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## Finance and Growth: The Legal and Regulatory Implications of the Role of the Public Equity Market in the United States

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# FINANCE AND GROWTH: THE LEGAL AND REGULATORY IMPLICATIONS OF THE ROLE OF THE PUBLIC EQUITY MARKET IN THE UNITED STATES

Ezra Wasserman Mitchell\*

*The important study of the relationship between finance and economic growth has exploded over the past two decades. One of the most significant open questions is the role of the public equity market in stimulating growth and the channels it follows if it does. This paper examines that question from an economic, legal, and historical perspective, especially with regard to its regulatory and corporate governance implications. The US market is my focus.*

*In contrast to most studies, I follow both economic history and the actual flow of funds in addition to empirics and theory to conclude that the public equity market's contribution to US economic growth is highly limited to the small but important contemporary role it plays in providing exit opportunities for entrepreneurs and venture capitalists. Nevertheless, there is a serious question as to the real economic growth benefit of easy exit. In particular, exit by merger may well be more macro-economically efficient than exit by IPO.*

*I further tentatively conclude that the modern behavior of the US public equity market may be damaging to the long-term sustainability of American corporate capitalism and to long-term social welfare – in particular the market's significant role in increasing economic inequality. Thus an overall appraisal of the market's benefits and costs in the broader context of economic growth and economic inequality is long overdue. Important questions for corporate governance, financial regulation, and the structure of market institutions are raised. Along the way, I will have reason to question the continuing viability of the Miller-Modigliani irrelevance theorem.*

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What is the contribution of the public equity market to US economic growth? Resolution of this question has important implications for how we regulate securities markets, financial markets more broadly, and even corporate governance. If public equity markets stimulate growth in a meaningful way, the kind of serious market regulation and shareholder-oriented corporate governance we currently employ may be suitable. But, if public equity markets play a limited role in financing corporate productivity, we might conclude that the manner in which we currently regulate is far too costly, and that regulatory resources might be better used if redirected to more productive financial sectors—or even saved. We might also conclude that corporate and securities laws inappropriately privilege the interests of public equity holders in a manner that negatively affects economic growth. Underlying this analysis is the critical question of whether we should diminish the role of public equity markets in order to protect the functioning of capitalism.

My principal conclusion is that the primary role of the US public equity market is to stimulate business formation by providing IPO exit for early investors. As a historical matter, however, that function is quite recent and remains quite limited—recent arguments for its importance are therefore overstated. More importantly, evidence exists to suggest that easy IPO exit may not be entirely beneficial and that there is good reason to think that exit by merger provides a greater contribution to long-term economic growth.

There are also deeper structural issues for lawyers to address. If the public equity market makes only a limited contribution to American industrial production, perhaps it is time to rethink the manner in which we regulate the issuance, sale, and trading of securities. I will argue that most

public equities serve as financial commodities rather than financing instruments, but without the ultimate use value of real commodities. And I will further argue that economic theory itself demonstrates that the risk-allocation functions of the market only allocate risks that would not exist in the absence of a public equity market. This would obviously be unobjectionable if the public equity market provided strong growth benefits. But it does not. The market exists for the sake of the market.

I tentatively conclude that the modern behavior of the US public equity market may be damaging to the long-term sustainability of American capitalism and the long-term welfare of Americans. The implication is that we need to focus our intellectual and regulatory resources on those aspects of the market that do serve to finance long-term economic growth. In other words, we must diminish the role of the public equity markets in order to protect the long-term functioning of capitalism itself.

This paper proceeds as follows. Part I presents a summary review of the literature on the nexus between financial development and economic growth in an effort to isolate the growth-related functions of public equity markets. Part II presents a more in-depth examination of the purported economic growth-creating functions of public equity markets. Part III dives deeper into the strongest of the arguments supporting a nexus between public equity markets and economic growth, evaluating their strengths. Part IV adds insights from economic history and microeconomic financial analysis to explore the relationship between the microeconomic and macroeconomic evaluations of the market's role. The principal focus of this section is on entrepreneurial finance, the main channel through which it appears that the public equity market provides its most useful function. Related questions center on the substitutability of debt for equity and relationships among the public equity market, corporate finance, and managerial behavior. Part V concludes.

## I. BACKGROUND

In the words of two prominent scholars, “[t]he influence of financial development on economic growth . . . is now a firmly established part of the economics canon.”<sup>1</sup> While this literature frequently is dated to 1911, significant interest in the subject has grown only over the last twenty-five years and is itself largely ahistorical. While much of the effort focuses on developing countries, attention also has been paid to developed economies.<sup>2</sup>

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1. Peter L. Rousseau & Paul Wachtel, *Economic Growth and Financial Depth: Is the Relationship Extinct Already?* 1-2 (NYU Working Paper No. 2451/26108, 2008) <http://ssrn.com/abstract=1282539>.

2. For excellent surveys and analyses of this literature, see generally Ross Levine, *Financial Development and Economic Growth: Views and Agenda*, 35 J. ECON. LIT. 688 (1997) [hereinafter, Levine, *Financial Development*]; Ross Levine, *Finance and Growth: Theories and Evidence*, in HANDBOOK OF ECONOMIC GROWTH, VOLUME 1A, 865-934 (Philippe

There is significant debate over the circumstances under, and the extent to which, financial development stimulates economic growth.<sup>3</sup> Much of the work has centered on banks,<sup>4</sup> although attention also has been paid to the relationship between stock market development and economic growth<sup>5</sup> where the evidence is most ambiguous,<sup>6</sup> with one of the weakest

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Aghion and Steven N. Durlauf, eds.; 2005) [hereinafter Levine, *Finance and Growth*]; Peter L. Rousseau, *Share Liquidity and Industrial Growth in an Emerging Market: The Case of New England, 1854-1897*, NBER Working Paper No. H0117 [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=225069](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=225069) (1999); Peter L., Rousseau & Richard Sylla, *Emerging Financial Markets and Early U.S. Industrial Growth*, NBER Working Paper No. W7448 (2001) [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=191548](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=191548); Raghuram G. Rajan, & Luigi Zingales, *Financial Dependence and Growth*, 88 AM. ECON. REV. 559 (1998).

3. There is also a significant methodological debate within economics, with empirical studies beginning to shift from cross-country regressions to time-series analysis in the late 1990s, with advocates of the latter arguing, in part, that cross-country studies obliterate much of importance in particular national situations. *See e.g.* Philip Arestis, Panicos Demetriades, & Kul B. Luintel, *Financial Development and Economic Growth: The Role of Stock Markets*, 33 J. MONEY, CREDIT, AND BANKING at 17, n.3 (2001) [hereinafter, Arestis et al., *Financial Development and Economic Growth*].

4. James B. Ang, *A Survey of Recent Developments in the Literature of Finance and Growth*, 22 J. ECON. SURVEYS 536, 568 (2008). *But see* Levine, *Finance and Growth*, *supra* note 2, at 714 (claiming that the literature is focused too greatly on equity markets); *see also* Robert G. King & Ross Levine, *Finance and Growth: Schumpeter May Be Right*, 108 Q. J. ECON., at 717 (1993).

5. *See e.g.* Raymond Atje & Boyan Jovanovic, *Stock Markets and Development*, 37 EURO. ECON. REV. 632 (1993) (arguing that stock market development drives growth); *see also* Ross Levine & Sara Zervos, *Stock Market Development and Long-Run Growth*, 10 World Bank Economic Review 323 (1996) (to the same effect). *But see* Philip Arestis, & Panicos Demetriades, *Financial Development and Economic Growth: Assessing the Evidence*, 107 ECON. J. 783, 790 (1997) (noting insufficient evidence to establish that financial development causes real GDP growth in the United States); *see also* Arestis et al., *Financial Development and Economic Growth*, *supra* note 3, at 16, (arguing that empirical evidence on the role of stock markets is weak and that while developed banks and stock markets both correlate with economic growth, banks show a much stronger correlation and that the evidence with respect to stock markets is overstated); *see also* Richard F. D. Harris, *Stock Markets and Development: A Re-Assessment*, 41 EURO. ECON. REV. 139 (1997) (arguing that stock market-growth nexus is weak).

6. *See* Philip Arestis & Panicos Demetriades, *Financial Development and Economic Growth: Assessing the Evidence*, 107 ECON. J. 783 (1997); *see also, generally* Arestis et al., *Financial Development and Economic Growth*, *supra* note 3, (arguing that empirical evidence on the role of stock markets is weak and that while developed banks and stock markets both correlate with economic growth, banks show a much stronger correlation and that the evidence with respect to stock markets is overstated); *see also, generally*, Harris, *supra* note 5; Gerard Caprio, Jr., & Asli Demirguc-Kunt, *The Role of Long-Term Finance: Theory and Evidence*, 13 THE WORLD BANK RESEARCH OBSERVER, at 171 (1998) (noting note that “the effect of stock market development on firms’ financing decisions is theoretically inconclusive,” and little empirical evidence exists); Thorsten Beck & Ross Levine, *Stock Markets, Banks, and Growth: Panel Evidence*, 28 J. BANKING & FIN., at 28 (2004) (concluding that their data show both banks and stock markets as important for industrial growth, although they concede that conclusions as to which are more important are debatable); *see also*, Asli Demirguc-Kunt & Ross Levine, *Stock Market Development and Financial Intermediaries: Stylized Facts*, 10 World Bank Economic Review 291, 293-4 (1996); Peter Haas, and Gerhard Fink, *The Finance-Growth-Nexus Revisited: New Evidence and the Need for Broadening the*

bodies of empirical evidence dealing with the relationship between the stock market, corporate governance, and economic growth.<sup>7</sup> The most plausible conclusion is that developed stock markets encourage economic growth by providing liquidity for investors. This appears to be correct. But, as is typically the case, the devil is in the details.

It makes sense to begin with a look at the ways in which financial development is believed to affect economic growth, taking Levine's "tentative observations" as among the best conclusions available at the moment.<sup>8</sup> Those conclusions are that "countries with better functioning banks and markets grow faster, but that the degree to which a country is bank-based or market-based does not matter much" and that "better functioning financial systems ease the external financing constraints that impeded firm and industrial expansion."<sup>9</sup>

Several different theoretical approaches have been used to evaluate the "finance-growth nexus."<sup>10</sup> I will concentrate on what Levine refers to as the "functional approach," which appears to fit best an analysis of the purposes of the market, corporate governance and financial regulation.<sup>11</sup> This approach identifies five major functions of financial markets that may explain the correlation of financial development with economic growth: (1) providing mechanisms for risk-sharing; (2) facilitating resource allocation; (3) providing mechanisms for asserting corporate control and moni-

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*Approach* (EI Working Paper No. 73, 2003), <http://fgr.wu-wien.ac.at/institut/ef/publicat.html> (criticizing previous work, particularly with methodology applied to developing countries, and noting that positive stock market effects have been shown for the U.S. economy).

7. Levine, *Finance and Growth*, *supra* note 2, at 874; *but see* Randall K Morck & Lloyd Steier, *The Global History of Corporate Governance: An Introduction* at 40 (NBER Working Paper No. W11062, 2005), [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=652361](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=652361) (concluding that "[f]inancial development seems intimately tied to corporate governance," but acknowledging the ambiguity of the evidence); *see also* Gerard Caprio, Jr. & Ross Levine, *Corporate Governance in Finance: Concepts and International Observations*, in FINANCIAL SECTOR GOVERNANCE: THE ROLES OF PRIVATE AND PUBLIC SECTORS, pp. 17-47 (Robert E. Litan, Michael Pomerleano, and V. Sunderajan, eds., 2002) ("Just as corporate governance influences the efficiency of firm production at the corporate level, so does the effectiveness of a nation's corporate governance system shape economic performance at the country level.").

8. Levine, *Finance and Growth*, *supra* note 2, at 868; *see generally* Ang, *supra* note 4 (providing an excellent literature review, including sophisticated critiques of the empirical methodologies used and suggestions for improved analysis).

9. Levine, *Finance and Growth*, *supra* note 2, at 868. It should be readily apparent that accepting these conclusions determines nothing about the benefits either of stock markets or shareholder rights, especially in light of Levine's own assertion that the distinction between a bank-based system and a market-based system appears irrelevant and other evidence that banks are more closely correlated with growth than equity markets.

10. The empirical approaches have included "broad cross-country growth regressions, times-series analyses, panel techniques, detailed country studies, and a recent movement that uses more microeconomic-based methodologies," Levine, *Finance and Growth*, *supra* note 2, at 868.

11. *See* Levine, *Financial Development*, *supra* note 2, at 689. Ang also employs the functional approach. *See generally* Ang, *supra* note 4.

toring managers; (4) pooling and deploying savings; and (5) providing mechanisms for the exchange of goods and services.<sup>12</sup> Levine identifies “two channels” through which each of these financial functions might affect economic growth: capital accumulation and technological innovation.<sup>13</sup>

Despite Levine’s five-part classification, it appears that the principal growth-related functions of financial markets generally boil down to the reduction of information and transaction costs. Other benefits are either subsidiary or closely related to those two functions. A broad public stock market is not necessary to reduce information and transaction costs, nor is a system of corporate governance that permits shareholders to exercise what are generally described as ownership rights. Perhaps most notably, the case for the stock market’s role in capital accumulation in the industrial sector is weak. The case for technological innovation is somewhat stronger, but the mechanisms of stimulating technological innovation are debatable.

## II. THE FUNCTIONS OF THE STOCK MARKET

Public equity markets can be seen as having four main functions in the economy. First, financial markets facilitate risk sharing. Second, financial intermediaries allocate capital among potential investments. Third, stockholders monitor corporate performance and motivate the market for corporate control. Fourth, and finally, financial institutions mobilize savings to fund investments. Each of these functions is used as theoretical support for the nexus between public equity markets and economic growth. In this Part, I will discuss each of these functions. Part III, however, will only focus on the first two functions, which I believe are the strongest evidence that public markets fuel economic growth and in fact encompass many of the important elements of the latter two functions. Moving forward, I will refer to the work presenting and supporting these arguments as the “finance-growth literature.”

### A. *Financial Markets Facilitate Risk Sharing*

The first function of public equity markets deals with investors’ ability to diversify and pool resources to invest in companies in a stock market. Capital investment entails information and transactions costs, which in turn present two types of risk: liquidity risk and “idiosyncratic risk.”<sup>14</sup> Liquidity risk, which generalizes over all investments, entails the possibility that an investor will be stuck with an undesirable investment. Idiosyncratic risk relates to investment in particular projects. Information asymmetries may be sufficiently great as to preclude most potential investors

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12. Levine, *Financial Development*, *supra* note 2, at 691.

13. *Id.*; Ang, *supra* note 4, at 538 (describing these channels as “the capital accumulation channel and the total factor productivity . . . channel.”).

14. Levine, *Financial Development*, *supra* note 2, at 691.

from undertaking an investment in a particular enterprise with a sufficient degree of confidence to commit to a long-term position in that enterprise. Transaction costs may be sufficiently high as to entail excessive sunk costs in making the investment or burdening exit from the investment with expenses that discourage investing in the first place. To the extent investing takes place in this environment, it will likely be in low-risk, low-return enterprises, thus stifling innovation and making saving rather than investment an attractive option.<sup>15</sup>

The emergence of financial markets ameliorates this problem by enhancing liquidity, thus encouraging savers to invest in higher-risk projects, with greater information provided by the market and the comfort of knowing that relatively low-cost exit is available, at the same time providing firms with the ability to obtain permanent capital for long-term investment. Moreover, by making diversification easier, financial markets may encourage savers to transform their savings into investments, providing lower risk but a sufficiently attractive overall return to make investment rational.<sup>16</sup> The effect of diminished liquidity risk may, it is argued, facilitate capital accumulation and encourage technological innovation, thus leading to economic growth.<sup>17</sup>

In reviewing the finance-growth literature, Levine notes that banks are fully capable of aggregating savings and deploying them in a diversified manner, with a mix of low-risk, low-return investments and more equity-like high-risk, high-return investments, while resolving information problems and providing liquidity to small investors.<sup>18</sup> Nonetheless, some scholars suggest that the presence of liquid equity markets diminishes the competitiveness of banks in performing this function, and thus liquid equity markets will come to dominate banks in ameliorating liquidity risk.<sup>19</sup> But, it is clear that both financial intermediaries and stock markets *can* perform the risk reduction function of information accumulation and transmission that helps to diminish liquidity risk.<sup>20</sup>

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15. *Id.* at 692.

16. *See id.* at 693. The effect of excess savings over investment is a long-standing one. *See* LAWRENCE E. MITCHELL, *THE SPECULATION ECONOMY: HOW FINANCE TRIUMPHED OVER INDUSTRY* 99 (2007) (describing early 20th century American views on the stagnation of the French economy) [hereinafter, MITCHELL, *THE SPECULATION ECONOMY*].

17. Levine, *Financial Development*, *supra* note 2, at 693.

18. NAOMI LAMOREAUX, *INSIDER LENDING: BANKS, PERSONAL CONNECTIONS, AND ECONOMIC DEVELOPMENT IN INDUSTRIAL NEW ENGLAND*, at 82 (1994); Levine, *Financial Development*, *supra* note 2, at 693-4.

19. Levine, *Financial Development*, *supra* note 2, at 694; *see also* Asli Demirguc-Kunt & Vojislav Maksimovic, *Stock Market Development and Financing Choices of Firms*, 10 *WORLD BANK ECON. REV.* 341, 316 (1996).

20. Levine, *Financial Development*, *supra* note 2, at 695; *see also* Ang, *supra* note 4, at 549 (noting absence of empirical evidence to support the superiority of either the bank-based or market-based view of the finance-growth nexus); R.D.F. Harris, *Stock Markets and Development: A Re-Assessment*, 41 *EUR. ECON. REV.* 139, 140 (concluding that stock market activity has only a weak effect on growth); Beck & Levine, *supra*, note 6, at 719-20 (concluding that banks and stock markets stimulate growth but conceding that their evidence could be



Thus while it appears that financial institutions generally contribute to economic development by overcoming problems of information asymmetry in a manner that enhances investor liquidity, the stock market's contribution to the performance of this function is ambiguous. It appears that this function may also be performed well by other types of financial intermediaries without some of the distortions created by equity markets.<sup>21</sup> It is premature, however, to dismiss entirely the importance of public equity in economic development—it is well supported that liquid capital markets, fueled by access to information, are at least correlative to economic growth.<sup>22</sup>

### B. *Financial Intermediaries Allocate Capital*

The second function of public equity markets, capital allocation, is tightly tied to its risk sharing function. In the presence of the informational problems discussed above, markets might allocate capital inefficiently.<sup>23</sup> In a public equity market, financial intermediaries, who may be especially effective in identifying entrepreneurs who are likely to succeed, step in. In 1911 Joseph Schumpeter assigned this function to banks,<sup>24</sup> but, as I will discuss in Part II, venture capital funds appear to have taken over a large portion of the task since the late 20th century.<sup>25</sup>

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interpreted in a manner that fails to privilege either form of financial institution. *But see* Levine & Zervos, *supra* note 5, at 324-325 (finding evidence from cross-country growth regressions that stock market development correlates with long-run economic growth (the methodology used in Levine & Zervos is criticized in Beck & Levine)); Demircuc-Kunt & Levine, *supra* note 6, at 293 (noting that countries with well-developed stock markets tend to have well-developed banks).

21. Andrei Shleifer & Robert W. Vishny, *A Survey of Corporate Governance*, 52 J. FIN. 737, 772 (1997) (noting that “a large theoretical and anecdotal literature argues that the American corporate governance system, particularly takeovers, imposes short horizons on the behavior of corporate managers, and hence reduces the efficiency of investment”). More recent empirical work seems to provide some confirmation of the theoretical insight. *See, e.g.*, John R. Graham, Campbell R. Harvey & Shiva Rajgopal, *Value Destruction and Financial Reporting Decisions*, 62 FIN. ANALYSTS J., at 27 (2006); John R. Graham, Campbell R. Harvey & Shiva Rajgopal, *The Economic Implications of Corporate Financial Reporting*, 40 J. ACCT. & ECON., at 3 (2005); Philippe Aghion & Jeremy C. Stein, *Growth vs. Margins: Destabilizing Consequences of Giving the Stock Market What it Wants* 1, 24-25 (2004), <http://ssrn.com/abstract=631184> (concluding that even in an efficient stock market, managers' desire to satisfy stock market demands can “introduce significant excess volatility into real variables such as output and sales”).

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23. Levine, *Financial Development*, *supra* note 2, at 695.

24. *See generally*, JOSEPH A. SCHUMPETER, *THE THEORY OF ECONOMIC DEVELOPMENT* (1911).

25. I say “appear to” rather than “have” because the proportion of new business financing attributable to venture capital is quite small, Allen N. Berger & Gregory F. Udell, *The Economics of Small Business Finance: The Roles of Private Equity and Debt Markets in the Financial Growth Cycle*, 22 J. BANKING & FIN., at 613-673 (1998) [hereinafter, Berger & Udell, *The Economics of Small Business Finance*]. Further, it appears to be concentrated in discrete regions of the country and discrete business sectors, although the former conclusion may be due somewhat to limitations in available data. *See* Paul A. Gompers, *Corporations*

It is not the case, however, that well-disseminated good information, or good information collected by financial intermediaries, necessarily results in the efficient allocation of capital. There is significant literature contradicting Levine, suggesting that developed stock markets can hinder economic growth by discouraging the search for information,<sup>26</sup> discouraging investment in human capital,<sup>27</sup> and distorting managerial incentives through market mechanisms resulting in a misuse of productive capital.<sup>28</sup>

### C. Stockholders Monitor Corporate Performance and Motivate the Market for Corporate Control

This third function of public equity markets deals with the concern that managers without very substantial equity stakes have incentives to take advantage of the corporation's assets for their own benefit or to fail to diligently perform their work—in other words, they might steal or they might shirk.<sup>29</sup> The specific areas of concern in the legal literature are board composition, shareholder voting, litigation, and the market for corporate control.

Why do we worry about monitoring in the first place? The microeconomic answer is that inadequate or inefficient monitoring leads to inefficient corporate governance. But this only leads to a second question: what is the real economic role of efficient corporate governance? The traditional answer is that, in the absence of efficient corporate governance, agency costs will lead to lower levels of investment (or higher costs of capital, which may amount to the same thing) and therefore diminished productivity and job growth, resulting in correspondingly lower levels of GDP.

This means that the monitoring argument is intimately linked to questions of capital formation and allocation. Absent public equity markets, no monitoring function of this kind is necessary. If financial institutions in public equity markets *do not* perform the capital allocation function discussed above in a manner that leads to economic growth, monitoring costs may be being wasted.

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*and the Financing of Innovation: The Corporate Venturing Experience*, Q4 FEDERAL RESERVE BANK OF ATLANTA ECON. REV., at 11 (2002); Paul A. Gompers & Josh Lerner, *The Venture Capital Revolution*, 15 J. ECON. PERSP., at 145,148 (2001); Samuel Kortum, & Josh Lerner, *Assessing the Contribution of Venture Capital to Innovation*, 31 RAND J. ECON., at 674 (2000).

26. Joseph E. Stiglitz, *Credit Markets and the Control of Capital*, 17 J. MONEY, CREDIT, AND BANKING, at 133 (1985).

27. See generally JEFFREY PFEFFER, *COMPETITIVE ADVANTAGE THROUGH PEOPLE: UNLEASHING THE POWER OF THE WORK FORCE* (1994) (arguing that human capital is a source of success for businesses, but that Wall Street encourages hostility to workers).

28. Graham, Harvey & Rajgopal, *supra* note 21,

29. Michael C. Jensen & William H. Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure*, 3 J. FIN. ECON., at 305 (1976) (as a starting point of the intersection between the financial economic literature on corporate governance and the legal literature).

It is worth noting, however, that in the absence of public markets, the monitoring problem would not necessarily evaporate—the focus would shift from concern with managers to worries about expropriation from shareholders by financial intermediaries, or from minority shareholders by controlling shareholders. There is a substantial and well-developed literature on these problems, especially in studies of comparative corporate governance.<sup>30</sup> The subject of monitoring, while important, has been rather exhaustively studied, and this paper does not intend to contribute further to that literature. Suffice it to say that resolution of the issue of capital formation determines the course that debates over monitoring should follow.

#### D. *Financial Institutions Mobilize Savings*

The fourth and final function of public equity markets is the ability of well-developed financial institutions to mobilize the savings of dispersed individuals by aggregating capital for investment.<sup>31</sup> Such mobilization helps to diminish information and transactions costs that might otherwise create excessive market friction and misallocation of resources. While information and transactions costs can be reduced through contracting between corporations and multiple investors, financial intermediaries can increase the efficiency with which this is accomplished and help to create investment vehicles in small enough denominations to permit widespread participation.<sup>32</sup> This may lead to economic growth because it also facilitates the allocation of capital to its highest-value users, and in so doing stimulates innovation and savings by providing higher returns to capital.<sup>33</sup> As with other functions, the strength of this role in stimulating economic growth lies in the actual allocation of capital by financial institutions to productive enterprise.

Several points should be immediately apparent from this distinct treatment of savings mobilization. While it can be treated analytically separately, it is really nothing more than a variation on the arguments previously discussed regarding risk pooling, resource allocation and, to some extent, managerial monitoring or, to put it summarily, the correction of informational asymmetries and reduction of transactions costs. Moreo-

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30. See generally Shleifer & Vishny, *supra* note 21, For a concise statement of the problem, see Jonathan R. Macey, *Italian Corporate Governance: One American's Perspective*, 1998 COLUM. BUS. L. REV. 121, 129-37 (1988).

31. Levine, *Financial Development*, *supra* note 2, at 698-99; Levine, *Finance and Growth*, *supra* note 2, at 879.

32. *Id.*

33. This latter point is less clear. There is debate in the literature on whether, for example, an active stock market increases or reduces savings. Levine, in *Financial Development*, does not mention increasing savings as a consequence of mobilization. See generally Levine, *Financial Development*, *supra* note 2. In *Finance and Growth*, he states the point without discussion. Levine, *Finance and Growth*, *supra* note 2, at 879. He does note, citing Bagehot, that such mobilization can increase the rates of return for individual investors on their savings, and this I take to imply that savings would therefore increase. *Id.* at 880.

ver, the argument does not significantly distinguish between equity and debt, nor could it, at least in the case of the United States, for equity does not directly finance industry. The kind of savings mobilization Levine discusses could be, and in many countries is, accomplished through the use of financial intermediaries rather than public equity markets. As an historical matter, U.S. banks and other financial intermediaries (not to mention trade creditors and the commercial paper market) have played a vital financing role.<sup>34</sup>

### III. DO PUBLIC CAPITAL MARKETS ACTUALLY STIMULATE ECONOMIC GROWTH?

Having laid out the principal arguments used to connect the development of financial markets and institutions to economic growth, I will now proceed to evaluate more precisely the central arguments that claim that public equity markets stimulate economic growth—the risk sharing and the capital allocation arguments. I will largely ignore the informational and transactions costs arguments, as they only matter if we conclude that public equity markets play an important role in capital formation. I will, however, take the informational and transactions costs arguments as theoretically sound on their own terms for purposes of this discussion.<sup>35</sup>

Recall from Part I above that easier access to information is very often used as an argument in favor of public equity markets as drivers of economic growth. The finance-growth literature relies upon indirect results of financial development, like informational efficiency and improved liquidity, to sustain the link, but this is insufficient. Nor is it sufficient to link, as the empirical literature does, industrial growth to the size and volatility of the stock market. These are merely proxies for the formation of productive capital—one really must follow the money. Doing so leads to the conclusion that the public market plays a limited and indirect, although possibly important, role in financing production.

#### A. Risk Sharing Arguments

Recall that the finance-growth literature emphasizes the role of financial institutions in overcoming information asymmetries and facilitating liquid markets. The *macroeconomic* literature connects this to economic growth by arguing that this function of financial institutions overcomes barriers to investment and thus helps to create the circumstances under which broad public investment in productive enterprise occurs. I do not intend to challenge this point. But, its relevance is dependent on questions of the nature of the risks shared, the answers to which in turn depend

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34. See Lawrence E. Mitchell, *The Legitimate Rights of Public Shareholders*, 66 WASH. & LEE L. REV., at 1635 (2010) [hereinafter, Mitchell, *Legitimate Rights*].

35. As Harris and Raviv concluded in 1991, the study of informational asymmetries appeared to have reached the point of diminishing returns in the context of explaining corporate capital structure. Milton Harris & Artur Raviv, *Capital Structure and the Informational Role of Debt*, 45 J. FIN. 321, 351 (1990).

upon the actual results of capital formation. Thus I will, in this Part, turn briefly to the microeconomic financial literature to evaluate precisely what risks are being shared through the acquisition and dissemination of information and the existence of liquid markets, saving for my discussion of capital allocation the issue of whether in fact the public equity market, as the principal financial institution under investigation, indeed fulfills this goal.

### 1. What Kinds of Risk?

Assume that shareholders do, in a meaningful way, take the risk of failure resulting from poor corporate production and innovation, and that they choose to do so in part because they have access to information that permits intelligent decision making with respect to their potential risk and return and facilitates the transfer of shares among investors. How do they assume their risk?

Shareholders assume their risk by purchasing stock, but, well before the seminal 1934 work of Benjamin Graham and David Dodd, it was widely acknowledged that the purchase of stock in a single public company was a poor investment strategy.<sup>36</sup> That pre-Graham and Dodd argument has been refined over time into what is generally known as modern finance theory. Portfolio theory (modern finance theory's first important contribution) addressed the question of how an investor should maximize the value of his investment. Portfolio theory concluded that investors should achieve a balance between moderating variance and return by creating an efficient portfolio—that is, one that either provided the highest return for a given level of variance or the lowest risk for a given return.<sup>37</sup> By so doing, each investor could achieve the maximum return for a given level of risk. The wisdom of investing in this manner followed as a matter of course.<sup>38</sup>

The argument that sustains portfolio theory meshes nicely with the finance-growth literature's explanation of the relationship between developed financial markets and economic growth. The market's role in providing liquidity makes diversification possible, and modern finance theory tells us that diversified investment is, in fact, the only prudent way for most people to invest.<sup>39</sup> So, the diversification function (facilitated by liq-

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36. BENJAMIN GRAHAM & DAVID L. DODD, *SECURITY ANALYSIS: PRINCIPLES AND TECHNIQUE*, at 1-21 (6th ed. 2006).

37. Harry Markowitz, *Foundations of Portfolio Theory*, 46 *J. FIN.*, at 469 (1991); Harry Markowitz, *Portfolio Selection*, 7 *J. FIN.*, at 77 (1952).

38. See, e.g., Ronald J. Gilson, & Charles K. Whitehead, *Deconstructing Equity: Public Ownership, Agency Costs, and Complete Capital Markets*, 108 *COL. L. REV.*, at 231 (2008); John H. Langbein, *The Uniform Prudent Investor Act and the Future of Trust Investing*, 81 *Iowa L. Rev.*, at 641 (1996).

39. Easterbrook and Fischel also credit limited liability with making diversification possible. See generally Frank H. Easterbrook & Daniel R. Fischel, *THE ECONOMIC STRUCTURE OF CORPORATE LAW* (1991). A discussion of limited liability is beyond the scope of this work—my concern here is with financial risk.

uid financial markets' abilities to overcome information asymmetries) is important not only to the market's effect on economic growth, as the macroeconomic argument claims,<sup>40</sup> but also to the welfare of individual shareholders, as demonstrated by the microeconomic perspective.

The finance-growth literature seems to neglect this overlap and assume that risk reduction—or rather risk-sharing—helps to facilitate economic growth, without paying much attention to the nature of the risks involved.

The microeconomic literature is more careful in categorizing risk.<sup>41</sup> The “capital asset pricing model” (CAPM) followed relatively quickly on the heels of portfolio theory. CAPM tells us that if stockholders can temper the risk of loss from any particular corporation by diversifying, a corporation must only compensate its shareholders—its risk-bearing specialists—for taking non-diversifiable risks.<sup>42</sup> Non-diversifiable risks are those that exist in the market itself, like risks of inflation, market bubbles, major political events, the impact of economic cycles, the unavailability of credit, and the like.

But, notice the paradox. If the only risk for which corporations must (and therefore will) compensate public shareholders is the risk inherent in the market, then the only risks in which those shareholders are specialists are market risks. In the absence of a stock market—or, to put it differently, in an economy based largely on the provision of external financing by financial intermediaries—intermediaries would demand compensation for the risk of loss inherent in specific corporate investments. While returns from systematic risk would still exist, they would be amplified by significant idiosyncratic risk (corporate-specific returns). Indeed, it is likely that systematic risk would be diminished by eliminating the market irrationalities inherent in stock market reactions to some categories of systematic events.<sup>43</sup> There would, in other words, be little need for the risk

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40. Levine, *Finance and Growth*, *supra* note 2, at 875-6.

41. This statement is a bit unfair. Work in the development literature recognizes, in addition to financial risk, legal risks, political risks, and the like. But insofar as financial risk is concerned, the statement in the text seems clearly correct.

42. William Sharpe, *Capital Asset Prices: A Theory of Market Equilibrium Under Conditions of Risk*, 19 J. FIN., at 425 (1964). It is commonly said that diversification “eliminates” the risk of holding stock in a particular corporation. This is obviously incorrect. If you own the stock of corporation A in your portfolio and A goes bankrupt, you have lost your investment in A. It is more accurate to say that the impact of that loss on your overall portfolio is balanced by potential gains in the stock of other corporations you own.

43. The question is one of collective versus individual rational behavior. While it is clear, as the current economic crisis demonstrates, that financial institutions collectively can behave irrationally, at least in the context of a broad derivatives market, it is much more likely that lending institutions and private equity funds who have contractual and close relationships with their portfolio companies act individually rationally and, for the most part, collectively rationally. The public stock market is an entirely different matter. Noise trading, for one, which characterizes some portion of the public equity markets doesn't affect the financing activities of financial institutions nor does it importantly affect the debt market. See Thomas Lee Hazen, *Rational Investments, Speculation, Or Gambling? Derivative Securities and Financial Futures and Their Effect on Capital Markets*, 86 Nw. U. L. REV. 987, 993

specialization services provided by shareholders, which is to assume systematic risk.

In other words, the logic of finance theory seems to lead to the circular conclusion that the only risks in which shareholders specialize are the risks that they themselves, aggregated in the institution of the market, create, as it is they—and not banks or public debt holders—who are uniquely dependent upon CAPM's beta, a measure of systemic risk, for their returns.<sup>44</sup> Consequently, the risk-specialization role of public shareholders, and thus the importance of the stock market, seems harder to justify. The logic of risk-specialization is a consequence of the existence of the market, not a justification for it.

Now I confess that this reasoning moves a bit too quickly. Despite the claims made on behalf of portfolio theory, stockholders *do* buy stock in specific companies and *do* take the risk of holding stock in specific companies—no matter the facility with which they can diversify in order to minimize that risk. In the absence of a market that allowed such diversification, shareholders would, so the argument continues, refuse to invest in specific companies and would therefore fail to provide the capital necessary to finance industry. The logical end of the portfolio theory argument returns to the premise that stockholders provide financing for industrial production. But this premise is precisely the question at issue—the data demonstrates that stockholders do not importantly provide financing for industrial production, both as an historical and as a contemporary matter. That financing historically has come principally from retained earnings and debt.<sup>45</sup>

While the argument from finance theory is elegant and is logical within its assumptions, the assumptions fail on the facts. The conclusion remains that stockholders can be seen as specialists in risk bearing only because of the existence of a public market, and the market for industrial equities exists primarily as a historically contingent fact, largely unrelated to the

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(1992); Fischer Black, *Bank Funds Management in an Efficient Market*, 2 J. FIN. ECON., at 323 (1975) (assuming an efficient market when stating that finance should track stock performance). More generally, in an equity market in which capital gains are the principal focus of investors, collective irrationality is quite common. *Id.* at 988 (arguing that the rise in speculative short term investments has led to an increase in irrational market activity).

44. I do not mean to suggest that systematic risk would be entirely eliminated or that financial institutions would not suffer in their investments from systematic risk. Instead, the return demanded by financial institutions—whose profits would not come from trading, but from dividends and interest—would likely be more finely calibrated to the risks inherent in individual corporate investments rather than exogenous factors. A closer correlation between actual corporate performance and returns on investments would likely result. The same result could be accomplished in the stock market if each market participant (or the overwhelming majority of market participants) invested on the basis of fundamentals and focused more on returns from corporate cash flow than from trading profits.

45. See Mitchell, *Legitimate Rights*, *supra* note 34, at 1643 n. 23. Since the data demonstrates a dramatic recent decrease in retained earnings, it is fair to ask whether the historic reliance on internal financing can continue.

financing of productive enterprise.<sup>46</sup> If this is true, then the market exists for the sake of the market, and investment in equities very much resembles the gambling it is often accused of being.<sup>47</sup> In this manner, modern finance theory nicely illustrates the gap between the real economy and the finance economy, and raises significant unexamined questions about the stock market's real contribution to economic growth.

## 2. The Mythology of Capital Gains

A second issue is the source of stockholder gains. Since 1980, stock market volatility has dramatically increased and there has been a precipitous drop in internal corporate resources—matched with a run-up in borrowed funds.<sup>48</sup> Empirical evidence increasingly points to a managerial focus on short-term stock prices during this period, even at the expense of business development, culminating in a dramatic increase in stock buybacks from 2004 to 2007. During that period, the S&P 500 spent more (both in the aggregate and as a simple majority of corporations) on stock buybacks than on productive capital, and dramatically more than on research and development.<sup>49</sup>

History demonstrates a significant shift in investment style over time. Through the 1950s, those who invested in public equity did so primarily for dividends. Indeed the New York Stock Exchange emphasized dividends in its “Own Your Share of American Business” campaign to induce larger numbers of Americans to invest in the stock market, as well as to establish a broader base with which to lobby against double taxation.<sup>50</sup> But matters changed in the 1960s and have continued along the path then set: the desire for dividends gave way to the demand for capital appreciation.

To some extent, this shift was planned and encouraged by the New York Stock Exchange, which was suffering from a lack of business in the 1950s. The NYSE clearly contemplated that increasing share ownership would enhance the speculative character of the market (as eventually it did).<sup>51</sup> For example, in its 1955 Annual Report, it noted the low annual

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46. See, e.g., MITCHELL, *THE SPECULATION ECONOMY*, *supra* note 16, at 1-29.

47. See e.g., JOHN MAYNARD KEYNES, *THE GENERAL THEORY OF EMPLOYMENT, INTEREST AND MONEY* bk. IV, at 147-64 (1935); Lawrence E. Mitchell, *The Morals of the Marketplace: A Cautionary Essay for Our Time*, 20 *STAN. L. & POL'Y REV.* 171, 180 (2009).

48. Mitchell, *Legitimate Rights*, *supra* note 34, at 1671

49. HOWARD SILVERBLATT & DAVE GUARINO, *S&P BUYBACKS: THREE YEARS AND \$1.3 TRILLION LATER*, *STANDARD & POOR'S*, at 1, 5-6 (Dec. 2007). At least a partial explanation for this high number may be the tax holiday granted by the Homeland Reinvestment Act of 2004, which facilitated repatriation of foreign earnings by U.S. companies operating abroad. See Dhammika Dharmapala, C. Fritz Foley & Kristin Forbes, *Watch What I Do, Not What I Say: The Unintended Consequences of the Homeland Investment Act*, 66 *J. FIN.* 753, 756 (2011).

50. See, e.g., Janice Traflet, “Own Your Share of American Business”: *Public Relations at the NYSE During the Cold War*, *BUS. & ECON. HIST.*, no. 1, 2003.

51. One exception to the drive toward speculation appears to have been perhaps the greatest popularizer of post-Depression common stock investment and a creator of the



turnover of 19%, stating, “[t]his is to be expected, of course, in a cash market of an investment character.”<sup>52</sup> Low turnover meant low commissions and low profits for the specialists who controlled the NYSE, and the annual report went on to complain that the Federal Reserve Board had raised margin requirements twice that year—an action it believed to be harmful to economic growth by diminishing market liquidity.<sup>53</sup> Explosive market development in the following years, with a marked turn to investing for capital gains, demonstrates the success of the NYSE’s programs, despite the failure of the Federal Reserve Board to reduce significantly (sometimes even increasing) margin rates.<sup>54</sup>

This shift to capital gains investing has significant implications for corporate finance and governance. The famous Miller-Modigliani irrelevance theory,<sup>55</sup> which, although debated, has wide adherence,<sup>56</sup> holds in part that dividend policy should be irrelevant to share price, transactions costs and taxation aside.<sup>57</sup> Once the issuer has disclosed its investment policy, the ratio of dividend payouts should not matter to shareholders because, among other things, share value depends upon the earnings value of the company’s assets. The source of financing of those earnings, whether internally from retained earnings or externally from debt or new equity, should not matter. Investors should be rationally indifferent between receiving dividends and capital gains because public stock prices in a broad and efficient market should discount all future cash flows to present value and incorporate them in the stock price.<sup>58</sup> Thus one could receive divi-

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NYSE’s Monthly Investment Plan, Charles Merrill and the firm he founded. Merrill appears to have been concerned with ensuring that new investors were careful in assessing the risks they took and prudent in their investments. *See generally* Edwin J. Perkins, *FROM WALL STREET TO MAIN STREET: CHARLES MERRILL AND MIDDLE CLASS INVESTORS* (1999) (suggesting that that Merrill popularized common stock investing in a fairly conservative way).

52. NEW YORK STOCK EXCHANGE AND AFFILIATED COMPANIES, ANNUAL REPORT FOR 1955, at 14.

53. *Id.*

54. Federal Reserve Board, 94th ANNUAL REPORT, at 323 tbl.8 (2007) (showing Initial Margin Requirements under Regulations T, U, and X); Peter Fortune, *Margin Requirements, Margin Loans, and Margin Rates: Practices and Principles*, NEW ENG. ECON. REV., Sept.–Oct. 2000, at 19. I do not mean to attribute this entire shift to the actions of the NYSE, for the story is far more complicated. I only cite the NYSE as one player, albeit an important one, in a critical shift in investing styles that raises questions about the macroeconomic role of U.S. public equities markets.

55. *See, e.g.*, Merton Miller & Franco Modigliani, *The Cost of Capital, Corporation Finance and the Theory of Investment*, 48 AM. ECON. REV., no. 3, 1958, at 261 [hereinafter, Miller & Modigliani, *The Cost of Capital*]; *see generally* Merton Miller & Franco Modigliani, *Dividend Policy, Growth, and the Valuation of Shares*, 34 J. BUS. 411 (1961) [hereinafter, Miller & Modigliani, *Dividend Policy*].

56. *See generally*, *Beyond Irrelevance*, THE ECONOMIST (Feb. 9, 2006), <http://www.economist.com/node/5492253>.

57. *See generally* Miller & Modigliani, *The Cost of Capital*, *supra* note 55; *see generally* Miller & Modigliani, *Dividend Policy*, *supra* note 55.

58. Miller and Modigliani expressly define “rational behavior” as meaning that “investors . . . are indifferent as to whether a given increment to their wealth takes the form of cash

dends over the long term by holding onto the stock, or realize them now by selling the stock and receiving the equivalent of those dividends in the form of capital gains—the proportion of the selling price that captures the seller's share of present and future retained earnings as well as future dividends.<sup>59</sup> Thus the shift to shareholder expectations of profits from capital gains should be untroubling because it should be irrelevant.

Understanding this argument in light of the contemporary understanding that one derives capital gains from discounted future dividends requires emphasizing one very important fact: dividends must be paid out of cash earned currently, or at least cash that is held by the corporation, and therefore certain. Discounted future dividends, even if the market is efficient, are uncertain and hence a risky proposition. Because these discounted dividends will only come in the (unpredictable) future, they do not exist at the time that a stockholder sells his shares for capital appreciation. Further, as a matter of financial reality, they are only as good as the assumptions one makes in applying various valuation models to the corporation's earnings and cash flows.<sup>60</sup> So in one very real sense, the capital gains seller is shorting future dividends, and the capital gains buyer is gambling that the rather significant assumptions upon which valuation models are built turn out to be correct, or at least that he can find someone else to buy the stock who believes them to be correct.

It is important to note that actual retained earnings have more or less disappeared from the books of industrial corporations since Miller and Modigliani wrote. Now the capital gains trader is effectively buying or selling what used to be referred to as “water.” While financial theory might establish equivalence, taking one's profits in capital gains (taken as discounted future cash flows rather than as accumulated retained earnings) is a very different proposition in real economic terms from receiving a check from a corporation with money in the bank.<sup>61</sup>

The disappearance of retained earnings might well have significant implications for the continuing validity of the Modigliani-Miller theory. Miller and Modigliani published their papers in 1958 and 1961. Retained earnings in 1961 constituted between 40% and 61% of corporate balance sheets, little changed from 1958.<sup>62</sup> Capital gains thus appear to have been supported by real deferred dividends, held in the form of retained earn-

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payments or an increase in the market value of their holdings of shares.” Miller & Modigliani, *Dividend Policy*, *supra* note 55, at 412.

59. *Id.*

60. See Marco Pagano, Fabiano Panetta & Luigi Zingales, *Why Do Companies Go Public? An Empirical Analysis*, 53 J. FIN. 27, 28 (1998). Studying a sample of Italian corporations, Pagano, Panetta, and Zingales conclude that investment and profitability tend to diminish following an IPO, and that the greatest single predictor of whether a firm will undertake an IPO is a high market-to-book ratio.

61. Lawrence E. Mitchell, *Whose Capital? What Gains?*, 49 ISSUES IN GOVERNANCE STUD. July 2012, BROOKINGS INSTITUTE, at 1, 5-6.

62. *Id.* at 6.

ings. While one assumes that market movements also affected stockholder profits, there were in fact balance sheet assets to support stock prices.<sup>63</sup> Thus the irrelevance demonstrated by Modigliani and Miller made perfect sense in 1961, even in light of the fact that valuation methods all are, necessarily, future -oriented.<sup>64</sup> The situation is dramatically different when, as we see in 2005, retained earnings constituted 11% of corporate balance sheet equity, following a steady thirty-year decline.

Capital gains are no longer supported by balance sheet assets. Market movements constitute virtually the entire amount of shareholder capital gains. Whatever power the irrelevance theory had at mid-century, the disappearance of retained earnings from corporate balance sheets would seem to cast it in an entirely different and far less persuasive light.

Recently, the dividend irrelevance provision has also been challenged head on in a provocative article by Harry DeAngelo and Linda DeAngelo.<sup>65</sup> DeAngelo and DeAngelo's critical starting insight is that Miller and Modigliani fail to answer their own question about dividend policy because their assumptions, taken together, demand that 100% of free cash flow be paid to shareholders in each period, with no earnings retention possible. In a well-reasoned argument, they conclude that dividend policy matters in precisely the same way that investment policy does. While the realization that Miller and Modigliani demand 100% payouts may seem to undercut the preceding discussion of retained earnings, such a conclusion would be wrong. The free cash flow at issue exists, by definition, only after funds have been invested. The income statement focus of this analysis does not, and does not need to, explicitly acknowledge the fact that if internally generated cash flow or the proceeds from externally-distributed equity are invested prior to determining free cash flow, those funds will appear in the equity portion of the balance sheet, the former as retained

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63. As to stock price movements, it is worth noting that volatility, expressed as turnover, was very low. See *Annual Reported Volume, Turnover Rate, Reported Trades (Mils. Of Shares)*, NYXdata.com, [http://www.nyxdata.com/nysedata/asp/factbook/viewer\\_edition.asp?mode=table&key=2206&category=4](http://www.nyxdata.com/nysedata/asp/factbook/viewer_edition.asp?mode=table&key=2206&category=4) (last visited May 8, 2017). Froot, Perold, and Stein distinguish mere turnover from real volatility, arguing that while turnover has significantly increased, volatility has not as a result of increased market capacity. They do, however, note the possibility that informational asymmetries between management and the market might well induce short-term managerial incentives. Kenneth A. Froot, Andre Perold & Jeremy C. Stein, *Shareholder Trading Practices and Corporate Investment Horizons*, 5 J. APPLIED CORP. FIN., at 42 (1992). While their argument is powerful, it is somewhat limited by the fact that it was made in 1992, before the very dramatic turnover increases in the early 21st century. It would be interesting to apply their methodology to that period to see if their conclusions hold.

64. Miller and Modigliani's work was designed to show the irrelevance of dividend policy on stock prices. They were careful to account for the need to finance both dividend payments and corporate investments either through retained earnings, current income, or debt. See Miller & Modigliani, *Dividend Policy*, *supra* note 55, at 429

65. See generally Harry DeAngelo & Linda DeAngelo, *The Irrelevance of the MM Dividend Irrelevance Theorem*, (2005) [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=680855](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=680855).

earnings. Indeed, Miller and Modigliani themselves must assume the existence of retained earnings because they treat, as a special case, a situation in which investment funds “come *only* from retained earnings.”<sup>66</sup> DeAngelo and DeAngelo’s critique, therefore, does not appear to undercut my argument.<sup>67</sup>

The argument that the stock market stimulates economic growth through its diminution of risk by facilitating information flows and diminishing transactions costs does not appear to be supported when the nature of the risks and the flow of funds are closely examined. Close analysis shows that those risks primarily are risks of the capital markets, not the risks of a productive economy. This conclusion, however, may not be significant if risk reduction—no matter the nature of the risks—in fact helps public equity markets allocate capital to productive uses. As I will now explore, public equity markets appear to have a role in allocating capital, but (1) the empirical evidence does not clearly support this conclusion and (2) the extent to which public equity markets allocate capital is overstated and indirect.

### B. Capital Allocation Arguments

At this point, it seems appropriate to return to the paradox with which I began and with which the economic literature does not appear to address in any significant manner. While economic theory provides plausible theoretical explanations for why equity capital is made available to finance production, the fact is public equity capital does not appear to finance production except under certain narrowly specific circumstances.<sup>68</sup> If equity does not provide finance, it does not seem likely that it can be an important factor in allocating capital.<sup>69</sup> This conundrum may explain the

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66. Miller & Modigliani, *Dividend Policy*, *supra* note 55, at 424.

67. This is so even though Miller and Modigliani argue that debt financing (which they introduce after assuming an all-equity world) would not affect their thesis. Miller & Modigliani, *Dividend Policy*, *supra* note 55, at 429-30. While debt was an important source of corporate financing at the time they wrote, the average corporation had a healthy chunk of retained earnings to back borrowings.

68. In a study covering the period 1988 to 2004, Huang, Mayer, and Sussman find that firms typically rely upon internal sources of financing. In the face of severe cash flow shocks, financing turns to trade credit, inventory depletion, and cash depletion. Over time, their pre-shock leverage ratio is restored by the issuance of new equity. *See generally* Zhangkai Huang, Colin Mayer, & Oren Sussman, *How Do Firms Finance Large Cash Flow Requirements?* (Oxford Fin. Research Ctr., OFRC Working Paper Series 2008fe06, 2008). Gilchrist, Himmelberg, and Huberman find that equity issuances increase in response to stock price bubbles. *See generally* Simon Gilchrist, Charles P. Himmelberg, & Gur Huberman, *Do Stock Price Bubbles Influence Corporate Investment?* 52 J. MONETARY ECON. 805 (2005). *See generally also*, Malcolm Baker, Jeremy C. Stein, & Jeffrey Wurgler, *When Does the Market Matter? Stock Prices and the Investment of Equity-Dependent Firms*, 118 Q. J. ECON. 969 (2003) (arguing, among other things, that what they define as “equity-dependent firms” are firms that find investment constrained when stock prices are low due to non-fundamental causes).

69. There is an argument that creditors follow the stock market in evaluating credit and providing debt. *See* Black, *supra* note 43, at 329 (arguing that in an efficient market, a

relative paucity of studies making strong causal claims from stock market development to economic growth. The literature, nonetheless, does make a case for the correlation between stock market development and economic growth.<sup>70</sup> The issue demands examination.

The role of public equity markets in allocating capital and financing productivity is the weakest link in the literature. Some of this weakness stems from the more general problem of the difficulties of assessing the contribution of the stock market to economic growth and perhaps an explanation as to why causation has been so difficult to establish.

Among some of the difficulties in assessing the importance of the stock market are the metrics one uses to determine stock market development. For example, Beck and Levine use turnover ratio. They reject as inadequate measures of value traded (value of domestic trades over GDP) and market capitalization (value of listed shares over GDP). The former is rejected because it fails to measure liquidity and also because it anticipates growth that has not yet occurred. The latter because it measures little other than the quantity of listings which, standing alone, says little or nothing about economic growth.<sup>71</sup>

Turnover also is an inadequate metric. While it certainly indicates market activity, and thus, can serve as a proxy for liquidity, it has little obvious relationship to corporate growth. First, the liquidity of the market says nothing about the uses of liquid funds. If anything, the 2008 financial crisis has shown us that liquidity can be used for no better purpose than to purchase speculative derivative securities that do not finance productivity but rather serve to create further liquidity without apparent economic purpose.

Liquidity *per se* is no guarantee that capital will find its way into financing production. It can, for example, be withdrawn from the market and used for consumption, or it can be saved for future investment or consumption. It is also possible, although unlikely over the long-term, that such withdrawals could be hoarded and kept unproductive. Related to this point, virtually the entire turnover measured occurs in the secondary market, which has no direct relationship to corporate finance. A far better metric might be the relationship of external equity financing to capital formation, either in terms of stated capital, retained earnings and deprecia-

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publicly traded company's stock price will be the principal source of credit information for banks, and concluding that because regulations in the U.S. are largely avoidable, this assertion should remain true even in a regulated market). While an examination of this claim is beyond the scope of this article, the analysis I provide suggests, if this is correct, the credit markets are misguided.

70. See generally Levine & Zervos, *supra* note 5. But see H.R. Garretsen, H.R. Lensink & E. Sterken, *Growth, Financial Development, Societal Norms and Legal Institutions*, J. INT'L FIN. MARKETS, INSTITUTIONS AND MONEY, at 165 (2004), (negating Levine and Zervos' findings when controlling for legal and societal factors).

71. Beck & Levine, *supra*, note 6, at 428.

tion, or additions to assets carried at cost.<sup>72</sup> Economists largely are in agreement that retained earnings and debt, not equity finance, have traditionally been the primary sources of funds for investment in productive capital.<sup>73</sup>

Studies employing GDP measures, providing reasonable proxies for economic growth to support some claims of causation, seem to provide some of the best evidence of the broader relationship between finance and growth from the growth side of the equation.<sup>74</sup> But problems remain. For example, Neusser and Klugel use financial sector GDP and manufacturing sector GDP to assess this relationship. Ignoring for the moment the substantially diminished proportion of the manufacturing sector's contribution to U.S. GDP,<sup>75</sup> which itself ought to suggest that this metric of growth is not especially informative, studies that link GDP growth to financial sector growth still fail to account for the use of funds employed by the financial sector or, to put it differently, the extent to which financial sector funds are directed toward productive economic use. Indeed, over the last several decades, the financial sector has increasingly turned to various forms of proprietary trading and sales of derivative securities—which do not themselves finance production—for substantial portions of their profits.<sup>76</sup>

### 1. Reducing the Cost of Capital

In an influential paper dealing with financial markets broadly considered, Rajan and Zingales, taking a microeconomic perspective, present empirical findings based on differences between industries within individual countries to suggest that financial development indeed has a causal relationship to economic growth through the capital allocation function.<sup>77</sup> They start from the theoretical explanation that one mechanism by which financial development facilitates growth is by reducing the cost of capital to business through the kind of liquidity and information mechanisms that “help a firm overcome problems of moral hazard and adverse selection. . .” but then acknowledge the obvious fact that “[i]t is ultimately the

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72. See generally Mitchell, *Legitimate Rights*, *supra* note 34 (exhibiting an example of this approach).

73. Levine, *Financial Development*, *supra* note 2, at 720; Arestis et al., *Financial Development and Economic Growth*, *supra* note 3, at 19; Colin Mayer, *New Issues in Corporate Finance*, 32 *EURO. ECON. REV.* 1167, 1175 (1998).

74. See Klaus Neusser & Maurice Kugler, *Manufacturing Growth and Financial Development: Evidence from OECD Countries*, 80 *REV. ECON. AND STATISTICS* 638 (1998); King & Levine, *supra* note 4, at 717.

75. U.S. BUREAU OF ECON. ANALYSIS, *Gross-Domestic-Product-Industry Accounts, Value Added by Industry (1958-2008)* [https://www.bea.gov/industry/gdpbyind\\_data.htm](https://www.bea.gov/industry/gdpbyind_data.htm).

76. ALAN D. MORRISON & WILLIAM J. WILHELM, JR., *INVESTMENT BANKING: INSTITUTIONS, POLITICS, AND LAW*, at 30, 34, 247, 303 (2007).

77. See generally Rajan and Zingales, *supra* note 2.

availability of profitable investment opportunities that drives growth . . . .”<sup>78</sup>

They conclude that financial development causes growth in this manner with respect to industries that are heavily dependent upon external financing. This analysis, on its face, appears to be tautological. Among these industries, they include newer firms. Their data show that “financial development has almost twice the economic effect on the growth of the number of establishments as it has on the growth of the average size of the establishment,”<sup>79</sup> suggesting that a potentially important way in which financial development could affect growth is by helping newer firms, which may be more dependent upon external capital and possibly more innovative, survive.<sup>80</sup> I explore the relationship between the public equity market and business creation in detail in Part 3.8.

Rajan and Zingales use broad measures of financial development, but in light of the fact that their principal control case is the United States, they may be implicitly assuming the importance of the stock market (although they also acknowledge the absence of strong causal claims for stock market influence alone).<sup>81</sup> They also note, from their own work, the unimportance of equity financing for productive capital, at least in the 1980s, which is consistent with the data both for that and earlier periods.<sup>82</sup>

## 2. Legal Norms of Binding Management

Demirguc-Kunt and Maksimovic, also starting with the premise that developed financial systems are important because they provide capital and information, draw relatively strong conclusions about the role of developed stock markets and well-developed legal systems in facilitating capital formation and thus economic growth. Their particular focus is the legal system’s role in ensuring credible commitments by managers to avoid opportunistic behavior, whether through contractual enforcement or fiduciary duties. They conclude that “[f]irms in countries that have active stock markets and high ratings for compliance with legal norms are able to obtain external funds and grow faster,” noting also that stock market size is not especially relevant but stock market activity is.<sup>83</sup>

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78. *Id.* at 560-1.

79. *Id.*

80. Shleifer & Vishny, *supra* note 21, at 765 (also noting the importance of external equity finance to new enterprises).

81. *See* Rajan and Zingales, *supra* note 2, at 561.

82. *See id.* at 569.

83. Asli Demirguc-Kunt and Vojislav Maksimovic, *Law, Finance, and Firm Growth*, 53 *J.Fin.* 2107, 2134, 2134 (1998); *see also*, Rene Stultz, *Does Financial Structure Matter for Economic Growth? A Corporate Finance Perspective*, in *FINANCIAL STRUCTURE AND ECONOMIC GROWTH: A CROSS-COUNTRY COMPARISON OF BANKS, MARKETS, AND DEVELOPMENT*, at 144 (Asli Demirguc-Kunt & Ross Levine, eds.; 2001).

Michael D. Bordo and Peter L. Rousseau recently have empirically concluded, albeit tentatively, that the origins of a country’s legal system (English common law vs. civil law) correlates with financial development, and more strongly that political factors like “proportional

One conclusion is of particular interest. They note that rates of return on invested capital tend to be lower in countries with active stock markets and well-developed legal systems, an observation they attribute to the discount provided by the decreased risk such systems provide.<sup>84</sup> This leads to lower retained earnings and therefore a greater dependence on external financing.

But this conclusion must be evaluated carefully. The data they examine run from 1980 to 1991. My own data also show a steady decrease in retained earnings during this period. It has also been suggested that the American stock market achieved its greatest efficiency after the 1970s,<sup>85</sup> so that later period data may indeed reveal a transformation in financing practice. Nonetheless, in the United States, retained earnings formed somewhere between 40% and 61% of the investment capital available to American non-financial corporations at least through the 1960s and, together with various forms of debt, easily accounted for two-thirds to almost three quarters of corporate finance during this period. The data is even more striking for the earlier part of the 20th century.

Even acknowledging the dramatic drop in retained earnings during this period, it is data covering this same later period that Rousseau and Wachtel use to show the weakness of the finance-growth nexus. Taking Demircuc-Kunt and Maksimovic's conclusion as accurate, it seems wrong to conclude that the external financing with which American corporations are replacing their internal equity is external equity. The data demon-

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representation election systems, frequent elections, and infrequent revolutions or coups are consistent with larger financial sectors and higher conditional rates of economic growth." Michael D. Bordo & Peter L. Rousseau, *Legal-Political Factors and the Historical Evolution of the Finance-Growth Link* 25 (Nat'l Bureau of Econ. Research, Working Paper No. 12035, 2006).

One implication of their work may be that financial development *per se* is not as critical as some scholars assert, but the that preconditions of a stable democratic legal and political system are critical, although Bordo and Rousseau also note that a significant aspect of the finance-growth nexus is not explained by legal and political factors. *Id*; see also Rafael La Porta, Florencio Lopez-de-Silanes, & Andrei Shleifer, *Legal Determinants of External Finance*, 52 J. FIN. 1131, 1149-50 (1997); see generally RAGHURAM G. RAJAN AND LUIGI ZINGALES, *SAVING CAPITALISM FROM THE CAPITALISTS: UNLEASHING THE POWER OF FINANCIAL MARKETS TO CREATE WEALTH AND SPREAD OPPORTUNITY* (2003); Peter L. Rousseau & Richard Sylla, *Financial Systems, Economic Growth, and Globalization, GLOBALIZATION IN HISTORICAL PERSPECTIVE*, at 373 (Michael D. Bordo, Alan M. Taylor, & Jeffrey G. Williamson, eds., 2003). Beck, Demircuc-Kunt, and Levine conclude that the important legal origins determinant of financial growth is the adaptability of the legal system to change. Thorsten Beck, Asli Demircuc-Kunt, & Ross Levine, *Law and Finance: Why Does Legal Origin Matter?* 31 J. COMP. ECON., at 653 (2003). See also, Thorsten Beck, Asli Demircuc-Kunt, & Ross Levine, *Legal Theories of Financial Development*. 17 OXFORD REV. ECON. POL., at 483 (2001).

84. Demircuc-Kunt & Maksimovic, *supra* note 83, at 2122. The positive flip side of this is that the cost of capital is lower in such countries.

85. Jeffrey N. Gordon *The Rise of Independent Directors in the United States, 1950-2005: Of Shareholder Value and Stock Market Prices* 59 STAN. L. REV. 1465, 1541, et. seq. (2007) (analyzing increases in SEC reporting requirements to increase market information and thus efficiency).



strate significantly negative external equity financing during the period they cover, at least for non-farm, non-financial corporations (financial corporations show an opposite trend), and indeed for the entire period from the early 1980s to the present except for a minor three-year positive trend between 1991 and 1994. Debt, not equity, appears to have replaced the depleted retained earnings, which would suggest that financial intermediaries play a far more significant role than external equity in American corporate finance.<sup>86</sup>

### 3. Equity in a Time of Distress

Huang, Mayer, and Sussman empirically evaluate two theories of capital structure that have important implications for the capital allocation argument.<sup>87</sup> The trade-off theory treats firms as having a “target” capital structure to which they return when circumstances result in misalignment. The “pecking order” theory privileges debt and retained earnings, and argues that firms turn to external equity only after the first two sources have been depleted. Departing from earlier studies, Huang and his coauthors study the financing behavior of firms that have been subjected to significant cash flow shocks. What they find is consistent with the pecking order theory prior to the shock, with behavior that would be predicted by the trade-off theory occurring within the three years following the shock. In other words, pre-shock financing is largely from internal cash flow, with the shock financed with trade credit, inventory reductions, and retained earnings. Debt issuances increase following the shock, but gradually are replaced with new equity issuances. Thus they conclude, among other things, that there are times when external equity importantly finances cash flow, although the conclusion is significantly more pronounced for smaller firms than for larger firms.

Huang, Mayer, and Sussman’s conclusions suggest that equity serves as an important form of what one might call emergency financing, that is, as a means to replace depleted capital and reduce increased leverage as a result of cash flow shocks. Their data is drawn from U.S. corporations from 1988 to 2004. Interestingly, this is a period for which Federal Flow of Funds data show significant negative net equity issuances for American corporations. So how can their results be squared with this information?

Their data includes both financial and non-financial corporations. While overall U.S. net equity issues are negative for the period, equity issues by financial corporations are significantly positive. One explanation might be that emergency equity is more commonly raised by financial corporations than non-financials, most likely in order to satisfy regulatory requirements or to support increased leverage. Another is that as cash flow-shocked corporations recover, they return to the practice, common during this period, of returning significant amounts of equity to their shareholders

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86. See Mitchell, *Legitimate Rights*, *supra* note 34, at 1662-63.

87. Huang et al., *supra* note 68, at 3.

through dividends, stock buybacks, and recapitalizations. Nevertheless, their conclusions must be acknowledged as at least a potentially significant qualification to my skepticism about the market's importance.

Another more straightforward (or at least more conventional) explanation, however, is that the public equity market is a necessary stimulus to industrial creation.<sup>88</sup> Public stockholders do not provide investment capital, so this story goes—what they actually do when purchasing stock is buy the shares of retained earnings or, in the absence of retained earnings, the claims on earnings, of those that do provide investment capital. Thus, the argument goes, original stock purchasers rely upon the exit option in order to provide equity capital in the first place. In the absence of that liquidity, investment in risky projects would be less likely to occur, and thus the link between liquidity and growth is really a link between liquidity and business formation. The presence of liquid markets stimulates the creation of businesses, which then grow as a matter of course through retained earnings and debt financing, ideally increasing GDP and employment. I will evaluate the strength of this argument in Part IV.

#### IV. FINANCING NEW ENTERPRISE

On its face, the argument that a public equity market is a necessary stimulus to industrial creation by facilitating exit options for investors is a strong argument, at least in theory, to justify the existence of an active stock market. The market's function is not to aggregate permanent investment capital, which in mature companies is provided by retained earnings and debt,<sup>89</sup> but rather to stimulate business formation by providing exit options for private investors who supply start-up capital and entrepreneurs who want to diversify. Permanent investment capital follows as a matter of continued earnings and corporate borrowing, with equity buyers sharing in the corporation's retained earnings as a reward for their willingness to let the entrepreneurs out.

There are, however several problems with this argument.

##### A. *The Historical Evidence*

The first is historical. The historical record, although not undisputed, makes it relatively clear that, from the beginning of industrialization, most risk capital was provided primarily by creditors. Thus, one cannot say in any strong sense that subsequent public stockholders purchased a position in the risk capital provided by earlier stockholders. Instead they can be seen as taking the debt holders out. Yet it clearly is not the case that all capital was aggregated in the form of debt and in fact some industries like railroads raised significant public equity. Indeed, recent scholarship demonstrates that more public equity than previously thought may have pro-

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88. Bernard S. Black & Ronald J. Gilson, *Venture Capital and the Structure of Capital Markets: Banks versus Stock Markets*, 47 J. FIN. ECON. 243, 272-73 (1998).

89. See generally Mitchell, *Legitimate Rights*, *supra* note 34.

vided initial capitalization for some segments of American industry, although not as the principal source.<sup>90</sup>

Moreover, in the early years of the 20th century, widespread corporate exit was a function more of contingent opportunity<sup>91</sup> or tax incentives than planned business behavior at the time of corporate formation. While take-over markets, private equity funds, and venture capitalists have made a strategy of finance and exit appear to be natural, those were not the concerns of nineteenth century industrialists. Entrepreneurs like Andrew Carnegie demanded significant inducements to exit businesses that produced cash flows adequate to create rather impressive fortunes. The merger wave of the turn of the twentieth century provided opportunity but also, in some very real sense, created competitive necessity. While Carnegie would likely have continued to prosper in the face of the creation of U.S. Steel, that corporation would have produced a competitor of an entirely different scale than Carnegie had seen. His participation in the venture enhanced the competitive positions of both enterprises.<sup>92</sup>

At the same time, the opportunity to exit the firm through newly liquid capital markets might well have contributed to economic growth by permitting the survival and prospering of firms that had lost their entrepreneurial head to a second, less competent, generation. Navin and Sears, reversing the causal relationship from financial development to growth, point out the extent to which the second-generation desire for exit helped to contribute to the existence of a liquid market for industrial securities.<sup>93</sup> Rather than exit serving as a precondition to business investment, the market itself was created by the desire for exit from already established industrial corporations.<sup>94</sup> The more-or-less forced public of-

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90. See generally Rousseau & Sylla, *supra* note 2. Peter L. Rousseau & Paul Wachtel, *Financial Intermediation and Economic Performance: Historical Evidence from Five Industrialized Countries* 30 J. MONEY, CREDIT AND BANKING 657, 688 (1998) (finding that financial intermediaries played a significant role in economic growth in the U.S. from 1870 to 1929).

91. See MITCHELL, *THE SPECULATION ECONOMY*, *supra* note 16, at 1-29.

92. See generally HAROLD JAMES, *FAMILY CAPITALISM: WENDELS, HANIELS, FALCKS, AND THE CONTINENTAL EUROPEAN MODEL* (2006) (containing a history of European industrial development from the perspective of founding families and their ownership perpetuation). A recent rich and fascinating paper by Julian Franks, Colin Mayer, Paolo Volpin, and Hannes Wagner concludes, among other things, that the type of financial development (debt versus equity) has an effect on the way family firms evolve (*e.g.*, from family firms to more widely held firms), that Continental European countries in which family firms predominate have seen, over the preceding decade, a pronounced shift from what they call “insider systems” (dominated by family control) to “outsider systems” (in which ownership tends to be held in broad public markets, but that this evolution has not resulted in diminished survivability of family firms in insider systems, and that firms in outsider systems (in their sample set, the U.K.) are more profitable than firms in insider systems (France, Germany, Italy), although in these latter systems, family firms are more profitable than those that are not. See generally Julian Franks, Colin Mayer, Paolo Volpin, & Hannes F. Wagner, *The Life Cycle of Family Ownership: International Evidence*, 25 REV. FIN. STUD. 1675 (2012).

93. See generally, Thomas R. Navin, and Marian V. Sears, *The Rise of a Market for Industrial Securities, 1887-1902*, 29 BUS. HIST. REV. 105 (1955).

94. *Id.* See also, MITCHELL, *THE SPECULATION ECONOMY*, *supra* note 16, at 1-29.

fering of shares of the New York Central Railroad following Cornelius Vanderbilt's death and its control passing to his son, William, is an illustration of this phenomenon.<sup>95</sup>

Even if public equity was a relatively small proportion of early industrial capitalizations, one could still argue that subsequent stockholders purchased the initial investors' shares of retained earnings. But this argument comes into question in light of the very heavy dependence of much of industry on debt.<sup>96</sup> And it appears to be the case that, over the past forty years, equity capital has overwhelmingly been replaced with debt.<sup>97</sup> Thus the "successor shareholder" argument is more complicated. American industry's principal risk capital has shifted dramatically away from retained earnings to debt and thus it is the case that the successor shareholders' position is not supported by early equity investment so much as it is supported by the capital of creditors. As a matter of simple economics, stripped of legal form, creditors have, for most of modern corporate history, been the principal owners of American industry.

It is clear that as early as the middle of the 20th century, the profits of public shareholders piggybacked on the risk capital contributed by creditors or, to put it differently, creditors were providing the bulk of the risk capital that had not been generated from the early investments of entrepreneurs. One could argue that the legal claims of equity and debt have long been settled such that this observation, while interesting, is not problematic. But the overlay of legal form on economic reality shows that those who control the risk capital, that is, the shareholders, do not provide that risk capital.

The mismatch permits managers, who are put in place indirectly by the shareholders, to engage in risk-taking with potentially large benefits to the shareholders but with potentially significant adverse consequences to the debt-holders. Again, this is not necessarily a problem of fairness as between the different financial claimants because of the established existence of legal forms and the ability of creditors to self-protect through contract. But it does present a problem of incentives that have potentially significant negative effects on the productive economy. As I suggested earlier, the mid-century turn in investment style from the expectation of dividends to speculation for capital gains generated by stock price appreciation suggests at least the possibility that managers would turn from stable and growing production to managing for stock price appreciation in a manner that damages long-term business health.

It appears to be the case that American industrial corporations, both historically and in more recent times, have demonstrated little need for public equity financing, at least as a matter of normal development and growth. More important, it may be that a broad and active public market

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95. MORRISON AND WILHELM, *supra* note 76, at 167.

96. Mitchell, *Legitimate Rights*, *supra* note 34, at 1676.

97. *Id.*

in industrial securities may not be compatible with healthy long-term corporate, and thus economic, growth.<sup>98</sup> A far stronger argument that links the stock market to real economic growth is that, at least in recent decades, entrepreneurs and private equity investors have demanded the opportunity for easy exit through an active liquid market in order to be induced to make their investments, and thus create productive businesses, in the first place. It is to this argument that I now turn.

### B. *The Contemporary Argument*

The second flaw in this argument relates to the capital allocation function discussed above. The capital allocation function relies heavily on the same factors that stimulate the risk-sharing function. Information costs and liquidity risk come together at the initial point of corporate finance and perhaps nowhere so pointedly as at the stage of initial capitalization. The literature claims that high-risk investments would not be made in the absence of liquidity options.<sup>99</sup> While public equity has played a relatively small role in financing mature industrial production, some amount of equity is privately issued at the start-up phase of a corporation, even if only to the firm's founders.<sup>100</sup> Since we can assume that many entrepreneurs lack sufficient capital to self-finance their businesses<sup>101</sup> and since, for the moment, we can further assume that creditors will demand some equity cushion in order to reduce the risks imposed by debt financing, we can further assume that entrepreneurs will seek additional outside (although typically not public) equity.<sup>102</sup>

Thus the question arises: How would we finance high-risk ventures if we didn't have a public stock market to provide liquidity that allowed risk

98. For a consideration and nuanced rejection of this view, at least for larger firms, see Randall Morck, Andrei Shleifer, Robert W. Vishny, Matthew Shapiro, & James M. Poterba, *The Stock Market and Investment: Is the Market a Sideshow?* 1990 BROOKINGS PAPERS ON ECON. ACTIVITY, no. 2, 1990, at 157.

99. See, Allen N. Berger & Gregory F. Udell, *Small Business Credit Availability and Relationship Lending: The Importance of Bank Organisational Structure*, 112 ECON. J., at F32, F34-36, (2002) [hereinafter, Berger & Udell, *Small Business Credit Availability*]. Berger and Udell are careful to note that their statistics are averages, with high variance, with high-growth firms receiving substantially more venture capital. *Id.*

100. Andrei Shleifer & Robert W. Vishny, *A Survey of Corporate Governance*, 52 J. FIN. 737, 765 (1997) (“[W]e do observe equity financing primarily for young, growing firms, as well as for firms in rapidly growing economies, whereas mature economies and mature firms typically use bank finance when they rely on external funds at all.”).

101. *But see* Massimo G. Colombo & Luca Grilli, *Funding Gaps? Access to Bank Loans by High-Tech Start-Ups*, 29 SMALL BUS. ECON. 25, 31 (2007) (finding that 84% of start-up funding for high-tech start-ups in Italy was from the personal capital of entrepreneurs, relatives, and friends).

102. Again it appears to be the case that business formation during nineteenth century industrialization presents an empirical counter-example to this assumption. See Navin & Sears, *supra* note 93, at 116; MITCHELL, *THE SPECULATION ECONOMY*, *supra* note 16, at 1-29. *But see generally* Rousseau & Wachtel, *supra* note 1 (observing an active public equity market in Boston before 1850).

taking to be rewarded? I will analyze the question from two theoretical perspectives. The first, the capital structure perspective, looks at alternatives to equity in financing new enterprises. The second considers the alternatives to public stock markets in presenting exit strategies for initial equity investors that are efficient both from a financial and economic growth perspective.

Is equity required to finance new risky ventures?<sup>103</sup> Fairly recent data show that the average small U.S. firm (nonfarm, non-financial, non-real estate) finances 49.63% with equity and the balance with debt.<sup>104</sup> But the equity sources are limited. Almost two-thirds of equity comes from the “principal owner,” an additional almost 13% comes from friends and family, and just over 3.5% comes from angel finance, while “[v]enture capital . . . provide[s] 1.85% of small business finance.”<sup>105</sup> As investors will demand returns commensurate with their risk, and such returns are characteristic of equity, one would think that equity is required.

But this is not necessarily the case. On one level, the relationship between risk and return suggests that even high-risk ventures that have a positive net present value could be financed largely with debt.<sup>106</sup> After all, returns adjust to fit the risk and this is no less true for fixed income securities than it is for equity. But this is probably not a satisfactory answer. One problem is that returns on debt might rise to a level where those returns impose fixed costs upon a start-up business that it might well be unable to meet.<sup>107</sup> Although some venture capitalists finance with debt, the debt is typically convertible into common stock, and it is to exit

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103. See Rajan and Zingales, *supra* note 2, at 565 (“It is common wisdom in the corporate finance literature (though we were hard-pressed to find formal empirical studies of this phenomenon) that there is a life cycle in the pattern of financing for firms; firms are more dependent on external financing early in their life than later.”); Claudio Michelacci & Javier Suarez, *Business Creation and the Stock Market*, 71 REV. OF ECON. STUD. 459, 461(2002) (arguing that the stock market encourages business creation as well as innovation and growth through a “virtuous circle” of recycling “informed capital”). See also Colombo & Grilli, *supra* note 101, at 27 (noting that in Europe, especially in countries with bank-based systems, “bank loans are still the most important source of financing” even for new high-tech start-ups).

104. Berger & Udell, *The Economics of Small Business Finance*, *supra* note 25 at 5, 6.

105. Berger & Udell, *The Economics of Small Business Finance*, *supra* note 25, at 618. They note that despite these averages, there are substantial differences among individual firms. *Id.* at 15. In particular, high-tech and similar firms with high potential growth but little in the way of tangible assets rely most heavily on external private equity financing. *Id.* They also note that when insider finance runs out, external debt is the likely next step. *Id.* at 9.

106. Berger & Udell, *The Economics of Small Business Finance*, *supra* note 25, at 626 (noting “surprising” amount of debt provided to young start-up companies by financial institutions). There is a significant and developing literature challenging the Miller-Modigliani hypothesis that firm value is unaffected by capital structure. See, e.g., Milton Harris & Artur Raviv, *Capital Structure and the Informational Role of Debt*, 45 J. FIN. 321, (1990); Caprio & Demircuc-Kunt, *supra* note 6,

107. Some studies suggest that, over time, interest rates and collateral requirements even for small business borrowers diminish due to the nature of relationship banking. See, e.g., Allen N. Berger & Gregory F. Udell, *Relationship Lending and Lines of Credit in Small Firms*, 68 J. BUS. 351, 370 (1995).

rather than current returns that venture capitalists look for their profits.<sup>108</sup> The same is true for venture financing using preferred stock, as to which dividends, while typically cumulative, are discretionary, allowing the corporation at least temporarily to reduce fixed costs by withholding dividends when necessary. While preferred stock bears some equity risk that is different in kind from the risk of nonpayment assumed by debt, those who finance new ventures tend to view it in the same manner as they do debt, and would be no more likely to finance with preferred stock if ready exit were unavailable.<sup>109</sup>

Debt may provide other advantages as a form of start-up capital. Myers presents an argument which leads to the implication that perhaps some risky ventures may be more likely to finance with debt than more established corporations.<sup>110</sup> He begins with the proposition that corporations facing risky investment decisions are less likely to have their market value diminished by issuing risky debt than those with less risky options.<sup>111</sup> He rests his theory on the uncontroversial notion that firms are valued as going concerns, based both upon their existing assets and on the expectation of future investments by the firm.<sup>112</sup> While existing assets are, by definition, in place, future investments are not assured. Indeed, they are discretionary with management. Thus future investment is in the nature of an option, to be exercised by management acting in the best interest of the corporation's shareholders.

That option can be financed with equity or with debt. Myers simplifies the problem by assuming that debt is issued to replace equity for the purpose of financing the project, not to purchase other assets.<sup>113</sup> If the debt matures "before the investment decision is made, but after the true state of nature is revealed," that is, after the value of the investment decision is known, the corporation will pay off the debt and keep the value of the investment for its shareholders.<sup>114</sup> In this state of affairs, according to Myers, shareholders could "borrow the entire value of the firm."<sup>115</sup> When debt matures after the investment must be made, the situation changes. If the value of the investment is less than the corporation's initial outlay plus payments due creditors, the managers will refuse to undertake a project

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108. See generally Bing Guo, Yun Lou, & David Perez-Castrillo, *Investment, Duration, and Exit Strategies for Corporate and Independent Venture Capital-backed Start-ups*, 24 J. OF ECON. & MGMT. STRATEGY 415, (2015) [http://www.law.northwestern.edu/research-faculty/searlecenter/events/innovation/documents/Perez-Castrillo\\_Venture\\_Capital\\_Start-ups.pdf](http://www.law.northwestern.edu/research-faculty/searlecenter/events/innovation/documents/Perez-Castrillo_Venture_Capital_Start-ups.pdf).

109. See Black & Gilson, *supra* note 88, at 253 n.4 (noting that venture capitalists choose between convertible preferred stock and convertible debt).

110. But see LAMOREAUX, *supra* note 18, at 9 (arguing that banks are less likely to finance risky ventures when they lend at arm's length).

111. Stewart C. Myers, *Determinants of Corporate Borrowing*, 5 J. FIN. ECON. 147, 167 (1997).

112. *Id.* at 148

113. *Id.* at 152

114. *Id.*

115. *Id.*

with positive net present value, since its return will go to the creditors.<sup>116</sup> This will adversely affect the market value of the corporation. Thus, according to Myers, the optimal policy for the corporation will be to issue no debt at all in order to avoid being in a position in which it will have incentives to refuse positive net present value projects.<sup>117</sup>

Debt is more likely to be issued, then, with respect to assets in place, what Myers refers to as “real assets,” rather than “real options.”<sup>118</sup> But, as he notes, the difference is one of degree and not of kind, and some real options have sufficiently distinct characteristics that a secondary market exists for them, providing some security for a lender.<sup>119</sup> Interestingly, these include precisely the assets one would expect to find in a high-risk start-up venture, like “patents, certain trademarks, franchises and operating licenses,” which should “‘support’ debt to the same extent as otherwise similar real assets.”<sup>120</sup>

Finally, and perhaps most importantly, Myers drops his assumption that discretionary investment has no effect on the variance of a corporation’s market value.<sup>121</sup> In this new state, it is reasonable to conclude that the investment’s effect on variance can be sufficiently great as to diminish or even wipe out value transfers from the investment from shareholders to bondholders. In this state, “[t]he impact of risky debt on the market value of the firm is less for firms holding investment options on assets that are risky relative to the firms’ present assets. In this sense we may observe risky firms borrowing more than safe ones.”<sup>122</sup>

It seems apparent that risky start-up corporations almost always invest in one (or a very limited set) of options. Since they constitute the same option set as the corporation’s business itself, they will, by definition, increase the variance of a corporation’s market value. It is precisely in this type of corporation that Myers predicts one ought to see risky firms engage in substantial borrowing. Thus the theory supports the possibility of debt financing as forming at least a significant part of the risk capital of a start-up corporation.<sup>123</sup>

This is not to claim that debt is a perfect substitute for equity and, indeed, even Myers admits, “after a point the firm cannot borrow more by

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116. *Id.* at 153

117. *Id.* at 154.

118. *Id.* at 163

119. *Id.* at .

120. *Id.* at 164.

121. *Id.* at 167.

122. *Id.* at 167.

123. Berger & Udell, *The Economics of Small Business Finance*, supra note 25, at 626 (comment on the “surprising” amount of finance provided by lenders to new businesses).



offering to pay a higher interest rate.”<sup>124</sup> There must then be a need for at least some equity investment in high-risk start-ups.<sup>125</sup>

No sensible creditor would lend money to a venture that lacked an asset base from which to look for repayment in the case of failure.<sup>126</sup> One answer to this might be that a combination of security interests (including liens on intellectual property and entrepreneurs’ guarantees of the debt) and the risk-adjusted returns on what we might refer to as “start-up debt” would, *ex ante*, provide adequate security and compensation for lenders.<sup>127</sup> Another is that, as with equity-financed start-ups, there is always an initial valuation of the company that brings to present value its anticipated performance in the future. And there is the implication from Myers’ powerful conclusion that the high variance of risky projects provides opportunity for entrepreneurs who take equity for assets rather than cash to profit by issuing debt.

None of these appear to be satisfactory answers.<sup>128</sup> At some level of risk, debt (and preferred stock), functionally become common equity although without equity’s participation. Under these circumstances, the putative debt-holders possess the same incentives to behave in the same manner as equity-holders (if the debt-holders have negotiated for equity-like control rights),<sup>129</sup> even assuming a debt market could sensibly exist at interest rates sufficiently high to compensate investors for the risks of failure inherent in a new enterprise.<sup>130</sup> Moreover, the existence of intangible assets would not satisfy these imaginary lenders.<sup>131</sup> Valuations are intrinsi-

124. Myers, *supra* note 111, at 154.

125. See generally John Boyd & Bruce Smith, *The Coevolution of the Real and Financial Sectors in the Growth Process*, 10 *WORLD BANK ECON. REV.* 371 (1996) (arguing more broadly that equity and debt are complements and not substitutes).

126. Shleifer & Vishny, *supra* note 21, at 765 (noting that, “[y]oung firms, and firms with intangible assets, may need to be equity financed simply because their assets have little or no liquidation value.”); see generally Robert E. Carpenter & Bruce Petersen, *Capital Market Imperfections, High-Tech Investment, and New Equity Financing*, 112 *THE ECON. J.* (2002) (noting a body of literature highlighting the importance of collateral to lenders).

127. But see Colombo & Grilli, *supra* note 101, at 4 (noting that interest rates on debt are unlikely to be high enough to compensate lenders for risk of failure in technology-based start-ups); Carpenter & Petersen, *supra* note 126, at F59 (to the same effect).

128. Stultz suggests four benefits of public markets even in the presence of bank financing: public markets allow entrepreneurs to “escape the bank” if the bank attempts to claim excessive returns from the project; they provide a higher rate of return to the entrepreneur than would more limited private markets which decrease the liquidity of his investment; they aggregate information; and they facilitate risk sharing with financial intermediaries. Stultz, *supra* note 83, at 157.

129. The situation of a “controlling debt-holder” presents its own problems by putting the creditor in a position, in which he is likely either to become equitably subordinated or to find himself liable for the corporation’s debts to others.

130. Colombo and Grilli note that interest rates on debt are unlikely to be high enough to compensate lenders for risk of failure in technology-based start-ups. Colombo & Grilli, *supra* note 101, at 4.

131. Carpenter and Petersen, *supra* note 126 at F58; see also Colombo & Grilli, *supra* note 101, at 4. However, Berger and Udell’s work establishing the informational benefits to

cally indeterminate, and are predicated far less on asset value than on future cash flow. Besides, even assuming the existence of valuable intellectual property, the increased chances of foreclosure present the likelihood of putting the putative lender into the business of locating venture financing, whether directly or by sale of the asset, effectively turning the lender into an entrepreneur and bringing us back to the beginning of the problem.<sup>132</sup>

If debt is an unlikely instrument with which to finance entrepreneurs who lack capital, it does appear that equity may be necessary.<sup>133</sup> There is evidence that small to medium U.S. high-tech firms use little debt, and that equity capital obtained through the firm's initial public offering is important in funding extensive firm growth. (At the same time, once public, most firms finance internally and rarely go back to public equity markets.)<sup>134</sup> But other scholars note the surprising amount of debt raised by start-up companies.<sup>135</sup> While the evidence is mixed, it would appear that the public equity market has performed an important function in stimulating new business growth and innovation, at least in the United States.<sup>136</sup>

### C. Venture Capital and Exit as the Key to Capital Formation

Although venture capital has not received as much attention as other forms of finance in the scholarly literature, it is clear that, in the United States, venture investments are concentrated in high technology and other

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banks (and firms) in relationship lending suggests that it is at least possible to conceive of a new business that establishes an early relationship with a bank seeing its cost of borrowing decline over time. Berger & Udell, *Small Business Credit Availability*, supra note 99, at F38.

132. Colombo and Grilli conclude their examination of financing constraints on high-tech startups in bank-based countries (specifically Italy but they generalize their conclusions) by arguing for policies that stimulate an efficient venture capital industry as an important means of providing liquidity for new concerns. Accepting both their analysis and conclusions leads back to the argument that external private equity is important in financing innovation and thus returns us to the question of the kinds of exit needed to stimulate the growth of that industry. Colombo & Grilli, *supra* note 101, at 41.

133. Carpenter and Petersen, *supra* note 126, at F59, F60.UC

134. Carpenter & Petersen, *supra* note 126, at F68.

135. Berger and Udell are careful to distinguish between types of start-up companies, noting that private external equity capital is far more common in riskier, and thus more likely more profitable, ventures. Typically institutional lenders come in later than lenders who have a relationship with the business's founders. Berger & Udell, *The Economics of Small Business Finance*, supra note 25, at 622.

136. Baumol, Litan, and Schramm define the entrepreneur as one who develops a new product or service or finds new ways to deliver existing products and services, tying innovation to the activity, rather than the size or stage of development of a business. See generally WILLIAM J. BAUMOL, ROBERT E. LITAN, & CARL J. SCHRAMM, GOOD CAPITALISM, BAD CAPITALISM, AND THE ECONOMICS OF GROWTH AND PROSPERITY [pincite] (2007). They give pride of place to entrepreneurial capitalism in their explanation of the ways in which certain kinds of capitalisms sustain economic growth and job creation in contrast to those that perform less well. While this broader topic of entrepreneurialism and growth is beyond the scope of this paper, what I argue here suggests that its macroeconomic importance should stimulate greater study by legal scholars.

especially risky ventures. While these form only a very small proportion of new business ventures,<sup>137</sup> it is these corporations, when they succeed, that seem to make the most substantial contribution to economic growth. Data published by the National Venture Capital Association show that 21% of 2008 U.S. GDP was generated by venture capital-backed companies. Job growth in venture-backed companies also has been significantly greater than that in the entire private sector.<sup>138</sup> This observation should not be surprising in light of the fact that an active venture capital market has existed in the United States only for the last 35 years<sup>139</sup> and it would therefore stand to reason that a large proportion of successful venture-backed companies remain in a stage of rapid growth. But despite historical qualifications it is nonetheless clear that venture capital has been important to stimulating a significant amount of GDP and job growth.<sup>140</sup>

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137. Berger & Udell, *The Economics of Small Business Finance*, supra note 25, at 623 (pointing out the venture funding tends to come at a relatively late stage of business development after internal capital has been used to establish a product).

138. THE NATIONAL VENTURE CAPITAL ASSOCIATION & IHS GLOBAL INSIGHT, *VENTURE IMPACT: THE ECONOMIC IMPORTANCE OF VENTURE CAPITAL-BACKED COMPANIES TO THE U.S. ECONOMY* (5th ed., 2009) [hereinafter, *THE NATIONAL VENTURE CAPITAL ASSOCIATION, Venture Impact*].

139. Kortum & Lerner, supra note 25, at 676.

140. See also Leslie A. Jeng & Philippe C. Wells, *The Determinants of Venture Capital Funding: Evidence Across Countries*, 6 J. CORP. FIN. 241, 245 (2000) (emphasizing the importance of venture capital in terms of the rates of venture-backed firm growth (although not GDP growth) and job creation compared with non-venture backed companies). Hellmann and Puri show that innovator firms are more likely than imitator firms to attract venture financing, and that venture financing is associated with faster product market delivery. Interestingly, they also show that for imitator companies, but not for innovators, venture capital is associated with greater amounts of external financing, thereby suggesting that venture capitalists' contributions to innovator firms are significantly greater than mere financing. Thomas Hellmann & Manju Puri, *The Interaction Between Product Market and Financing Strategy: The Role of Venture Capital*, 13 REV. FIN. STUD. 959 (2000). For a more casually empirical study of the non-financial contributions of venture capitalists, see Vance H. Fried & Robert D. Hirsch, *The Venture Capitalist: A Relationship Investor*, 37 CALIFORNIA MANAGEMENT REV., at 101 (1995).

It is worth noting that almost every law review article on the subject of venture capital (consisting of a relatively small body of literature) simply assumes its importance to the U.S. economy without any data as to its real contribution to growth. See generally Darian M. Ibrahim, *The (Not So) Puzzling Behavior of Angel Investors*, 61 VAND. L. REV. 1405 (2008); Jesse M. Fried & Mira Ganor, *Agency Costs of Venture Capitalist Control in Startups*, 81 N.Y.U. L. REV. 967 (2006); Elizabeth Cosenza, *Co-invest at Your Own Risk: An Exploration of Potential Remedial Theories for Breaches of Rights of First Refusal in the Venture Capital Context*, 55 AMERICAN U. L. REV. 87 (2005); Duke K. Bristow, Benjamin D. King, & Lee R. Petillon, *Venture Capital Formation and Access: Lingering Impediments of the Investment Company Act of 1940*, 2004 COL. BUS. L. REV. 77 (2004); George W. Dent, Jr., *Venture Capital and the Future of Corporate Finance*, 70 WASH. U. L. Q. 1029 (1992). But see generally Black & Gilson, supra note 88 (although technically not a law review article); Curtis J. Milhaupt, *The Market for Innovation in the United States and Japan: Venture Capital and the Comparative Corporate Governance Debate*, 91 NW. U. L. REV. 865, 866 n.3 (1997) (noting that claims for the importance of venture capital are underexplored).

Despite the impressive recent contributions of venture capital backed companies, it is worth noting that American industry had been enormously successful for more than a century prior to the introduction of venture capital. It would therefore be ahistorical and somewhat misleading to suggest that recent industrial innovation, especially in the venture-heavy technology and biotechnology industries, could only have been financed in the presence of venture capital. Nonetheless, I have promised to follow the money, and it appears that \$456 billion of venture capital had been invested in 27,000 companies over the 38 years ending in 2009.<sup>141</sup> The venture capital business model and venture capital contracts are structured in a manner that gives us reasonable assurance that virtually all of this money is actually invested in production or related expenses. So, in contrast to proxies for capital formation that dominate studies of the stock market's contribution to industrial growth, our ability to see the amount of cash invested in venture-backed industries gives us a more realistic starting point for analyzing the importance of public equity markets than exists in the literature.

But again, this is not without question. For what we don't see, and for which I have no source of data, is the amount of money withdrawn from these companies by entrepreneurs and venture capitalists to parallel the data on the net capital investment by the public equity market in American corporations. There is good reason to believe that withdrawals are negligible before the public offering stage. Both entrepreneurs and venture capitalists are, after all, far more interested in maximizing returns from exit than current income during development. Entrepreneurs typically draw relatively low salaries; venture capitalists typically purchase convertible preferred stock, with modest discretionary dividends that are easily passed by the board,<sup>142</sup> or convertible debt with modest fixed interest payments.<sup>143</sup> Even so, venture capitalists look for their returns on exit, not during their investment period. Based on this data, I will proceed on the inference that venture capital has recently become an important stimulus to real economic growth.

This leads to the vitally important question of the motivations of investors and venture capitalists in making their investments. The clear answer is, of course, the expected higher returns from venture investments than from, say, public equity investments.<sup>144</sup> These returns are, of course, real-

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141. THE NATIONAL VENTURE CAPITAL ASSOCIATION, *Venture Impact*, *supra* note 138, at 9.

142. Franklin Allen & Wei-ling Song, *Venture Capital and Corporate Governance*, in *CORPORATE GOVERNANCE AND CAPITAL FLOWS IN A GLOBAL ECONOMY* 133-156 (Peter K. Cornelius and Bruce Kogut, eds., 2003).

143. Black & Gilson, *supra* note 88, at 246, 260 (recognizing that exit, at least through an IPO, allows the entrepreneur to recapture control of the company from the venture capitalists by selling only a portion, if any, of his stock while the venture capitalists effect a complete exit).

144. George W. Fenn & Nellie Liang, *New Resources and New Ideas: Private Equity for Small Business*, 22 J. BANKING & FIN. 1077, 1080 (1998) (noting that one major data provider

ized upon exit. For venture capitalists, this exit may either occur (i) through public markets, or (ii) through strategic merger. Next, I will consider the relative importance and success of these two types of exits, and evaluate the necessity of public markets to the continued existence of venture capital.

### 1. Exit Through Public Markets

The predominant, although not exclusive, means of venture exit is through IPOs. I have been arguing, however, that the public equity market, which is the traditional avenue through which venture capitalists exit and reap the returns for which they have invested,<sup>145</sup> may not be as important for capital formation as is generally believed to be the case. The question then arises as to whether this conclusion holds for venture capital backed companies and whether venture capitalists can be induced to perform their important role in the absence of a public equity market.

Just how important is the IPO to venture capitalists as an exit option? Black and Gilson, in a comparison of U.S. and German venture capital, argue that it is quite important and that it also provides the most efficient form of exit.<sup>146</sup> Jeng and Wells, using a cross-country analysis of 21 countries, find that IPOs are the strongest factor in determining the level of later stage venture capital investing.<sup>147</sup> Despite the very real merits of these studies, it should be noted that they were written when significant venture funding had been a factor in American industry for only 20 years, using as data sources smaller subsets of this period.<sup>148</sup>

Accepting their conclusions still leaves the following question: for whom is efficiency important? Growth depends not only upon the creation of new businesses but upon their long-term survival as well. Cressy has demonstrated, using a large sample-set of U.K. start-ups, that human capital is the single best predictor of firm survival in businesses heavily dependent upon such human capital.<sup>149</sup> Clearly human capital is vitally important to the types of companies venture capitalists tend to finance.

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showed that returns to venture partnership funds, while very high in the early years of venture capital were, from about 1980 through 1995, "quite ordinary.")

145. Berger & Udell, *The Economics of Small Business Finance*, *supra* note 25, at 634.

146. Black & Gilson, *supra* note 88, at 274;

147. Jeng & Wells, *supra* note 140 (testing "gross domestic product . . . and market capitalization growth, financial reporting standards, labor market rigidities, financial reporting standards, private pension funds, and government programs" as factors in the level of venture capital financing in addition to the availability of IPOs). *See also*, Black & Gilson, *supra* note 88, at 274; Douglas Cumming, Grant Fleming, & Armin Schweinbacher, *Liquidity Risk and Venture Capital Finance*, 34 *FIN. MGMT.*, at 77 (Winter 2005).

148. *See generally* Black & Gilson, *supra* note 88, at (relying on data from 1978 to 1996); Jeng & Wells, *supra* note 140 (studying the period from 1986 to 1995).

149. Robert Cressy, *Are Business Startups Debt-Rationed?* 106 *THE ECON. J.* 1253 (1996) (discussing that it is logical to conclude that human capital is the best predictor of survival for equity-financed start-ups and "that the correlation between financial capital and survival is spurious."); *see also*, Luigi Zingales, *In Search of New Foundations*, 55 *J. FIN.* 1623,

Among the variety of services performed by venture capitalists, managerial assistance is one of the most significant. If we were to find that IPOs permit venture capitalists to exit at a premature stage of a business's managerial or economic development, we might agree that IPOs enhance efficient contracting between venture capitalist and entrepreneur, as Black and Gilson contend, but we might also conclude that such exit was not ideal in terms of long-term economic growth. If so, and if we chose to encourage exit that might be less micro-economically efficient as, for example, through strategic mergers, we would still have to address the contracting problem they examine. But we might be willing to incur some level of micro-inefficiency in exchange for ensuring that only more well-developed and better-managed companies entered the public market. It might be that exit through strategic merger results in higher contributions of venture-backed enterprises to GDP than IPO-backed exits.<sup>150</sup>

Jeng and Wells report that in 1988, exit through IPOs returned an average 195% over 4.2 years compared with strategic acquisitions which returned 40% over 3.7 years.<sup>151</sup> While this is an interesting fact, it says nothing about *why* the rate of return was so much higher in the IPO context.<sup>152</sup> It may be that the return captured by the exiting venture capitalists was less a function of profitability (and thus relevant to GDP) than it was to market factors.

Distortions created by market inefficiencies, including asymmetric information or market timing by exiting venture capitalists, could produce artificially high returns from IPOs such that strategic mergers, in which a single buyer more closely assesses the corporation's prospects without public market effects, produce more realistic valuations. IPOs tend to occur in robust markets in which the sellers can obtain high multiples of earnings. In fact the market was extremely active in Jeng and Wells' sample year of 1988, with a turnover ratio on the New York Stock Exchange of 55%, a ratio that, while not an all-time high, was, at its time, extremely high from an historical perspective.<sup>153</sup> Interestingly, it also appears that IPOs took a sharp dip that year from a much higher number of IPOs in 1987, suggesting perhaps that pent-up demand for new issues pushed

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1640-43 (2000) (discussing the important of human capital to new, equity-based, businesses during the 1990s).

150. The answer is, naturally, a matter of empirical investigation, which I do not here undertake.

151. Jeng & Wells, *supra* note 140, at 254.

152. *But see* James C. Brau, Bill Francis, & Ninon Kohers, *The Choice of IPO versus Takeover: Empirical Evidence*, 76 J. Bus. 583, 586 (2003) (finding that a more comprehensive study found that the difference between IPO premia and takeover premia to insiders like venture capitalists was 22%, a discount that the authors conclude that insiders are willing to take in exchange for the complete liquidation of their positions allowed by the acquisition in contrast to the IPO)

153. While IPOs generally don't list on the NYSE, the statistic is some indication of market activity.

prices higher in a particularly speculative environment.<sup>154</sup> This insight is supported by a study performed by Pagano, Panetta, and Zingales. Noting a paucity of data with which to analyze the question of why firms go public, they develop a substantial data set from Italy.<sup>155</sup> Simply put, they find that the greatest single factor in the decision to go public is the market-to-book ratio in the company's industry, and that "investment and profitability decrease after the IPO," suggesting that the availability of high multiples of earnings attracts the decision to exit.<sup>156</sup> While their study is necessarily limited by the available data, their identification of managerial motivations is consistent with the theory I have articulated. And, while nationally limited, they argue that their results can be extrapolated.<sup>157</sup>

There is, on the other hand, a significant literature on IPO underpricing, only some of which is related to venture capital-backed offerings. Jay Ritter has evaluated claims of IPO underpricing and concluded that while such underpricing can occur in the short-run, over the long-run IPOs tend to be poor investments, underperforming the market, thus suggesting investor over-optimism and opportunistic timing by issuers.<sup>158</sup> In a recent paper, Ritter refined his conclusions by studying the IPO market in the 1990s and, particularly, during the internet bubble of 1999 to 2000, concluding that during this period substantial IPO underpricing was observed because (i) issuers placed a higher premium on obtaining top analyst coverage (associated with a small number of underwriters) than on maximizing IPO value, and (ii) that side payments to managers of IPO companies and potential IPO companies in the form of preferential IPO allocations (a practice known as "spinning") shifted issuers' managerial incentives from maximizing IPO returns to maximizing their own personal wealth.<sup>159</sup>

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154. A possible factor in the diminished number of IPOs is the market crash on Black Monday, October 19, 1987, although the market rapidly recovered thereafter.

155. See generally Pagano et al., *supra* note 60.

156. *Id.* (discussing diversification and that entrepreneurs tend not to sell out substantially in the IPO but supernormal turnover in the control group happens within three years following the IPO). See also, Philippe Aghion, Patrick Bolton, & Jean Tirole, *Exit Options in Corporate Finance: Liquidity Versus Incentives*, 8 REV. FIN. 327, 346 (2004); see generally Douglas Cumming & Jerry McIntosh, *Boom, Bust, and Litigation in Venture Capital Financing*, 40 WILLAMETTE L. REV. 867 (2004) (discussing cyclicity of IPO market and venture financing); Douglas Cumming & Jerry McIntosh, *Venture-Capital Exits in Canada and the United States*, 53 TORONTO L. J., at 101 (2003) (discussing exit more broadly); Joshua Lerner, "Angel" Financing and Public Policy: An Overview, 22 J. BANKING AND FIN. 773, 776 (1998) (noting studies that demonstrate public offerings tend to occur when stock is overvalued and those that demonstrate that stock prices typically decline upon the announcement of equity issuances by public companies); Michelle Lowry, *Why Does IPO Volume Fluctuate So Much?* 67 J. FIN. ECON. 3 (2003) (discussing the role of investor sentiment in the U.S. IPO market).

157. Other, somewhat older, studies suggest that venture-backed IPOs outperform non-venture backed IPOs, and are less systematically underpriced than non-venture IPOs. See generally Berger & Udell, *The Economics of Small Business Finance*, *supra* note 25, at 634.

158. Jay R. Ritter, *The Long-Run Performance of Initial Public Offerings*, 46 J. FIN., at 3 (1991); Tim Loughran & Jay R. Ritter, *The New Issues Puzzle*, 50 J. FIN., at 23 (1995).

159. Tim Loughran & Jay R. Ritter, *Why Has IPO Underpricing Changed Over Time?* 33 FIN. MANAGEMENT, at 5 (2004).

The period-specific nature of this analysis demonstrates, so Ritter argues, that the pricing of IPOs can depend very much on circumstances external to the various measurements of issuer value, and supports his idea of the cyclicity of IPO pricing. Interestingly, Loughran and Ritter document a shift over time in firms going public toward firms with negative earnings.<sup>160</sup> This last observation should at least counsel caution in assessing the long-run real economic contributions of companies that go public.

Ritter's work has been challenged, in particular in connection with venture capital IPOs.<sup>161</sup> Brav and Gompers replicate and modify Ritter's work by, in part, more closely examining the types of companies going public. They find that venture-backed IPOs substantially outperform the market over a five year period and that at least some of Ritter's conclusions can be explained by the presence of "small, non-venture backed IPOs," the returns (and other performance metrics) on which are significantly below venture-backed IPOs. This underperformance, they conclude, can be explained at least in part by the behavior of market investors who are more likely to be the purchasers of these types of IPOs and who are more prone to emotional behavior than are the institutions that tend to buy the larger, venture-backed, IPOs.<sup>162</sup> They also find that the underperformance shown by Loughran and Ritter appears to carry through to non-public companies with similar characteristics, thus suggesting that it is the nature of the company more than its private or public status that primarily accounts for performance.

Gompers and Josh Lerner extend their research back into an historical period that preceded the creation of NASDAQ and the venture capital industry itself. Studying stock prices and performance from 1935 to 1972 creates, they argue, substantial doubt over whether IPOs underperform, and shows that overall IPOs match market returns.<sup>163</sup> On the one hand, this makes perfect sense given the number of public offerings that occurred during that period because the number and diversity of offerings almost certainly presents sufficient diversification to mimic the market, even though a substantial number of leading corporations had become public prior to that time. (It is worth noting that the components of the Dow Jones Industrial Average in 1935 and 1972 were substantially the same and largely included companies formed prior to or shortly following the turn of the century.) Moreover, this is a period for which substantial retained earnings were held by American corporations, earnings which

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160. *Id.*

161. Alon Brav & Paul A. Gompers, *Myth or Reality? The Long-Run Underperformance of Initial Public Offerings: Evidence from Venture and Nonventure Capital-Backed Companies*, 52 J. FIN. 1791 (1997); Paul A. Gompers & Josh Lerner, *The Really Long-Run Performance of Initial Public Offerings: The Pre-Nasdaq Evidence*, 58 J. FIN., at 1355 (2003) [hereinafter, Gompers & Lerner, *The Really Long-Run Performance*].

162. *See also*, William L. Megginson & Kathleen A. Weiss, *Venture Capitalist Certification in Initial Public Offerings*, 46 J. FIN., at 879 (1991) (showing that institutional holdings of venture-backed IPO stocks is greater than non-venture backed IPO stocks).

163. Gompers & Lerner, *The Really Long-Run Performance*, *supra* note 161.



likely had some effect in supporting stock prices, unlike the average of corporations in the period from the 1980s on that typically provides data from these studies, in which retained earnings rapidly were disappearing.<sup>164</sup> In any event, the issue continues to be a subject of active debate, and leaves the desirability of the IPO exit option inconclusive.

Overpricing and underpricing IPOs both can have negative repercussions. Overpricing results in the inefficient allocation of capital if investors become sufficiently disenchanted by the post-IPO underperformance of the market that IPO returns become disappointing, leading venture capitalists to underinvest. It also has the potential to leave management with long-term unsustainably high stock prices, which they might attempt to maintain by short-run measures that damage long run performance.<sup>165</sup> Underpricing transfers money from the corporation to secondary buyers as well as to entrepreneurs and venture capitalists who typically retain significant portions of their shares after the IPO, thus perhaps leaving the newly-public company without adequate resources or with the need to obtain additional external financing in the future.<sup>166</sup> In neither case is the corporation well served in terms of its long-run managerial and financing goals, and thus productivity and long-term economic growth could suffer.<sup>167</sup>

## 2. Exit Through Strategic Merger

Despite the academic interest in venture-backed IPOs, acquisitions as an exit mechanism significantly exceeded IPOs in every year from 1998 to 2008, including the bubble years of 1999 and 2000.<sup>168</sup> Strategic buyers are unlikely systematically to misprice a company.<sup>169</sup> In the first place, strate-

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164. Mitchell, *Legitimate Rights*, *supra* note 34, at 1655 Fig. 1.

165. See, e.g. Graham, Harvey & Rajgopal, *supra* note 21.

166. Silvia Rossetto argues that when venture capitalists are eager to exit existing investments in order to obtain capital to invest in higher return opportunities during a hot IPO market, they are more willing to underprice IPOs. See generally, Silvia Rossetto, *The Price of Rapid Exit in Venture Capital-Backed IPOs*, (AFA 2006 Boston Meetings Paper, 2006) [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=686704](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=686704). Aghion, Bolton, and Tirole, addressing the question of optimal contract design for monitoring venture capital deals, argue that the optimal contract for a venture capitalist (more broadly, in their terms, an “active monitor,” should be more liquid when flows of funds into the venture capital industry are high, leading to lower demanded returns thus reducing the cost of a more efficiently liquid contract. Aghion, et al., *supra* note 156, at 350.

167. Bebchuk and Zingales argue that the effects by a business owner of the initial choice of ownership structure leads toward a distortion of the socially optimal structure in favor of excessive IPOs. See generally, Lucian A. Bebchuk & Luigi Zingales, *Corporate Ownership Structures: Private Versus Social Optimality* (Harvard Law School Center for Law and Economics, Working Paper 181) (published as *Ownership Structures and the Decision to Go Public*, Concentrated Corporate Ownership (2000)) [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=10072](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=10072).

168. WILMERHALE, VENTURE CAPITAL REPORT 4-5 (2008).

169. Oddly, Jeng and Wells give data on exit by strategic merger versus IPO for every country in their study but the United States. Jeng & Wells, *supra* note 140.

gic buyers are unlikely to be subject to the distorting incentives that entrepreneurs, managers, venture capitalists, and investment bankers may suffer. Moreover, such purchases rely neither on the presence of an efficient market nor are likely to be distorted by market trends or noise trading. Rather, strategic buyers engage in the kind of due diligence and valuation methods suited to their own business needs, and are unlikely to make offers for companies that neither fit with their own long-term business plans nor needs for growth.<sup>170</sup> Thus strategic buyers are more likely to get it right than the market as a whole, suggesting that strategic acquisitions might be more beneficial from a macroeconomic standpoint than IPOs in terms of broader economic growth.

History again suggests that exit through an IPO may not be optimal from a productivity and growth perspective.<sup>171</sup> A significant problem during the merger wave that formed the modern stock market was that trust promoters and investment bankers both exited and provided liquidity for industrialists before the combinations they created had adequate performance histories to justify the multiples (then called capitalizations) at which the securities were sold. One result of this behavior was a significant stock market crash in 1903, diminishing stock prices by approximately \$1.8 billion in 1903 dollars, leaving the combinations' creators with substantial cash and public buyers with unsustainable (and evidently unsustained) stock prices.<sup>172</sup> At least as significant, the 1920s, which was a decade of major innovation, saw a substantial number of highly priced IPOs from companies that had little operating history and ceased to exist after the 1929 Crash.<sup>173</sup> The dot.com bubble of the late 1990s also provides an example of a period in which a number of untested companies went public at

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170. James C. Brau, Bill Francis, & Ninon Kohers, *The Choice of IPO Versus Takeover: Empirical Evidence*, 76 J. BUS., at 583, 585 (2003) (noting that strategic buyers are less likely to face information asymmetries regarding the target's value than IPO buyers).

171. I do not mean to suggest that what was true in a very different economy can be completely extrapolated to modern circumstances, only to observe that historical sensitivity might lead to the conclusion that claims for the importance of venture capital might be overstated.

172. MITCHELL, *THE SPECULATION ECONOMY*, *supra* note 16, at 95.

173. For data on the average age of companies that made IPOs during the 1920s, see Boyan Jovanovic, & Peter L. Rousseau, *Why Wait? A Century of Life Before IPO*, 91 AM. ECON. REV. 336, 337 (2001) (describing how the average age of firms going public was rising during the 1920s, but was still younger than in subsequent decades). Thomas Phillippon argues that the 1920s were a time of "rapid entry and investment by firms with large financial needs" including the electric industry, automobile, and pharmaceutical companies. Thomas Phillippon, *The Evolution of the U.S. Financial Industry from 1860 to 2007: Theory and Evidence*, 6, 24 (Nov. 2008) <http://pages.stern.nyu.edu/~tphillip/papers/finsize/pdf>. See also, Boyan Jovanovic & Peter L. Rousseau, *Two Technological Revolutions*, 1 J. EURO. ECON. ASSOCIATION, at 419 (2003) (noting that the electric and internal combustion sectors led the way for a wave of IPOs in the 1920s.) Many of the companies that went public during that era did, however, survive, prosper, and remain with us in some form today.

high multiples,<sup>174</sup> only to collapse when the bubble burst in 2000.<sup>175</sup> While in each of these cases, fallen stock price did not necessarily mean corporate death (and indeed a number of fallen companies went on to prosper), it does suggest that the greater availability of IPOs during periods of significant industrial innovation creates incentives for venture capitalists to exit long before sound business logic would suggest is prudent.

The 2008 financial collapse provides a laboratory in which to examine the question, at least short-term. The second quarter of 2008 saw a complete absence of IPOs, the first time that had happened since 1978. At the same time, while strategic acquisitions of venture-backed companies were down, they nevertheless continued. A subsequent study suggests that, even after recovery, venture capital funding and exit may be changed for the long-term in that corporate life-cycles may lengthen, with venture capitalists extending the growth and maturity of their investments before bringing them public, thus incurring more intermediate investment costs during the corporations' development. As a result, exits may become less lucrative and strategic acquisitions could become a more important exit mechanism.<sup>176</sup> Indeed, some evidence suggests that this was precisely the case. In 2009, there were 262 acquisitions of venture-backed companies in contrast to only 13 IPOs.<sup>177</sup> While economic conditions were probably unattractive for IPOs in light of the ongoing financial crisis, it is also well known that financing was hard to obtain, a circumstance that could also have limited the number of acquisitions. This information is consistent with the possibility that exit strategies for venture capitalists may be changing.

Encouraging exit through strategic merger might be a better alternative than IPOs for ensuring long-term corporate productivity and growth. When entrepreneurs and early investors exit a firm through a public offering, they sell the stock at a multiple of earnings ideally designed to capture future cash flows produced by the business. Whether or not they get it right is heavily dependent upon experience, judgment, and market conditions, and indeed the late 1990s provide an excellent example of a market environment in which IPOs either may have been systematically underpriced or highly overvalued by the market immediately following the of-

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174. See Eugene Choo, *Going Dutch: The Google IPO*, 20 *BERKELEY TECH. L. J.* 405, 408-10 (2005); Christine Hurt, *Moral Hazard and the Initial Public Offering*, 26 *CARDOZO L. REV.* 711, 712 (2005). See also, Joseph L. Lemon, Jr., *Don't Let Me Down (Round): Avoiding Illusory Terms in Venture Capital Financing in the Post Internet Bubble Era*, 39 *TEXAS J. BUS. L.* 1, 3 (2003).

175. Manuel A. Utset, *Reciprocal Fairness, Strategic Behavior, & Venture Survival: A Theory of Venture-Capital Financed Firms*, 2002 *WIS. L. REV.* 45, 49.

176. PRICEWATERHOUSECOOPERS, *THE EXIT SLOWDOWN AND THE NEW VENTURE CAPITAL LANDSCAPE: FINDINGS FROM THE MONEYTREE REPORT* (2008).

177. NATIONAL VENTURE CAPITAL ASSOCIATION, *VENTURE-BACKED EXIT MARKET IMPROVES MARGINALLY AT YEAR END* (January 4, 2010) <http://bx.businessweek.com/zappos/view?urlhttp%3A%2F%2Fc.moreover.com%2Fclick%2Fhere.pl%3Fr2441771128%26f%3D9791>.

fering.<sup>178</sup> The important point, as I noted in Section 3.1, is that external buyers of the stock do not expect to realize these cash flows through improved management of the business. Rather, as the shift from investing for the expectation of dividends to trading for capital gains suggests, they anticipate their profits from their ability to sell the stock, regardless of whether the increased selling price is a function of good management, market sentiment, or stock price manipulation.

In contrast, strategic merger partners must assume that the only way that they will realize their expected return on investment is if they manage companies or use their innovations better than they had been managed or used under the entrepreneur and venture capitalists. Otherwise, they would have no way of generating the cash flows needed to compensate them not only for the cost of acquisition, but also to generate profits above that cost. While there are many ways to generate higher short-term earnings that can damage the business in the long run, the incentives of strategic buyers make mutilation an irrational management strategy from any perspective. It makes sense, then, to think that a firm that is sold in its entirety to a strategic buyer will, *ceteris paribus*, be better managed than a firm that is transferred to broad public ownership through an IPO. This should be true even if, as is often the case, the entrepreneur maintains a substantial stake in the company, because the IPO inevitably subjects him to market pressures in managing the company, which may divert his incentives away from real economic growth.

I think that at least the parameters of the argument are clear. Most important is that we need to understand the impact of venture capital exits on GDP growth and job creation, not simply in terms of return to investors. While the latter is important data, it is not enough to sustain the argument that, as a matter of legal policy, our paradigmatic exit mode should be through IPOs. It may be that such a conclusion should be sustained. But not without significantly more empirical research, beginning with a healthy scholarly skepticism that largely has been absent.

#### D. Moving Forward

I have spent time discussing the relationship between the public equity market and venture capital, but would be remiss in failing to discuss the role the former plays in more historically traditional exit. The record is clear that public equity markets have long provided exit for entrepreneurs and their heirs. But the historical role the market has played has been somewhat different. Rather than ensuring high returns, it has provided a way for entrepreneurs to diversify their investments by monetizing and reinvesting portions of them and, perhaps more important, has given the second and third generations a way of creating incentives for professional managers to replace untalented or uninterested heirs. Each of these rea-

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178. See generally Ritter, *supra* note 158 (arguing that underpricing is a short-term phenomenon); see generally Brav & Gompers, *supra* note 161 (finding that venture-backed IPOs outperform non-venture-backed IPOs).

sons has a relationship to GDP growth, the former by providing investment or consumption capital, and the latter by ensuring business growth and stability.

I have already discussed this at some length in Part 3.7. Recall that Navin and Sears, in their still-influential paper, argue the reverse causality of finance and growth, that is, that the development of finance as an exit mechanism followed upon the substantial growth of nineteenth century corporations. Moreover, as I there noted, exit was not of special concern to the great nineteenth century industrialists; current returns on their investments were more than sufficient to satisfy the desires of Carnegie and Rockefeller, including extraordinarily generous amounts for philanthropic purposes. And that list could be repeated at length. Finally, I there discussed the different sorts of managerial incentives that motivate one who continues to own a business and one who forms it with the expectation of selling.

It is important to note that the business goals of those earlier capitalists are not gone. As the venture capital literature notes, entrepreneurs often use the IPO as a means of recapturing control from the venture capitalists, even if liquidating some portion of their investments at the venture exit stage. And entrepreneurs do remain in control of some of the most visibly successful of venture-backed companies. Would they have engaged in entrepreneurship if the high-multiple IPO exit option were unavailable? This, of course, is an unanswerable question. But the nineteenth century model of innovative entrepreneur, when the IPO exit option was effectively unavailable, provides a nice suggestion that the need to capitalize eternity was not a driving force behind their creations. Even the partial exits achieved during the Great Merger Wave that led to the formation of the modern stock market were far less motivated by desires for exit than they were for business purposes and the opportunism of investment bankers.<sup>179</sup> The introduction of federal income tax law in 1916 was certainly a spur to significant exit. But taxation remains a highly effective means of shaping industries and markets, and achieving macroeconomic policy goals. So one cannot take any particular set of tax incentives as a given without considering the policy objectives to be achieved. In any event, history at least raises a question of the overall importance of this form of entrepreneurial exit, and the macroeconomic inquiry I have been pursuing here requires us again to ask whether the market infrastructures we've created, complete with all of their attendant costs and effects upon managerial and investor behavior, are justified in terms of economic growth light of the immaterially small percentage of annual trading that relies upon entrepreneurial exit.

More immediately, an important and, perhaps, problematic aspect of the strategic merger solution is that the entrepreneur often loses control of the business to the acquirer. This deprives her of the intangible benefits

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179. MITCHELL, *THE SPECULATION ECONOMY*, *supra* note 16, at 1-29.

personal to the entrepreneur of remaining in control of the business and ideally helping it to grow. Whether or not this would act as a disincentive to innovation and business creation is not clear, and is a question that requires further study. Another disadvantage from the entrepreneurial standpoint is the lost opportunity to build future wealth from increases in the corporation's stock price. This may or may not provide a disincentive to innovate, since presumably the entrepreneur will not agree to sell the business unless she is happy with the acquisition price. More important, and more relevant to the point of this paper, is the question I have already discussed of whether IPO exit is best from the standpoint of economic growth and job creation. As I have noted, that is not a question I can answer within the parameters of this piece, but at a minimum the answer to that macroeconomic question must be weighed and balanced with the microeconomic question of entrepreneurial incentives rather than simply disregarded.

#### V. CONCLUSION

While the case for the public stock market in terms of productive capital formation is dubious as a general proposition, there is a more specialized case to be made for the importance of the stock market in stimulating innovation in the form of venture capital –backed new business creation. Yet venture financing covers only a small portion of U.S. industrial history, and claims about its significance demand qualification, or at least substantial contextualization. Even if we accept the case for venture capital as a stimulant for GDP growth and the microeconomic arguments for IPO exit as a necessary stimulant to venture capital investment, we cannot conclude that the IPO market provides the best form of exit from a macroeconomic perspective or that capital would not be invested in its absence. I have raised significant questions about the sources of IPO returns, the state of development of companies taken public in contrast to those sold in strategic mergers, and the managerial maturity of such companies. These all go to the ultimate question of the comparative merits of the public market versus private sales in terms of GDP growth and job growth. These questions tie directly into the structure and substance of legal regulation.

All of this raises serious questions that deserve further exploration as to the talent, time, and resources we devote to the public equity market, both from a legal and an economic incentive. One might theorize – although it is beyond the scope of this paper to do so at length – that the answer is the entrenched financial interests of investment banks and other financial intermediaries and investors who maintain the market for their own benefit regardless of broader economic consequences. In light of the potentially damaging effects of the market, and especially in light of the role the public equity market has played in dramatically increasing economic inequality, it is time to dig deeper into the question of the relationship between the public equity market and economic growth.