these public markets with information for valuation.[8] Zeff (2013) describes the shift in financial reporting objectives from "stewardship" to "decision usefulness" primarily for investors (the information/valuation role).

Twenty-first century firms are now more knowledge-based, requiring human capital to generate their intangible assets. Most of the value of these firms' is off-books in the form of growth options (Myers 1977). Lacking physical assets for debt collateral, these firms turn to alternative sources of financing. PE markets with their access to large pools of institutional funds provide that capital. But as important, managers of PE funds are active investors in their investees and help devise governance mechanisms that align the interests of the stakeholders in

[5] "Venture Impact: The Economic Importance of Venture Backed Companies to the U.S. Economy," National Venture Capital Association (2009).
[6] www.preqin.com/docs/newsletters/pe/Preqin-Private-Equity-Spotlight-October-2014.pdf
[7] Several studies document public companies fleeing US exchanges following the passage of the Sarbanes-Oxley Act of 2002. See Gao (2011), Hostak et al. (2013), Piotroski and Srinivasan (2008), Li (2104), and Leuz et al. (2008).
[8] The regulation of UK capital markets increased the financial regulation and investor protection in the middle of the 20th century. See (Franks et al. 2003).

these firms.[9] Jensen (1993) argues, "Active investors are important to a well-functioning governance system because they have the financial interest and independence to view firm management and policies in an unbiased way. They have the incentives to buck the system to correct problems early rather than late when the problems are obvious but difficult to correct."

Capital allocation in 21st century firms is now a three step process. First, institutions invest in PE funds. These funds have limited horizons, usually 10-12 years. To attract capital from institutional investors, the PE firms must design corporate governance mechanisms to moderate the conflicts of interests between the general partner and the limited partners (the institutional investors) in the fund. Second, managers of these funds invest in start-ups or existing firms. To generate attractive returns, PE funds (as active investors) design corporate governance schemes to align the interests of the stakeholders in their investees. Third, the PE funds liquidate the companies in their portfolios by selling them to other PE funds, to strategic buyers, to management, or into the public markets. To help ensure attractive returns to the buyers of the investee, the PE fund managers design post-sale contracts that foster the future success of the investee. All three steps in the process require complex financial contracts to facilitate the deals by mitigating opportunistic behaviors among the various parties in the PE fund and its investees. Except for firms going IPO, all three processes are in relatively unregulated private capital markets populated by sophisticated participants, and these parties are free to devise efficient contracting solutions to reduce the various conflicts of interests they face (Skinner 1993). These parties want less costly, more flexible principles-based accounting systems that allow experimentation to devise governance mechanisms that reduce the various conflicts of interest and retain the human-capital assets inside knowledge-based firms. The ascent of private capital markets has pressured standard setters to provide separate, simplified accounting standards for private companies.[10] These two-tier GAAP provide private firms more flexibility and lower costs to design accounting systems to control the conflicts of interests in

[9] Private equity includes a variety of specialized financial intermediaries including VC funds, angel investors, private equity pools, and other organizations that raise private capital and invest in early and later stage start-ups, private companies seeking capital, and public firms looking to exit the public markets (Gilligan and Wright 2014). VCs and PEs have fundamentally different investment strategies. VCs invest in start-ups and young high-growth companies, whereas many PEs invest in mature companies with stable cash flows and few growth options.

[10] See http://www.ifrs.org/IFRS-for-SMEs/Pages/IFRS-for-SMEs.aspx and http://www.fasb.org/pcc.

knowledge-based firms. The relative importance of accounting in these private companies will gravitate back to its stewardship roots.[11]

To be clear, accounting net income is a poor measure of the manager's performance in firms with substantial growth opportunities (Smith and Watts 1992). An ideal metric that aligns the interests of owners and managers is one that captures the value added in the current period by the managers' actions in that period (Barclay, et al. 2005). Accounting net income fails to do this when the firm has substantial intangible assets because managers' investments in intangible assets (R&D, brand capital, most computer software, human capital) are written off in the period incurred and the future value of these investments are not recognized until realized. In these firms, managers can be adding significant value to the firm yet accounting earnings report losses. So, in growing 21st century human-capital-intensive firms, accounting net income is a poor motivator of the key stakeholders. Rather than utilizing accounting net income, other accounting numbers derived from the audited financial reports can prove constructive in designing incentive contracts in 21st century firms, such as revenues, cash flows, cost reduction targets, working capital, and so forth. In addition, accounting net income in these firms is not very helpful for valuation because current period earnings are a poor predictor of future earnings (Srivastava 2014 and Aggarwal et al. 2102). Hence, while accounting net income is ill-suited for both valuation and stewardship in 21st century firms, other accounting numbers are useful for stewardship (and likely valuation) in these firms.

No generally accepted definition of "stewardship accounting" exists. It has evolved from connoting management's honesty in husbanding the firm's resources to its efficiency in deploying those resources (Zeff 2013). To some writers, stewardship implies a greater focus on the balance sheet than the income statement because lenders worry about their collateral and stockholders care about management's fiduciary duty over the firm's resources. Zeff (2013) documents the shifting objectives of financial reporting from a stewardship focus on the balance sheet to a "decision-usefulness" (i.e., valuation) focus on the income statement following the passage of the US securities acts.[12]

[11] Accounting, especially managerial accounting, has always played a very important role internally for performance measurement, cost control, and responsibility accounting (i.e., stewardship). What I am arguing is that the relative importance of the information role will decline.

[12] British and European accounting policy makers traditionally have ascribed stewardship a larger role for financial reporting than American policy makers. However, the IASB has deemphasized stewardship and has moved more towards the US position (Zeff 2013).

In this paper, I adopt a broad view of "stewardship." All organizations face conflicts of interest among the parties to the firm ranging from fraud and embezzlement, to shirking, to misappropriating firm resources. Key stakeholders in the firm collectively have incentives to minimize the costs arising from these opportunistic actions (Jensen and Meckling 1976) and will devise a variety of formal and informal mechanisms to control these costs – everything from corporate charters and bylaws, lending agreements, management compensation schemes, budgets, security guards, closed circuit TV surveillance, internal auditors, and so forth. Accounting plays an important role as a control device. For example, senior managers employ budgets, standard costs, and divisional reports to control opportunistic behaviors of subordinates (Zimmerman 2014). Writing in 1922, James McKinsey describes the need for internal accounting reports for both planning (coordination) and control to "award bonuses or increases of salaries to the executives on the basis of their performance, and thus encourage efficiency and initiative" (McKinsey 1922 p.24). I view stewardship accounting as part of the firm's efficient contracting technology arising from the various stakeholders seeking to devise mechanisms that mitigate the inherent conflicts of interests as a way to affect future cash flows (Watts and Zimmerman, 1990 and Lambert 2010).[13] My interpretation of stewardship does not favor one financial statement over another as the stakeholders in each firm will devise those income and balance sheet elements that best alleviate their unique conflicts.[14]

The next section describes how the fundamental characteristics of firms are changing and how these changes influence the capital allocation process and the information used in the process. Section III presents evidence of the changing nature of firms and capital markets. Section IV discusses the implications for financial reporting and standard setting. Section IV offers some closing thoughts. An appendix suggests potential research avenues.

II. Fundamental Changes in the Nature of Firms[15]

Understanding the role of information in capital allocation requires an appreciation of how changing technology and markets create new commercial opportunities, how these opportunities cause new firms to arise and force existing firms to restructure, the types of

[13] Gjesdal (1981) also defines the stewardship accounting arising from the "demand for information about the actions that are taken for the purpose of controlling them."

[14] While the valuation and stewardship roles are distinct, the same information can be useful for both. For example, valuations that guide managers' decisions can also be used to evaluate past decisions by managers (Lambert 2010).

[15] Much of this section draws from (Zingales 2000).

specialized resources needed by these firms, the financing of these resources, the corporate governance problems created by the stakeholders providing the resources, and how information is used to mitigate these governance issues. For example, shortly after the Norman Conquest (A.D. 1066), the early English merchant guilds received royal charters to monopolize trade in a region. These guilds had "audited" financial reports to protect the members of the guild (who provided resources) from expropriation by the officers of the guild (who managed the common resources) (Watts and Zimmerman 1986). As new organizational forms emerged in Britain, such as the regulated trading companies in the 1400s, the joint stock companies in the 1500s and 1600s, and eventually limited liability corporations in the 1800s, accounting and the legal system adapted to meet the demands to align the interests among the key stakeholders in the firm.[16] These adaptations helped protect the interests of the stakeholders and encouraged private capital markets to finance the emerging firms.

This section describes how what I term "21st century firms" differ in fundamental ways from their predecessors (termed "traditional firms"). These differences changed how these 21st century firms get financed – in particular, creating a demand for PE funds. The modern PE market is just a recent example of financial entrepreneurs arising to meet a market demand. When US federal bank laws in the 1970s kept interest rates well below the inflation rate, financial entrepreneurs created money market accounts paying market rates that drained billions of dollars out of banks. The evolution of the London Stock Exchange from the early 17th century coffee houses, mutual funds and index funds that offer low cost diversification, and junk bond markets to finance leverage buyouts of public companies, are further examples of market-driven financial innovations.

A. Traditional Firms

The traditional firm emerged during the second industrial revolution (roughly 1840 – 1920) to exploit economies of scale and scope made possible by coal-powered and later electrified factories, the production line, and mass production. These firms were physical-asset intensive and highly vertically integrated to minimize disruptions along their supply chains. Professional managers were needed with the skills to manage the large enterprise and the more

[16] See Gillian (1997) for a history of UK law and how the collective interests of the City of London protected their regulatory autonomy over several hundred years.

mechanized factories (Chandler 1962). The very size and physical-asset intensity of these firms required more investment and more risk taking than the entrepreneur typically could afford. Public capital markets with dispersed investors filled this niche and spurred the creation of US firms like General Motors, American Telephone and Telegraph, General Electric, and U.S. Steel (Chernow, 1990).

With dispersed investors came conflicts of interests among the managers who owned a small fraction of the stock and the various classes of outside capital (debt and equity) (Jensen and Meckling 1976). The primary conflicts of interest involved the manager-shareholder conflict and the conflicting incentives between debt holders and shareholders. Accounting's stewardship (efficient contracting) role helped mitigate these conflicts. Compensation contracts based on accounting profits facilitated the alignment of manager and shareholder interests; and loan agreements containing audited accounting-based covenants reduced the ability of shareholders to transfer wealth from the debt holders (Smith and Warner 1979). For example, the rule that "dividends can only be paid out of earnings" helped protect the debt holders' collateral, as did conservatism (recognizing unrealized losses but not unrealized gains) (Watts and Zimmerman 1990. Accounting earnings evolved in the 19th century to mean "distributable profits" as a way to maintain capital and mitigate conflicts between shareholder and debt holders.[17]

The passage of the US Federal Securities Acts in the 1930s expanded the role of financial accounting to provide reliable information to the public capital markets (i.e., the decision-usefulness/information/valuation role). The 1933 US Act Preamble stated that "investors receive financial and other significant information concerning securities being offered for public sale; and prohibit deceit, misrepresentations, and other fraud in the sale of securities. … This information enables investors … to make informed judgments about whether to purchase a company's securities."[18] [19] Accounting standard setters now view external parties as the primary users of financial statements and while these statements are not designed to report the value of

[17] See Nobes (2015) for a history of the development of concept of "distributable income."

[18] http://www.sec.gov/about/laws.shtml. The UK has a similar information perspective. "The FRC's mission is to promote high quality corporate governance and reporting to foster investment. … Our functions contribute to the effective functioning of the capital markets. We help ensure that investors have what they need to place their money with reasonable confidence that any risk is taken on an informed basis and managed as well as it can be." (Financial Reporting Council 2014)

[19] The 1934 US Securities Act created the Securities and Exchange Commission (SEC) and gave it the power to set accounting standards and periodic reporting for public companies.

the firm "they provide information to help existing and potential investors, lenders and other creditors to estimate the value of the reporting entity."[20]

While the primary role of accounting used by standard setters shifted towards valuation (improving capital allocation in public markets), the stewardship role remains critical to efficient capital allocation. The magnitude of the conflicts of interest (including fraud and poor risk management systems) among the firm's stakeholders limit the size of the firm, and in the extreme may prevent the firm from forming or cause the firm to fail (e.g., AIG, Lehman Brothers, and Barings Bank).

B. 21st Century Firms

Beginning in the 1970s and accelerating in the 1980s and 1990s two confluent forces changed the fundamental economics of new firms seeking capital and forced existing firms to rethink their business strategy – the proliferation of information technology and increased global competition (Zingales 2000). The invention of the integrated circuit in the 1950s, its commercialization via mainframe computers in the 1960s and microcomputers of the 1970s, and eventually the Internet in the 1980s spawned the "information age." Increased global competition, primarily from Asia, increased the demand for process innovation and quality improvement. To blunt this increased competition, Western firms sought to leverage new ideas about improved manufacturing and service processes using the new information technologies to capture economies of scope.

Information technology (including telecommunications, computers, and software) is a general purpose technology, like steam power in the industrial revolution or electricity in the early 20th century. A general purpose technology induces process and product innovation in most industries by those in the industry clever enough to deploy the new technology (Chun et al. 2008). Information technology (IT) creates potentially value-increasing innovation and asset recombination opportunities leading to Schumpeter's (1942) "Creative Destruction." Firms compete to exploit these opportunities and as the process of creative destruction unfolds, start-up firms and perceptive existing firms displace less insightful existing firms, which in turn are displaced by other start-ups or other existing firms. Few need reminding of how digital imaging destroyed conventional photography, Amazon disrupted traditional book stores, e-books, and

[20] IFRS (2010) OB7 p. A24.

cloud computing, Apple's iTunes disrupted traditional music distribution channels, or how Airbnb is attempting to disrupt bricks-and-mortar hotel chains. These examples illustrate the successful application of IT in new and unpredictable ways across diverse industries.

To better understand how 21st century firms differ from their predecessors, it is useful to classify a firm's resources into *hardware*, *software*, and *wetware* (Romer 1998). Hardware consists of physical (tangible) assets. Software consists of "soft" assets, such as a firm's formulas and recipes (trade secrets) for creating value (not just computer code). And wetware refers to employee brainpower, that is, "wet computers." For example, suppose a machinist discovers how to extend the life of the tooling in her machine. This idea by the machinist is "wetware." If the firm writes a policy or trains its other machinists on how to use this new technique (trade secret), the firm has converted the machinist's wetware into software that creates value for the firm.

Starting in the 1970s and accelerating even today, there has been a massive shift in the proportion of resources used by emerging and existing firms from hardware into wetware (and then software). Stated differently, firms' relative investment in intangible to tangible assets is growing over time, and most of these intangible assets arise from employee wetware. Even traditional tangible-asset-intensive firms are not immune to the extent that their business strategies are made obsolete by new entrants (e.g., Amazon, Netflix, and video streaming destroying video rental stores). To survive, these firms must re-invent themselves by devising new strategies, which require human capital to invent and implement the strategies. This reallocation of the firm's resources from tangible physical assets to human assets and intangible assets has significant implications for how start-ups emerge and existing firms restructure, get financed, and the role of accounting in the allocation of capital.

First, a firm owns and can capture value from its hardware and software, but it only "rents" its wetware. Wetware is the private property of individual employees, who take it with them to another firm if they so choose. To create and capture value, owners must devise ways to convert the knowledge contained in employee wetware — even knowledge unrecognized by employees — into software. Innovation often involves teams of people with complementary skills. Assembling, motivating, and retaining those team members with the wetware capable of generating firm value – who I call "key stakeholders" – requires creative incentive and control

schemes.[21] Some firms turn to formal "intrapreneurship" programs where employees are encouraged (and in some cases even financed) to start new "firms" to capitalize on innovative business ideas.[22] For examples of the failure of human-capital-intensive firms to retain key personnel, one only has to examine service firms. Professional consultancies are especially prone to conflicts of interest among key stakeholders (law firms, consulting firms, etc.). A law firm's stars with their enormous billings, client portfolios and reputations drive key decisions. The proposed 2013 merger of US-based McKenna, Long & Aldridge and UK's Dentons failed because of opposition by some star partners over compensation.[23] Likewise, investors withdrew $23 billion of the $222 billion from the US PIMCO's Total Return Fund when it was announced that the founding chief investment officer and manager of the fund left to join Janus, a different US mutual fund family.[24]

Second, while hardware can be used only at one location, Romer's (1998) "software" can be replicated at low cost to create value at many locations throughout the world. Walmart and McDonalds have thousands of units operating under the same business format; billions of people access essentially the same Google platform; Microsoft Office runs on hundreds of millions of computers. The ability to lever "software" at low cost provides enormous opportunities for value creation.

Third, 21st century firms obviously have fewer physical assets and more intangible assets (i.e., software and wetware). Improved processes, quality improvements, and new products can only be generated by employees (wetware). The quintessential examples are Steve Jobs at Apple, Larry Page and Sergey Brin at Google, and Jeff Bezos at Amazon. Amazon's market-to-book ratio is 15, IBM's and GlaxoSmithKline's are 11, and Diageo's and Google's are 5. Intangible assets have come to eclipse physical capital in terms of firm valuation and drive survival in 21st century firms.

Finally, PE capital markets now perform essential functions of both financing and governing 21st century firms. Twenty-first century firms, like their predecessors, must devise

[21] Firms seek to protect their "software," or intellectual property, via patents, trademarks, and non-compete-employment agreements with key personnel. However, the high cost of using the legal system to protect a firm's intellectual property limits the effectiveness of these protections.
[22] www.forbes.com/sites/danschawbel/2013/09/09/why-companies-want-you-to-become-an-intrapreneur/
[23] J. Smith (2013) "A Bad Week for Law-Firm Hook-Ups: Another Possible Merger Fails," *Wall Street Journal Law Blog* (Nov 26). http://blogs.wsj.com/law/2013/11/26/a-bad-week-for-law-firm-hook-ups-another-possible-merger-fails/?mod=WSJBlog&mod=smallbusiness
[24] K. Grind (2014) "Record Cash Follows Boss out the Door," *Wall Street Journal* (October 2), A1.

governance mechanisms including compensation agreements and ownership structures to align the interests of their key stakeholders. Knowledge-based enterprises must keep the core intangible (human) capital with the specialized wetware within the firm.[25] PE firms now play an important function (besides providing capital) in devising these governance mechanisms. And the lure of eventual large pecuniary rewards via IPOs or private buyouts motivates the wetware owners and their investors to create firm value.

C. The Role of PE in Allocating Capital to 21st Century Firms

Private equity now finances everything from early and mid-stage start-ups, to the purchase of both public and private small to large firms (Gilligan and Wright 2014, p.14). PE fund managers create value because their unfettered access to private inside information about their investees allows them to actively manage their investments via board representation and voting control over material matters (Kaplan and Stromberg 2003). Some PE funds specialize in restructuring public companies by taking them private. In these situations the turnaround strategy is likely to succeed since the PE manager can more easily monitor management and implement better aligned management incentives than dispersed public shareholders (Jensen 1989 and 1993).

In 2010, private equity funds owned seven of the ten most profitable British private firms.[26] Between 1999 and 2009, over 60% of all US IPOs had VC backing. Between 2007 and 2013, EU (including UK) PE funds raised about €321 billion with €35 billion invested in early and later stage investments, and most of the balance flowing to buyout funds.[27] PE's major source of capital comes from institutional investors. In the EU between 2007 and 2013, pension plans were the largest single capital source (21%) for private equity funds (including VCs).[28] In 2013, PE investments returned $135 billion to US pension plans.[29]

---

[25] Hellman and Puri (2002), Bottazzi, et al. (2005), and Kaplan and Lerner (2010)
[26] C. Wheatley, "Britain's Biggest Private Companies," Sunday Times (June 20, 2010)
[27] EVCA European Private Equity Activity Data 2007-2013.
[28] The California Public Employees' Retirement System, the largest US public pension fund, provides retirement, health and related financial programs and benefits to more than 1.6 million public employees. It manages $300 billion with $30 billion invested in various private equity funds. See www.calpers.ca.gov/index.jsp?bc=/investments/assets/mvs.xml
[29] Wursthorn, P. (2014) "Pension Funds Wrestle with What to Do with Cash from Private Equity," *Wall Street Journal* (May 11).

A typical PE fund liquidates after 10 to 12 years. To raise capital for new funds, PE funds must provide attractive returns for their current investors. Hence, they must be able to profitably exit their existing investees. Large US institutional investors in PE funds hire investment advisors ("gatekeepers") to monitor the performance of PE funds and advise their clients as to the allocation of capital across PE funds.[30]

Because many start-ups are knowledge-based and the ultimate value creation depends critically on the human capital (wetware) of the entrepreneurs, VCs' return on investment depends on aligning the interests of the parties providing the critical intangible resources. The organization of the start-up, including how the ownership shares are distributed among the key resource providers, must be designed initially and allowed to evolve over time. VCs as active investors assist emerging firms implement these control mechanisms. VCs, often with board seats, help determine the start-up's human resource policies, design stock option plans to retain key personnel with the needed wetware, monitor the performance of the start-up, and provide additional capital based on attaining milestones. By having board seats, VCs retain the right to appoint and remove senior managers, and provide accountants, lawyers, consultants, and investment bankers to their investees. By selecting professional managers, VCs reduce the firm's dependence on the entrepreneur or any one professional manager. Similarly, PE firms as active monitors deploy similar strategies in their investees (Jensen 1993 and Toms and Wright 2002).

PE-owned investees behave differently than their public peers. For example, Asker et al. (2014) argue that private firms are subject to less pressure to produce short-term results than public firms. Consistent with their conjecture, compared to public firms, private firms invest more and are more responsive to changes in investment opportunities. Agarwal and Tambe (2014) find workers in PE-backed leveraged buyouts are employed for a longer period of time over their careers than similar individuals from non-PE-backed firms. The authors reason that PE investors help implement the latest IT imparting many employees with new skills that extend their careers. And, firms that are majority-owned by PE sponsors report superior long-term stock

[30] Some PE funds with poor performance do not liquidate in the allotted time because their investments have soured. These so-called "zombie funds," estimated at close to $500 billion in 2013, allow fund managers to continue to earn fees because their fund agreements gave management too much power. But most of these zombie funds have not been able to raise capital for new funds. See H. Thomas, "Private Equity's Zombie Problem, *Wall Street Journal* (April 23, 2013).

price performance after they go public, consistent with stronger oversight by PE sponsors with greater ownership stakes (Katz 2009).

Figure 1 summarizes the PE capital investment cycle. It begins with investment advisors recommending PE fund investments to their institutional investors (1). Then the institutions contract with the PE fund (2). The PE fund manager selects a portfolio of firms (investees) to finance (3) and the PE fund manager actively monitors the investees (4). Eventually, the PE fund liquidates its position in the investee via sale or IPO (5) and distributes the fund proceeds to the limited and general partners (6). Finally, the PE manager's prior fund performance influences the investment advisor's recommendations about future investments with this PE manager (the dotted line).

D. **The Role of Accounting in Allocating Capital to 21st Century Firms**

Figure 1 depicts three distinct firms in the capital allocation cycle: the PE fund, the PE investee, and the investee that ultimately is either sold privately or goes IPO. While the PE investee and the eventual firm sold is usually the same legal entity, different information is required during the initial PE active management phase and when the investee is sold or goes IPO.

PE Fund. To raise capital, the PE fund must align the interests of the general partners (i.e., the PE firm) and the limited partners (i.e., the institutional investors). Severe conflicts of interest often exist in these funds (Zingales 2009). Complex legal agreements are written to control these conflicts via the PE fund's charter and by-laws, many of which are accounting based (i.e., reinvestment of capital gains and the compensation of general partners) and require audited financial statements (Gompers and Lerner 1996). When the PE fund is liquidated, the proceeds are distributed among the general and limited partners. Periodic valuations of the PE fund's investees are reported to the limited partners using audited financial reports prepared under GAAP. But given the limited life of the PE fund, the realized return to the limited partners is based on actual cash received when the fund is liquidated, not some GAAP accounting earnings estimate.

Investee. Active monitoring by the PE fund manager requires periodic reports about the investee as it assembles or reorganizes the key resources, which are often intangible assets (wetware). During the formative stages of a start-up or restructuring an existing firm, the

investee is converting wetware into software and acquiring hardware. This can involve building and testing prototypes, developing the technology platform, clinical trials of new pharmaceuticals and medical devices, implementing new business models often involving cost reductions in restructuring firms, and so forth. Since these activities require human capital inputs from key personnel, the PE manager in consultation with management designs compensation arrangements (including equity plans) to attract and retain key employees as well as resources from outside the firm, such as joint ventures and licensing agreements.

In firms with substantial growth options, GAAP accounting net income usually fails to match the value added in the current period with the managers' actions in that period (Smith and Watts 1992 and Skinner 2008). PE managers want transparent reporting systems to effectively monitor management, especially as the investee evolves over time. Monitoring spending and maintaining tight controls over cash burn is essential. Esplin et al. (2014) report that some PE managers say they rely more on cash flow measures than accounting earnings in their investment and operating decisions. These PE managers also want audits of their investees because the PE manager, who also has a board seat, has direct access to the auditor who can then assess the quality and adequacy of management's capabilities and controls.

Since GAAP accounting earnings-based performance metrics often fail to capture managers' value-increasing actions arising from growth options, non-financial performance measures must be devised for incentive compensation. Often equity grants are used to align incentives (Smith and Watts 1992). While 21st century firms likely deploy accounting earnings less frequently for incentive compensation, internal accounting reports including budgets remain critical for planning and control purposes. For example, many knowledge-based firms have teams of people with complementary skills. Knowledge in these teams likely is dispersed across the team members, and must be assembled and often reassembled in highly fluid product markets characterized by rapid innovation. Budget systems that force team members (management) to meet frequently to review and update the budget facilitate knowledge assembly (Zimmerman 2014 Ch. 6). Hence, while accounting earnings is less suitable as a performance measure in intangible-intensive firms with growth options, other accounting-based metrics such as revenue targets or cost reduction goals are utilized in designing governance schemes.

Exiting the investee. Exiting, either through a sale of the start-up to another firm or via an IPO, requires the investee to maintain accounting reports and internal control systems that can

withstand the due diligence process demanded by buyers. To the extent the investee has sustainable free cash flow, GAAP earnings is useful for valuation. Moreover, accurate measures of the investee's profits are used to divide the profits among the managers and the various classes of outside investors depending on prior contractual commitments.

All three firms in the capital acquisition process require accounting systems that report on the performance of the stewards of the capital, and hence help control their actions (stewardship accounting). Dedman et al. (2014) provide evidence consistent with stewardship accounting. They find that small UK private companies are more likely to purchase voluntary audits if they have greater conflicts of interests among stakeholders, are riskier, and wish to raise capital. Accounting remains important for valuation; but there is little to value if the opportunistic behavior of the stewards cannot be controlled.

E. **The Role of Capital Markets in Allocating Capital to 21st Century Firms**

PE markets perform three somewhat distinct roles in capital allocation. First, they provide seed capital to fund early-, middle-, and late-stage entrepreneurs and/or the capital to buy out public shareholders of listed firms. Second, as active investors, PE managers devise and oversee governance mechanisms that better align the interests of the key stakeholders. Finally, PE has come to substitute for the public capital markets with the buyout pools that motivate and discipline the entrepreneurs and other PE fund managers.

Not all PE investees are intensive knowledge-based firms with few tangible assets. Numerous "traditional," tangible-asset-based-firms continue to be formed (construction companies, real estate firms, manufacturing companies, etc.). What I am arguing is that the proportion of emerging intangible-asset-based firms is increasing relative to emerging tangible-asset-based firms, and there are ready suppliers of capital (e.g., pension plans) that can manage the relatively illiquid PE markets. The next section provides evidence documenting the changing demographics of firms and capital markets.

III. Evidence on the Changing Demographics of Firms and Capital Markets

This section reviews research on the emergence of two related phenomena: the 21st century firm and public and private capital markets.

A. The Emergence of 21st Century Firms

A series of research papers document the eclipsing of traditional firms by 21st century firms. Srivastava (2014) presents data on the number of firms traded on US exchanges between 1970 and 2009 (including foreign firms trading as ADRs).[31] Figure 2 plots the total number of firms trading on US exchanges from 1970 to 2009 (the solid top line).[32] We see that the number of listed firms rises to a maximum of about 6,600 firms in 1998 and falls to about 5,100 firms in 2009. Using this time-series of US listed firms, he divides them into five cohorts based on when the firm is first listed: (i) firms trading prior to 1970, (ii) those newly listed in the 1970s, (iii) those newly listed in the 1980s, … (v) those newly listed in the 2000s. The five dotted lines (that sum to the solid line) plot the number of firms in each cohort in each year. The pre-1970 peers are all firms trading as of the beginning of 1970. There were about 2,300 of these firms trading at the beginning of 1970, and only about 430 firms of these firms exist in 2009. Firms are delisted because they were acquired, went private, or were dissolved. Firms newly listed between 1970 and 1979 (the 1970 cohort) reaches a maximum of about 1,500 firms in 1979 and then declines to about 240 firms in 2009. Comparing each successive of cohort, we see that the maximum number of firms in each cohort increases for the 1980 and 1990 cohorts compared to their predecessors, but the maximum number of firms in the 2000 cohort only reaches about 2,200 firms in 2008, fewer than the maximums in the 1980 and 1990 cohorts. Comparing the slopes of the 1970, 1980, and 1990 cohorts in the ten years following reaching their peaks, we observe the rate of decline in the next ten years becomes progressively steeper. In other words, later cohorts have a higher failure rate than their predecessors. This is consistent with firms' business models becoming obsolete faster in later years.

Twenty-first century firms are more knowledge based than their predecessors and should have more intangible assets than traditional firms. Srivastava (2014) compares various measures of intangible intensity for each cohort plotted in Figure 2. His final sample size is nearly 190,000 firm-year observations. He reasons intangible-intensive firms will have higher ratios of Selling, General, and Administrative expenses (SG&A) to total expense than less intangible-intensive firms because (i) GAAP requires firms to expense expenditures on R&D, customer

[31] All financial firms are excluded.
[32] The data in Figure 2 are from Srivastava (2014) Table 1.

relations, human capital, brands and trademarks, and most computer software, and (ii) 21st century firms have large amounts of these types of "investments." He reports the average ratio of SG&A to total expense more than doubles from 16% for firms listed prior to 1970 to 38% for firms listed after 2000, indicating an increasing intangible intensity across successive cohorts of listed firms.[33] He documents similar patterns for alternative proxies of intangible intensity. R&D divided by total expenses increases from 1.13% for firms listed prior to 1970 to 9.4% for firms listed after 2000. Likewise, the average market-to-book ratios increase from 1.39 for firms listed prior to 1970 to 3.53 for firms listed after 2000. He also reports that more recently listed firms tend to be in knowledge-based industries such as pharmaceuticals, business and personal services, communication, computers and electronic equipment, whereas firms listed earlier tend to be in less knowledge-based industries such as utilities, tobacco products, shipbuilding and railroad equipment, textiles, food products, and steel.

Fama and French (2004) similarly examine newly listed firms on US exchanges from 1970 – 2001. They report that the cross section of profitability (earnings before interest but after taxes divided by assets) becomes progressively more left skewed (large losses are more likely). They also document a decline in the survival rates of newly listed firms. The probability that a seasoned firm continues to trade for an additional ten years falls from 61% for the 1973 cohort to 37% for the 1991 cohort.

Irvine and Pontiff (2009) corroborate recently listed firms differ from their predecessors. Between 1964 and 2003 the volatility of firm-specific stock returns (after removing total stock market volatility) has increased as has firm-specific volatility of cash flows. They attribute these findings to more intense economy-wide competition. Brown and Kapadia (2007) ascribe the increase in firm-specific return volatility to more recently listed firms. Likewise, Srivastava (2014) reports that revenue volatility, expense volatility, and earnings volatility increase substantially for more recently listed firms.[34]

Besides documenting that newly listed firms have increasingly more intangible assets, and are riskier than firms listed prior to 1970, research documents that the properties of accounting earnings differ between pre- and post-1970 listed firms. Under the traditional

[33] Averages are computed using all firm-year observations for the firms in each listing cohort. For example, for all firms listed prior to 1970, the average SGA to total expenses includes all firm-year observations from when the firm was listed through 2009, if the firm survived through 2009.

[34] Volatilities are computed as the standard deviation of the last four years of the variable deflated by average total assets.

accounting concept of matching expenses to revenues, we should observe a high correlation between a firm's expenses and revenues. In fact, under "perfect matching" the correlation between a firm's revenues and expenses should be one (Dichev and Tang 2008). But US GAAP and IFRS require that certain expenditures be expensed immediately rather than traced, such as R&D, investments in human capital (wetware), advertising, most computer software expenses, and so forth. Srivastava (2014) argues that knowledge-based firms should have a lower correlation between their revenues and expenses than traditional firms because a larger fraction of their expenses are really investments in intangible intellectual property. He estimates individual firm-specific regressions where the dependent variable is the firm's total revenue in the year scaled by total assets and the independent variables include SG&A scaled by total assets and other control variables. Firms listed prior to 1970 have a coefficient on SG&A of 1.05, and this coefficient falls to 0.10 for firms listed in the 2000s.[35] The declining coefficient on SG&A is consistent with knowledge-based (i.e., 21st century) firms having more investments in intangible assets that under GAAP require immediate expensing.

Two other differences between traditional and 21st century firms regarding the properties of accounting earnings have been documented: 21st century firms have lower earnings persistence and their reported earnings are less relevant to the stock market. Earnings persistence is the ability of current earnings to predict future earnings. Dichev and Tang (2008) argue that poor matching between revenues and expenses reduces the correlation between current earnings and future earnings. They report that the ability of current earnings to predict future earnings declined significantly over the period 1967 to 2003.

Accounting earnings relevance is the percentage of the total annual stock return explained by accounting earnings released in that year.[36] Srivastava (2014) reports that accounting earnings of firms listed prior to 1970 explain 15% of annual stock returns, and this declines to just 2% for firms listed after 2000. Aggarwal et al. (2012) examine IPOs completed in 1986–1990 and 1997–2001. They focus on initial offering price of the IPO and show a V-shaped relation between firm value and earnings. The offering value of the IPO is positively correlated with accounting earnings when earnings are positive. However, IPO value is negatively

[35] For firms listed before 1970, a 10% increase in SG&A to total assets generated a 10.5% increase in revenues to total assets. Firms listed in the 2000s, a 10% increase in SG&A to total assets generated a 1% increase in revenues to total assets.

[36] Earnings relevance is measured using the adjusted R-square from regressions of annual stock returns on levels of, and changes in, annual earnings.

correlated with negative income (i.e, IPOs with larger negative income are valued higher than IPOs with smaller negative income). But the prestige of the investment banker and the percentage of post-IPO shares retained by insiders are as or more important in explaining IPO value than accounting earnings.

While accounting earnings appear less relevant for valuation purposes for 21st century firms, one cannot conclude that financial reports are less relevant to market participants for valuing 21st century public companies. These reports contain substantial amounts of detailed information in the various statements, footnotes, and text. To date, there is no evidence regarding whether audited financial reports are more or less important in valuing 21st century firms relative to the total milieu of public and private information (private information by hedge funds, media, analyst reports, firms' voluntary disclosures, and so forth).[37]

The empirical evidence described above is consistent with the gradual replacement of traditional, tangible-asset-intensive firms with 21st century intangible-asset-intensive firms.[38]

B. Changing Public and Private Capital Markets

As documented in the previous section, the "DNA" of 21st century firms differs from their predecessors. Hence, their financing and governance also likely differ. Since 21st century firms have complex incentive problems among the intangible resource providers, active investors such as PE firms help mitigate these problems. Accordingly, the size of the private capital markets should increase relative to the public markets. Jensen (1989) predicted "The Eclipse of the Public Corporation" and the rise of active investors as a way to reduce opportunistic behavior by managers.[39] Consistent with Jensen's (1989) prediction, the number of public companies has dropped by 38% since 1997 in the USA and by 48% in Britain's main markets.[40]

---

[37] Core et al (2003) report mixed findings that the relation between equity value and traditional financial variables differs between firms trading after the mid-1990s from those trading in previous periods. However, Core et al. (2003) do not specifically examine the relation between equity value and traditional financial variables for successive cohorts of firms listed by decade. Also, see Kothari and Shanken (2003).

[38] Srivastava (2014) rules out changes in GAAP as the primary cause of the observed changes in reported accounting numbers for two reasons. First, GAAP has required immediate expensing of in-house intangible investments since the early 1970s. Second, he replicates all of his findings using the cash components of revenues, expenses, and earnings, which should be less affected by changes in GAAP.

[39] Jensen (1989) argues that public corporations with free cash flows in excess of their growth prospects should be private so that active investors can control the opportunistic behavior of managers to retain excess cash invested in unprofitable projects.

[40] "The endangered public company," *Economist* (May 19, 2012). In 2013, the number of publicly traded US firms rose by 92companies. See D. Strumpf "U.S. Public Companies Rise Again," *Wall Street Journal* (Feb.5, 2014).

But these data report the actual numbers of listed firms not the relative size of public versus private capital markets, and ignores the public debt markets.

One reason for the shrinking population of public US firms is the decline in the number of IPOs coupled with a rise in the rate of firm failures (Fama and French 2004). IPO volume has declined substantially since 2000. Gao et al. (2013) argue that in many sectors of the economy, bringing products to market quickly is now very important. By selling to a larger strategic buyer rather than waiting to do an IPO, the start-up can realize economies of scope (arising from knowledge-based resources) sooner. Gao et al. (2013) provide evidence consistent with their conjecture.

While it is difficult to get precise estimates of the size of the private capital market because no central exchange exists, one can get a glimpse of this market by the amount of funds raised. Based on data from the US Securities and Exchange Commission, private markets raised $1.7 trillion compared to $1.2 trillion raised publicly in 2012.[41] Another metric of the private market is the number and size of private companies. Asker et al. (2014) point out that of the 5.7 million US firms, only 0.06% are listed. They estimate that in 2010, private US firms accounted for 69% of private-sector employment and 59% of sales. But perhaps more surprising, 86% of US firms with 500 or more employees were privately held. And most of these firms wish to remain so. A survey of CFOs of the very largest private US firms revealed that 80% had little to no desire to go public (Brau and Fawcett 2006). Nonetheless, among the very largest US firms, public firms dominate. In 2013 the two largest public firms (Walmart and Exxon) had sales in excess of $400 billion each, while the two largest private firms (Cargill and Koch) each had sales in excess of $120 billion.

IV. Implications for Accounting Information for Allocating Capital

Prior sections have described the rise of the 21st century, knowledge-based firm, the way capital markets now allocate capital to these intangible-asset-intensive firms, and how the properties of their accounting numbers differ from their predecessors. This section offers some implications for the role of accounting in allocating capital.

[41] D. Gorfine, "With The JOBS Act, The Private Funding Market Finally Gets Its Chance" *Forbes* (July 31, 2013).

A. An Increasing Proportion of Firms Will Remain Private

Historically, some large capital-intensive firms remained private to keep control in the founder's family, if the family could amass the financial resources required to remain competitive. But relatively more 21st century firms will remain private for four additional reasons. First, increasing expected litigation costs will discourage private firms from going public. According to Romer (1986), technological innovation is increasing at an increasing rate. Basically, as entrepreneurs innovate, these new innovations, when combined with existing innovations, create geometrically more opportunities for further innovations. Hence, both the rate of technological innovation and the rate of formation of new firms are increasing at an increasing rate.[42] This increasing rate of technological innovation and new firm formation accelerates Schumpeter's (1942) "Creative Destruction." Firm survival rates will continue to fall. Surviving firms will tend to modify their business models faster, which will intensify mergers, divestitures, and reorganizations. These forces increase the frequencies of accounting restatements,[43] goodwill, intangible asset, and fixed asset impairments, and going concern qualifications. In the USA, public firms reporting restatements, impairments, going concern qualifications, and reorganizations generate higher rates of litigation, which reduce the expected returns of private firms going public. Absent changes in US tort law, these high expected legal costs will tilt PE managers from exiting their investee via an IPO and towards a private sale to a strategic buyer or another PE fund. The shorter life expectancies of newly listed firms and the higher fixed costs of going public will also bias private firms against public markets.

Second, humans innovate and then form firms to monetize their innovations. These knowledge-based firms have complex governance problems that likely are better controlled by an active PE investor than either lead directors or activist shareholders in public firms (see Gilligan and Wright, 2014 p. 15).[44] Compared to public companies, PE controlled firms face smaller free-rider problems among the concentrated investors and the PE manager has more access to inside information. Again, many of these 21st century firms will be more profitable if

[42] Mathematically, the number of permutations of n distinct innovations is the product of all positive integers less than or equal to n, which increases at an increasing rate in the number of distinction innovations.
[43] Restatements will increase due to increased product-market competition creating cost containment pressures, including cutting accounting staff, leading to more financial reporting errors.
[44] This is consistent with the analysis in Fama and Jensen (1983). They argue that it is very difficult to design hierarchical structures to control behavior of managers in complex organizations where information relevant to decisions is dispersed throughout the firm. In such complex firms, ownership will be more concentrated.

they avoid going public (Gao et al. 2013) because the costs of the conflicts of interests are better controlled by the PE manager.

Third, institutional investors will likely increase the share of their portfolios invested in PE funds if these investments offer higher returns or lower risk. Since many institutions such as pension plans, nonprofit endowments, and life insurance companies have long investment horizons and predictable cash flow needs, they do not value as highly the liquidity provided by public markets as individual investors.

Fourth, additional regulation of public markets such as the Sarbanes-Oxley Act and Dodd Frank in the USA will drive some public firms to become private. These four economic forces will cause a larger fraction of firms to be private compared to historical averages.

With the relative growth of PE and an increasing fraction of private firms that use their accounting systems for stewardship rather than valuation, the relative importance of the valuation role of accounting will erode.

B. Rules-Based versus Objectives-Based GAAP on Capital Allocation

Kothari et al. (2010) argue that the broad boundaries underlying principles-based GAAP allow the key stakeholders who have the specific knowledge about their firms' economic situation (i.e., the contracting parties and the regulatory, political, and tax environments) to devise innovative accounting systems that maximize firm value. For example, start-up firms involve complex relationships among the various parties with the intangible resources. The VC looks to the internal governance structures to generate verifiable information on employees' performance. Hence, PE managers as active investors want information about their investee to manage it, to decide whether to invest additional capital, and to install customized performance metrics to monitor, motivate, and retain/replace the internal managers.

Similarly, PE funds issue audited financial statements to their private investors to help mitigate conflicts of interests between them and their limited partners and the debt holders. Complex covenants are written to control these conflicts and many of these covenants are accounting based (i.e., reinvestment of capital gains, compensation of general partners, etc.).[45] Because intangible-intensive firms vary considerably in terms of their key constituencies that create value, each requires its own tailor-made governance mechanism. One size doesn't fit all.

[45] Gompers and Lerner (1996)

The contracting parties in private firms want flexible, low cost GAAP that they can customize for their unique circumstances.

Leftwich (1983) presents evidence that private contracting parties modify the accounting procedures used in private lending agreements to align the interests of borrowers and lenders. A similar process occurs in PE managed firms (Kaplan and Stromberg 2003). But as rules-based GAAP diverges from the "optimum" accounting rules desired by the contracting parties in private firms, the cost of modifying GAAP increases, and the contracting parties will seek alternative non-accounting-based governance devices. Opponents to fair value accounting standards argue such standards hamper accounting information's role in allocating capital efficiently because they increase the volatility of PE fund valuations and makes these funds appear riskier. PE fund managers then respond by focusing on short-term rather than long-term results (Kaufman Foundation 2013).

Like Skinner (2008), I am not advocating more detailed rules involving disclosure of intangibles. The stewardship role of accounting is critical to mitigating the contracting problems between limited and general partners in the PE funds and between PE investees and outside investors. Generally, rules-based GAAP is less useful and often more costly than principles-based GAAP because principles-based GAAP facilitates experimentation in mitigating these conflicts.[46]

C. Back to its Roots

Previous sections described the economic forces of technological innovation and competition changing the nature of firms, how they get financed, and the role of information in allocating capital. This subsection argues that the valuation role of accounting will gradually decline from its now dominant role and hence the relative importance of stewardship will increase. Both roles will remain important; and their importance will vary across firms. For example, in traditional tangible-asset-intensive firms seeking capital from the public markets, the valuation role remains dominant. Such public firms must comply with public company GAAP, and currently public-company GAAP has a predominant valuation focus (Zeff 2013). But for hard to value, high growth-option intangible-intensive firms staying private, the valuation role

[46] Zeff (2013 p. 51) argues "At the very least, one concludes that the USA seems to be an environment which is not hospitable to genuine innovation in financial reporting."

takes a back seat to the stewardship role. Accounting earnings do not capture firm-value increases delivered by the manager in the current period. Nonetheless, audited financial statements often remain an important control device (and a key component of stewardship) even in these 21st firms because other audited accounting numbers such as revenues, cash flows, and costs can be suitable governance metrics.

When successful start-ups go public, accounting information is beneficial in valuing the IPO. But the importance of accounting information for valuing IPOs likely will decline for two reasons. First, 21st century firms have less persistent earnings, which reduce earnings usefulness for valuation. Second, the market has additional information useful in valuation besides the start-up's financial statements – the reputation of the PE firm financing the IPO (Aggarwal et al. 2012). More reputable VCs select better-quality firms that exhibit superior long-run performance post-IPO and have greater involvement post-IPO in the corporate governance of their investees because they retain more shares and board seats (Krishnan et al. 2011). Also, VC reputation affects how much capital the VC can raise for future deals. Atanasov et al. (2007) report that VCs involved in litigation raise significantly less capital than their peers and invest in fewer deals. Those VCs alleged to have expropriated from founders are penalized even more heavily. Huang et al. (2014) conclude that PE firms strive to maintain their reputations by not expropriating wealth from debt holders. These studies support the view that sophisticated market participants utilize a broad set of information beyond the financial reports in valuing IPOs.

How quickly accounting's role shifts back towards stewardship depends on several previously identified factors: the number of emerging 21st century firms, the comparative advantage of PE managers to nurture these firms, the compliance and litigation costs of public markets, and the supply of institutional capital that does not require liquid public markets. Extrapolating from past trends in these factors suggests an increasing concentration of total firm value residing in private companies. The private equity markets generally are less regulated than public markets. As more capital flows into private equity, the importance of accounting in aligning the interests of the parties in the PE fund and the parties in the PE's investee increases relative to the importance of accounting to assist the public capital markets in valuation. In other words, accounting's role will swing back more towards its initial stewardship role from its recent valuation role. How quickly this occurs, and in which countries, also depends on how much pressure private companies and PE markets bring to bear on the standard setters.

Accounting standard setters feeling the heat have reacted. In 2009 the IASB published IFRS for small and medium-sized entities (*IFRS for SMEs*).[47] *IFRS for SMEs* at only 230 pages compared to full IFRS at over 3,000 pages simplifies the recognition and measurement principles in full IFRS and requires far fewer disclosures. It focuses on providing users with "information about short-term cash flows, liquidity and solvency (rather than longer-term forecasts of earnings and share prices)."[48] Interestingly, the IASB recognizes that *IFRS for SMEs* is not primarily for valuation. By 2014, 63 out of 130 IFRS jurisdictions allow or require *IFRS for SMEs*.

Similarly, in 2012 the US Financial Accounting Foundation (FAF) established the Private Company Council (PCC) to improve the process of setting accounting standards for private companies. The FAF formed the PCC after intense lobbying by small companies, the US Chamber of Commerce that represents private companies, PE firms such as Bain Capital, and the AICPA that represents small auditors (Ramanna 2014). All argued that FASB accounting standards impose substantial costs on private companies. This lobbying behavior by private companies and PE firms is consistent with rules-based GAAP imposing costs on private companies. The PCC has issued several standards, including simplifying accounting for goodwill, intangibles arising in business combinations, stock-based compensation, and hedge accounting.

D. Implications for Standard Setters

Public-company standard setters view existing and potential investors and creditors as the primary users of financial reports.[49] The US FASB explicitly excludes internal users when devising accounting standards by arguing that private parties are free to modify their GAAP numbers.[50] Some modifications to are relatively low cost such as computing EBITDA from the GAAP reports. But undoing certain accounting standards such as revenue recognition is not free. While the direct costs of maintaining two sets of books (i.e., different accounting conventions for external reports and internal uses) might be low given extant accounting software packages and

[47] http://www.ifrs.org/IFRS-for-SMEs/Pages/IFRS-for-SMEs.aspx
[48] http://www.ifrs.org/IFRS-for-SMEs/Documents/Fact-Sheet/IFRS-for-SMEs-Factsheet-August-2014.pdf
[49] FASB (2010 p.1)
[50] "However, management has the ability to access additional financial information, and consequently, general purpose financial reporting need not be directed explicitly to management." (FASB 2010 p. 10) The IASB in its Conceptual Framework reaches the same conclusion (see IASB 2010 OB9).

ERP systems, the indirect costs of two sets of accounts can be substantial.[51] Dealing with multiple sets of books consumes managers' limited attention. Confusion arises among internal users when different reported numbers exist for the same division, product, or customer. The old adage states "A man with a watch knows what time it is. A man with two watches is never sure." Different reported financial results for the same object will lead some opportunistic stakeholders to argue for the set of numbers that makes them better off. These discussions further dissipate senior management resources. Different reported results undermine the integrity of the accounting system among the various stakeholders. One measurement system forces everyone to play by the same rules. Having a single audited reporting system used for both internal and external users reduces errors in the reported numbers and increases the credibility of the accounting reports.

Substantial evidence exists supporting the view that most firms use the same accounting procedures for internal and external uses. Virtually all firms use budgets and periodic reports derived from the accounting system to run the day-to-day operations of the business.[52] The wide spread use of these reports is consistent with their usefulness in planning and control (Zimmerman 2014 Ch. 6). Kaplan (1984 p. 409) in describing internal reporting practice argues "US practice is characterized by the internal use of accounting conventions that have been developed and mandated by external reporting authorities." In other words, most firms choose not to keep a separate set of books for internal reporting. Dichev et al. (2013) survey US CFOs of both public and private companies. They report a close link between internal and external reporting. Over 80% of CFOs report that internal uses of GAAP earnings are "very important for use by the company's own managers." One CEO stated, "We make sure that everything that we have underneath – in terms of the detailed reporting – also rolls up basically to the same story that we've told externally." Finally, a series of studies document that managers base internal investment decisions on GAAP earnings, and when GAAP changes so do internal investment decisions.[53]

Standard setters are short sighted by choosing investors as the primary users of financial statements and ignoring internal users for a couple of reasons. First, since the same accounting

[51] Zimmerman (2014 ch 1)
[52] Berland and Boyns (2002) document that budgeting was a common practice in many British and French firms by the 1930s, and some firms had budgets as early as 1900.
[53] See Shroff (2014) for references.

conventions are used for both internal and external reporting, GAAP and changes in GAAP affect internal investment decisions. Second, public-company GAAP affects the decisions of private companies to go public and public companies to go private. More complex standards drive up the cost of preparing financial statements and auditing these statements.[54] At the margin fewer, companies will choose public capital markets. Third, a myopic focus on public-market investors biases GAAP towards comparability and away from flexibility. Comparability across companies is a more useful attribute for valuation than for resolving conflicts of interests (Zingales 2009). The latter requires more flexible GAAP. Flexible GAAP allows the key stakeholders to devise control mechanisms that attract, retain, and motivate the intangible-asset owners in 21st century firms and attract institutional investors to PE firms who finance and actively manage these 21st century firms. Since the nature of the governance problems vary across these firms, so too will their control systems, necessitating more flexibility in private-company GAAP than in public-company GAAP.

V. Conclusions

It is difficult to imagine life before Wi-Fi, smart phones, texting, internet shopping, GPS, Facebook, and email. The same technological forces changing our everyday lives have profound and enduring effects on the formation of firms, how they are financed, their ownership structures, the capital markets, and the information for allocating capital. Twenty-first century firms differ significantly from their predecessors – they are more knowledge based, more dependent on the wetware of their employees, more intangible-asset intensive, and require more direct oversight by PE investors to align the interests of the key knowledge-based resource providers. With access to large pools of capital from institutions, PE firms actively manage their investees.

Given the increasing rate of technological innovations, new and existing firms' business models are less stable (Owens et al. 2014), exhibit more volatile earnings, have less persistent earnings, and face a greater risk of failure. I suspect PE markets will continue to grow relative to public markets. Since much of 21st century firms' value is created by key stakeholders, including the entrepreneur, the PE investor in these firms has a comparative advantage over

[54] One might argue that more complex GAAP also yield benefits to the firm. But if the benefits exceeded the costs, firms had incentives to provide these disclosures voluntarily.

dispersed shareholders in public markets in devising innovative governance solutions that drive value creation. Accounting plays an important role in these incentive aligning systems. These efficient contracting accounting solutions will likely diverge from public-firm GAAP that focuses on valuation, thereby causing private firms to seek exemptions from public-firm GAAP. The IASB and FASB have yielded to the pressure and have adopted two sets of standards – one for private companies and the other for public companies. Accounting information will always remain an important source of information for valuation purposes. But there is little to value unless the incentives of the key stakeholders are aligned. With private-firm GAAP, the role of accounting will gradually shift back to its stewardship (i.e., efficient contracting) roots.

APPENDIX: Implications for Accounting Research

The conjectures described in this paper suggest some research challenges and a number of fertile areas for accounting researchers. First, the increasing concentration of intangible-intensive firms in public markets, and hence in the common data bases used by researchers will require further thought about constructing large samples containing both traditional and 21st century firms. Simple industry controls unlikely capture the underlying differences of the sample firms because common industry classifications contain both traditional and 21st century firms. Effective propensity score matching requires richer theories of the firm to guide the choice of variables used in the matching process. The lack of compelling theories to control for sample selection and endogeneity problems will limit the inferences drawn from studies containing both traditional and 21st century firms.

Second, when pooling time-series and cross-sectional observations into a single panel, researchers need to consider explicitly how the changing demographics of firms entering and exiting the panel might be corrupting the study's inferences. In other words, if an implicit assumption of the study is time-series stationarity of the firms and the researcher pools data from entering and exiting firms, then the implicit assumption is violated.

Third, most of studies examining the changing demographics of firms cited in this paper are based on US capital markets. It would be useful to document that the trends observed in the US markets extend to other capital markets, and if they do not, to understand the reasons for the differences.

Fourth, studies of private firms, while constrained by data availability, will likely prove quite valuable in advancing our knowledge of the contracting role of accounting.[55] Several possibilities come to mind.

- Do private companies use their accounting systems primarily for control (i.e., stewardship) and how?
- When public companies go private, what changes (if any) are made in their accounting procedures, and are these changes consistent with more stewardship?

[55] Limited data on private US firms exists. See Sageworks.com, PrivCo.com, Hoovers.com, and dnb.com.

- Is there cross-sectional variation in how accounting is used in private-equity fund contracts among the limited and general partners and creditors, and if so can these differences be explained based on the investment strategy (and hence agency problems) of the fund?
- Private company GAAP differs between the US and countries adopting private-company IFRS. Do these differences affect venture formation, success, or exit strategies?
- Private firms, which are less constrained by public-firm GAAP, will be incubators for accounting innovations as PE firms invent new governance mechanisms to provide incentives to keep the human-capital-based assets in the firm. When some of these firms do go public, their underlying accounting systems will be path dependent on the systems developed while private.
    - How does private-company GAAP evolve from public-firm GAAP?
    - Which public-company standards are modified to produce private-company standards?
    - How do private firms that go IPO change their accounting procedures from small-firm GAAP to public GAAP? Can the underlying economics of 21st century firms explain these differences?

REFERENCES

Agarwal, A. and P. Tambe (2014) "Private equity, technological investment, and labor outcomes," Working paper NYU.

Aggarwal, R., S. Bhagat, and S. Rangan (2012) "Valuation of IPOs," in *The Oxford Handbook of Venture Capital* Oxford University Press.

Asker, J., J. Farre-Mensa, and A. Ljungqvist (2014) "Corporate Investment and Stock Market Listing: A Puzzle?" Forthcoming *Review of Financial Studies.*

Atanasov, V., V. Ivanov, and K. Litvak (2007) "The Impact of Litigation on Venture Capitalist Reputation" NBER Working Paper No. 13641 (November).

Barclay, M., D. Gode, S. Kothari, (2005) "Matching Delivered Performance," *Journal of Contemporary Accounting & Economics* 1: 1-25.

Berland, N., and T. Boyns (2002) "The development of budgetary control in France and Britain from the 1920s to the 1960s: a comparison," *European Accounting Review* 11: 329–356.

Brau, J., and S. Fawcett (2006) "Initial public offerings: An analysis of theory and practice," *Journal of Finance* 61: 399-436.

Bottazzi, L., M. Rin, and T. Hellman (2005) "Human Capital in the Knowledge-based Firm: Evidence from Venture Capital," working paper University of British Columbia.

Campbell, J., Lettau, M., Malkiel, B. and Xu, Y. (2001) "Have individual stocks become more volatile? An empirical exploration of idiosyncratic risk," *Journal of Finance* 56: 1–43.

Chandler, A. (1962) *Strategy and Structure: Chapters in the History of the American Industrial Enterprise* (Cambridge MA: MIT Press)

Chernow, R (1990) *The House of Morgan: An American Banking Dynasty and the Rise of Modern Finance* (New York: Grove Press).

Chun, H., J Kim, R. Morck, B. Yeung (2008) "Creative destruction and firm-specific performance heterogeneity" *Journal of Financial Economics* 89: 109-135.

Comin, D. and Mulani, S. (2006) Diverging Trends in Aggregate and Firm Volatility, *Review of Economics and Statistics* 88: 383–388.

Core, J., Guay, W. and van Buskirk, A. (2003) 'Market valuations in the new economy: an investigation of what has changed,' *Journal of Accounting and Economics* 34: 43–67.

Dedman, E., Kausar, A. and Lennox, C. (2013) The demand for audit in private firms : recent large-sample evidence from the UK. *European Accounting Review* 23: 1-23.

Dichev, I. and Tang, V. (2008) “Matching and the Changing Properties of Accounting Earnings over the Last 40 Years,” *Accounting Review* 83: 1425–1460.

Dichev, I., J. Graham, H. Campbell, and S. Rajgopal (2013) “Earnings quality: Evidence from the field,” *Journal of Accounting and Economics* 56: 1-33.

Esplin, A., K. Jamal, and S. Sunder (2014) “Auditing and private capital formation: a field study,” Working Paper Yale University.

Fama, E. and French, K. (2004) “New Lists: Fundamentals and Survival Rates,” *Journal of Financial Economics* 73: 229-269.

Fama, E., and M. Jensen (1983) “Separation of Ownership and Control” *Journal of Law and Economics* 26: 301-325.

Financial Reporting Council (2014) *The FRC and its Regulatory Approach* (January).

Financial Accounting Foundation Board of Trustees (2012) *Establishment of the Private Company Council Final Report* (Norwalk Connecticut, Financial Accounting Foundation).

FASB (2010) “Statement of Financial Accounting Concepts No. 8: Conceptual Framework for Financial Reporting Chapter 1, The Objective of General Purpose Financial Reporting, and Chapter 3, Qualitative Characteristics of Useful Financial Information,” (Financial Accounting Foundation: Norwalk, Connecticut)

Franks, J., C. Mayer, and S. Rossi (2003) “The Origination and Evolution of Ownership and Control,” Working paper Centre for Economic Policy Research.

Gao, Y. (2011) “The Sarbanes-Oxley Act and the Choice of Bond Market by Foreign Firms,” *Journal of Accounting Research* 49: 933-968.

Gao, X., J. Ritter, and Z. Zhu (2013) “Where Have All the IPOs Gone?” *Journal of Financial and Quantitative Analysis* 48: 1663–1692.

Gjesdal, F. (1981) “Accounting for Stewardship,” *Journal of Accounting Research* 19: 208-231.

Gilligan, G. (1997) "The Origins of UK Financial Services Regulation," *The Company Lawyer* 18: 167-176.

Gilligan, J. and M. Wright (2014) *Private Equity Demystified – An Explanatory Guide*, ICAEW www.icaew.com/corpfinfac.

Gompers, P. and J. Lerner (1996) “The Use of Covenants: An Empirical Analysis of Venture Partnership Agreements,” *Journal of Law and Economics* 39: 463- 498.

Hellman, T. and M. Puri (2002) “Venture Capital and the Professionalization of Start-Up Firms: Empirical Evidence, *Journal of Finance* 57: 169-197.

Hostak, P., T. Lys, Y. Yang, and E. Carr (2013) “An examination of the impact of the Sarbanes–Oxley Act on the attractiveness of U.S. capital markets for foreign firms,” *Review of Accounting Studies* 18: 522-559

Huang, R., J. Ritter, and D. Zhang (2014) "Private Equity Firms' Reputational Concerns and the Costs of Debt Financing," forthcoming *Journal of Financial and Quantitative Analysis.*

IASB (2010) “The Conceptual Framework for Financial Reporting,” IFRS Foundation.

Irvine, P., and J. Pontiff, J. (2009) “Idiosyncratic Return Volatility, Cash Flows and Product Market Competition,” *Review of Financial Studies* 22: 1149–1177.

Jensen, M., and W. Meckling (1976) “Theory of the firm: Managerial behavior, agency costs and capital structure,” *Journal of Financial Economics* 3: 305–360.

Jensen, M. (1989) “The Eclipse of the Public Corporation,” *Harvard Business Review* (Sept/Oct): 61-74.

Jensen, M. (1993) “The Modern Industrial Revolution, Exit, and the Failure of Internal Control Systems,” *Journal of Finance* 48: 305-360.

Kaplan, R. (1984) “The Evolution of Management Accounting,” *Accounting Review* 59: 390-418.

Kaplan, S. and J. Lerner (2010) “It Ain’t Broke: The Past, Present, and Future of Venture Capital,” *Journal of Applied Corporate Finance* 22 (Spring): 36-47.

Kaplan, S. and P. Stromberg (2003) “Financial contracting theory meets the real world: An empirical analysis of venture capital contracts,” *Review of Economic Studies* 70: 281-315

Katz, S. (2009) “Earnings Quality and Ownership Structure: The Role of Private Equity Sponsors,” *Accounting Review* 84: 623-658.

Kaufman Foundation (2013) “State of Entrepreneurship Address: Financing Entrepreneurial Growth” (February).

Kothari, K., K. Ramanna, and D. Skinner (2010) “Implications for GAAP from an analysis of positive research in accounting,” *Journal of Accounting and Economics* 50: 246–286.

Kothari, S., and J. Shanken (2003) “Time-series coefficient variation in value-relevance regressions: a discussion of Core, Guay, and Van Buskirk and new evidence,” *Journal of Accounting and Economics* 34: 69–87.

Krishnan, C., V. Ivanov, R. Masulis, and A. Singh (2011) "Venture Capital Reputation, Post-IPO Performance, and Corporate Governance," *Journal of Financial and Quantitative Analysis* 46: 1295-1333.

Lambert, R. (2010) Discussion of "Implications for GAAP from an analysis of positive research in accounting," *Journal of Accounting and Economics* 50: 287–295.

Leftwich, R. (1983) "Accounting Information in Private Markets: Evidence from Private Lending Agreements," *Accounting Review* 58: 23-42.

Lerner, J. (1995) "Venture Capitalists and the Oversight of Private Firms," *Journal of Finance* 50: 301-318.

Leuz, C., A. Triantis, and T. Wang (2008) "Why do firms go dark? Causes and economic consequences of voluntary SEC deregistrations," *Journal of Accounting and Economics* 45: 181-208.

Li, X. (2014) "The Sarbanes‐Oxley act and cross-listed foreign private issuers," *Journal of Accounting and Economics* 58: 21-40.

McKinsey, J. (1922) *Budgetary Control* (New York: Ronald Press).

Myers, S. (1977) "Determinants of corporate borrowing," Journal of Financial Economics 5: 147-175.

Nobes, C. (2015) "Accounting for capital: the evolution of an idea," forthcoming *Accounting and Business Research.*

Owens, E., J. Wu, and J. Zimmerman (2014) "Business Model Shocks and Abnormal Accrual Models," Working paper University of Rochester.

Piotroski, J., and S. Srinivasan (2008) "Regulation and Bonding: The Sarbanes-Oxley Act and the Flow of International Listings," *Journal of Accounting and Economics* 46: 383–425.

Ramanna, K. (2014) *Political Standards: Accounting for Legitimacy* unpublished monograph Harvard Business School.

Romer, P. (1986) "Increasing Returns and Long-Run Growth" *The Journal of Political Economy* 94:1002–1037.

Romer, P. (1998), "Bank of America Roundtable on the Soft Revolution: Achieving Growth by Managing Intangibles," *Journal of Applied Corporate Finance* 11: 8–27.

Schumpeter, J. (1942) *Capitalism, Socialism, and Democracy* (Harper & Brothers: New York).

Shroff, N. (2014) "Corporate Investment and Changes in GAAP," working paper MIT.

Skinner, D. (1993) “The investment opportunity set and accounting procedure choice: Preliminary evidence,” *Journal of Accounting and Economics* 16: 407-445.

Skinner, D. (2008) “Accounting for intangibles – a critical review of policy recommendations,” *Accounting and Business Research* 38. International Accounting Policy Forum: 191-204.

Smith, C. and R. Watts, (1992) “The investment opportunity set and corporate financing, dividend, and compensation policies,” *Journal of Financial Economics* 32: 263 ‑ 292

Smith, C., and J. Warner (1979) “On Financial Contracting: An Analysis of Bond Covenants” *Journal of Financial Economics* 7: 117- 161.

Srivastava, A. (2014) “Why Have the Measures of Earnings Quality Changed Over Time?” *Journal of Accounting and Economics* 57: 196–217.

Thakor, A. (2011) “Sources of Capital and Economic Growth: Interconnected and Diverse Markets Driving U.S. Competitiveness,” Center for Capital Markets Competitiveness United States Chamber of Commerce.

Toms, S. and M. Wright, 2002. “Corporate governance, strategy and structure in British business history, 1950-2000,” *Business History* 44: 91-124.

Watts, R., and J. Zimmerman (1979) “The Demand for and Supply of Accounting Theories: The Market for Excuses,” *The Accounting Review* 54: 273-305.

Watts, R., and J. Zimmerman (1983) "Agency Problems, Auditing, and the Theory of the Firm: Some Evidence," *Journal of Law and Economics* 26: 613-633.

Watts, R., and J. Zimmerman (1990) “Positive Accounting Theory: A Ten Year Perspective,” *Accounting Review* 65: 131-156.

Zeff, S. (2013) “The Objectives of Financial Reporting: A Historical Survey and Analysis,” *Accounting and Business Research* 43: 262-327.

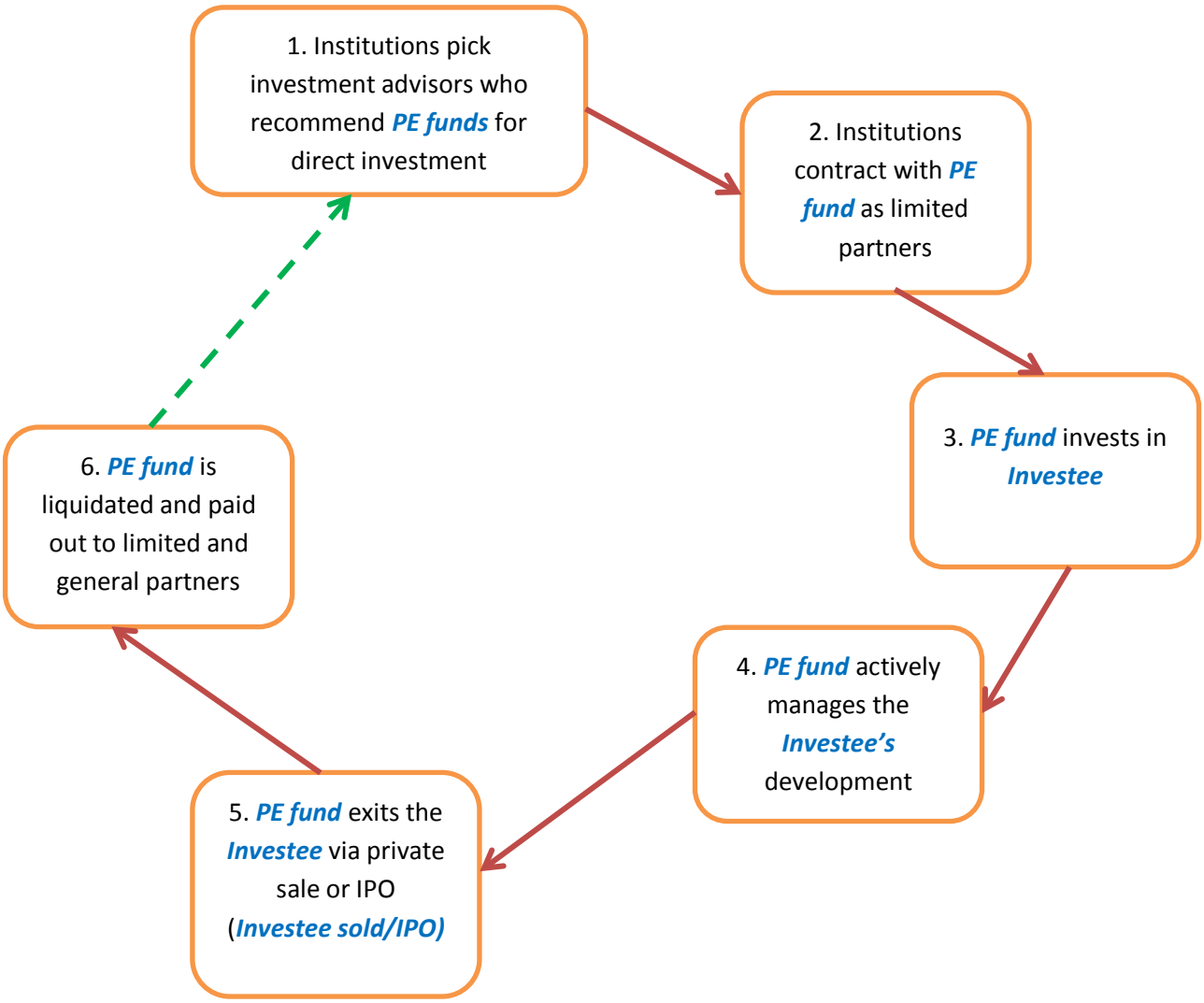
Zimmerman, J. (2014) *Accounting for Decision Making and Control* 8th ed (New York: McGraw-Hill/Irwin)

Zingales, L. (2000) “In Search of New Foundations,” *Journal of Finance* 55: 1623-1653.

Zingales, L. (2009) “The Future of Securities Regulation,” *Journal of Accounting Research* 47: 391-425.

Figure 1

Private Equity (PE) Investment Cycle



Three distinct firms:

PE fund

Investee

Investee sold/IPO

Figure 2

Number of Listed Firms on US Exchanges and Number by Decade