Toward a New Law and Economics: The Case of the Stock Market

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By

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Abstract

Do the public equity markets play the macroeconomic role we believe them to play? What is the relationship between the U.S. public equity markets and American economic growth? What do these conclusions teach us about the approaches we take and should take in evaluating and designing the laws of corporate governance and securities regulation?

The law and economics paradigm of the last forty years may be mistaken in assuming that economic efficiency on an individual (or institutional) level is sufficient to ensure economic welfare on a macroeconomic level. While legal scholars have carefully and usefully examined the effects of a wide range of regulations on individual and institutional behavior, they have largely done so without considering the broader economic roles individuals and institutions play in building a growing and sustainable economy that creates wealth and jobs. Asking these broader questions may lead to reexamination of the ways in which we encourage the creation of economic institutions and incentives for economic behavior.

This paper exemplifies this new approach through an examination of the role of the U.S. public equity markets, concluding that their contribution to economic growth is highly limited. Public equity markets do not generally finance the formation of productive capital except in the limited, but important, role they play in providing exit opportunities for entrepreneurs and venture capitalists. I do not accept this conclusion uncritically, noting that even claims for the importance of public equity markets for business creation may well be overstated, and that there is considerable research yet to be done. Moreover, even if the conclusion holds, an overall appraisal of this contribution in the broader context of the public equity markets raise important questions for corporate governance, financial regulation, and the structure of market institutions.

1 Theodore Rinehart Professor of Law, The George Washington University. My thanks go to Peter Conti-Brown, Larry Cunningham, Theresa Gabaldon, and Leo Strine. Excellent research help was provided by Sabin Ahmed, Jason Dalal, Tim Frey, Artur Kolasa, and Adele Maloney.
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I. Introduction

For at least forty years, legal scholars concerned with the economic analysis of law have focused almost exclusively on the behavior of individuals and of individual institutions. Perhaps this is as it should be for lawyers in a relatively free society. Once the premise of individual self-determination (extended by metaphor and practice to private institutional self-determination) is granted, what more, after all, is there for law to do? It may be that the best law can do is to create chutes and ladders that shift individual behavior away from undesirable goals and towards those ends we prize, and to do so as efficiently as possible.

Perhaps in no area of legal scholarship is this approach more pronounced than in the economic analysis of laws governing economic and financial activity. Corporate governance scholarship asks principally, among other things, what are the governance structures and rules that best channel individual behavior to minimize agency costs and provide the managerial incentives that permit the corporation to enhance shareholder wealth. Securities law is concerned with the goal of strengthening the fairness and efficiency of markets, largely by enhancing the decisionmaking abilities of individuals. Analysis of the broader regulation of financial institutions has focused on the legal structures (or relative absence of them) and economic parameters within which individual creativity and self-interest can best be pursued. From the study of shareholder voting rights to the question of risk management in banking regulation, our concern has been the behavior of the individual and the institution.

Efficiency of individual and institutional behavior has been the watchword of this paradigm. For the most part, economic analysis of the law takes, as given, that what is most cost-effective for the individual will largely be good for the broader society, as the efficient behavior of individuals results in the greatest wealth for the greatest number. It is consistent and sensible to think that the individually-oriented focus of American law I described above would easily lend itself to this economic and philosophical orientation.

But this premise underlying the modern economic analysis of law – that efficiency for one is efficiency for all – may be overstated, at least in times of change and stress. Certainly it has been called into question by economic collapse following an era of substantial deregulation in which individuals and institutions were free to pursue their

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self-interest with a vengeance. The traditional economic analysis of law, by providing much of the intellectual underpinning for this deregulation, helped to lead to bad results because of its failure to question whether, how, and when microefficiency really does produce socially desirable economic results.

Perhaps the apex of these efforts were two pieces of legislation passed late in the second Clinton administration, the Gramm-Leach-Bliley Act of 1999, and the Commodities Futures Modernization Act of 2000.

This is not to say that the study of law and economics has been unconcerned with social welfare. Indeed, the ultimate interest of economics in general is social welfare, seen either as collective individual welfare or wealth maximization or some broader set of individual satisfactions. For examples see Louis Kaplow and Steven Shavell, Fairness Versus Welfare (2002); Lucian Arye Bebchuk and Luigi Zingales, Ownership Structures and the Decision to Go Public, in Randall K. Morck, Concentrated Corporate Ownership, 55 (2000).

The microeconomic analysis of law is heavily neo-classical in its approach. Ang, supra note __, at 536, criticizes neo-classicists for their assumption "that financial systems function efficiently where financial factors are often abstracted from the analysis." Thus, "designing policies for economic development while completely ignoring improvement of the financial system is a significant oversight."

Taxation is the primary area of legal scholarship with which I am familiar in which macroeconomic questions traditionally are addressed. See, e.g., Neil H. Buchanan, Taxes, Saving, and Macroeconomics, 33 J. Econ. Issues 59 (1999); Joseph Tobin, Going From the Frying Pan into the Fire? A Critique of the U.S. Treasury’s Newly Proposed Section 987 Currency Regulations, 17 U. Miami Bus. L. Rev. 211 (2008)(using macroeconomic theory to argue against the adoption of regulations that would govern taxation of U.S. corporations foreign branches’ capital gains and losses); Jeff Strnad, Some Macroeconomic Interactions with Tax Base Choice, 56 S.M.U. L. Rev. 171 (2003)(considering the macroeconomic consequences of various tax bases); George R. Zodrow, Economic Analyses of Capital Gains Taxation: Realizations, Revenues, Efficiency, and Equity, 48 Tax L. Rev. (1993)(reviewing theoretical literature on capital gains taxation and the relationship between capital gains rates, revenues, and realizations). It is also the case that some of the large literature on comparative corporate governance ties microeconomic analysis of the issues that arise to macroeconomics, but extended discussion is rare. For a notable recent exception, see Alan Dignam and Michael Galanis, Corporate Governance and the Importance of Macroeconomic Context, 28 Oxford J. Leg. Stud. 201 (2008)(analyzing the structural relationships between a nation’s corporate governance systems and its macroeconomic features, and concluding that macroeconomic features have impacts on microeconomic structures). Others have addressed, even if somewhat indirectly, macroeconomic issues in the context of microeconomic analysis. See e.g., Ronald J. Gilson, Reflections in a Distant Mirror: Japanese Corporate Governance Through American Eyes, 1998 Colum. Bus. L. Rev. 203 (1998). More commonly, to the extent the literature notes macroeconomic concerns, they are accepted for purposes of argument or simply noted, but even this level of macroeconomic attention is rare. See e.g., John C. Coffee, Jr., The Rise of Dispersed Ownership: The Roles of Law and the State in the Separation of Ownership and Control, 111 Yale L. J. 1, 5 (2001)(noting that “A growing body of research suggests that an active securities market if an engine for economic growth.”); Katherina Pistor, Yoram Keinan, Jan Kleinheisterkamp, and Mark D. West, The Evolution of Corporate Law: A Cross-Country Comparison, 23 U. Pa. J. Int’l Econ L. 791, 792 (2002)(“the quality of corporate law . . . is an important determinant for capital market development, which in turn fosters economic growth.”) The overwhelming body of legal literature on comparative corporate governance is focused, as Curtis Milhaupt describes it, on two central issues: Do differences in the origins and characteristics of legal systems explain differences in corporate governance? Are corporate governance systems and structures converging on a U.S. model? Curtis J. Milhaupt, In the Shadow of Delaware? The Rise of Hostile Takeovers in Japan, 105 Colum. L. Rev. 2171, 2174 (2005).
These observations raise important questions for legal scholars. What are the mechanisms by which the self-interested behavior of individuals and individual institutions actually leads to increased economic production, steady and sustainable economic growth, and full employment? What, if any, are its effects on the equitable distribution of wealth? The legal literature largely assumes that, by taking care at the individual level, these socially desirable, indeed essential, goals will take care of themselves. But we cannot know that this is true unless we engage in the necessary effort to demonstrate it. If the economically informed legal study of economic behavior is to fulfill its promise of making a positive difference in the quality of the American and world economies, it must start to pay attention to the macroeconomic effects of our microeconomic regulation. This paper is designed to engage that effort.5

The paper thus begins this project by addressing the following questions: Do the public equity markets play the macroeconomic role we believe them to play? What is the relationship between the U.S. public equity markets and American economic growth? What do these conclusions teach us about the approaches we take and should take in evaluating and designing the laws of corporate governance and securities regulation? Corporate governance law, for example, relies heavily for enforcement of the duty of care and shareholder wealth maximization on public equity markets, and particularly the market for corporate control.6 The underlying assumption is that the collective behavior of shareholders, acting both in the market and, increasingly in their voting capacity, will induce management to increase firm value, and that this in turn benefits society. Securities regulation seeks both to protect shareholders, inducing them to invest, and to increase market efficiency. This intersects with corporate governance by enhancing the ability of the market to police management and to facilitate informed shareholder voting. But if public equity markets play a limited role in financing corporate productivity,7 we might conclude that the manner in which corporate and securities laws privilege the interests of public equity holders facilitates or creates incentives for individual and institutional behavior that negatively affects economic growth. Or we might find that a more calibrated approach to the public equity markets leads us to design laws and regulations that privilege those market sectors that do foster growth rather than design our regulations for a unitary market. We might also attempt to find ways to enhance the

5 I offer this paper on its own terms as an introduction and example of how the use of a new economic paradigm might enrich our legal study of economic behavior. A more abstract theoretical exploration of the use of macroeconomics in the study of economic and financial law is in progress.

6 Martin Gelter, The Dark Side of of Shareholder Influence: Managerial Autonomy and Stakeholder Orientation in Comparative Corporate Governance, 50 Harv. Int'l L. J. 129 (2009) (agency problems in U.S. corporate governance "are held in check by market mechanisms, most of all the market for corporate control."); see also Jonathan Klick and Robert H. Sitkoff, Agency Costs, Charitable Trusts, and Corporate Control: Evidence from Hershey's Kiss-off, 108 Colum. L. Rev. 749, 828 (2008) (empirical evidence showing that the market for corporate control improves shareholder value); Edward S. Adams, Bridging the Gap Between Ownership and Control, 34 J. Corp. L. 409, 413 (2009) (discussing how the doctrine of duty of loyalty, the duty of care, and market forces have been used to curb the problem of agency costs).

productivity-related potential of the public equity markets, rather than to regulate them as we find them. In short, an understanding of the macroeconomic effects of the public equity markets may call into question the legal solutions we have reached using the tools of microeconomics.

I proceed as follows. Part II raises the paradox created by empirical demonstrations that public equity has rarely been a significant factor in financing American corporate capital formation at the same time that lawyers and some economists give it pride of place in that context. Part III presents, in more or less summary fashion, a review of the largely macroeconomic literature on the nexus between financial development and economic growth in an effort to isolate the functions of the public equity markets.8

In Part IV I analyze this literature, adding insights from microeconomic and financial analysis to explore the relationship between the microeconomic and macroeconomic views of the world while addressing the central question of the market’s role. It is here that macroeconomic questions intersect most directly with the legal concerns noted above. The principal focus of this section is on capital formation, and especially entrepreneurial finance, the main area in which it appears that the stock market provides its most useful function by providing exit for relatively early stage investors whom, in recent years, are heavily represented by venture capitalists. Related questions center on the substitutability of debt for equity and the relationship between the public equity markets, corporate financing, and managerial behavior.

In the course of this analysis, I shall also argue that the foundational literature on dividend policy must be reconsidered in light of significant historical changes in corporate financing practices that have occurred since the time it was written, that the public equities market distorts managerial incentives and, most important to this inquiry, that the need for an active IPO market to stimulate entrepreneurial investment is both ahistorical and, as an economic matter, may be overstated. More modestly, it appears that the empirical literature cannot sustain the conclusions it reaches without more work. At the same time, it appears that an IPO market (which obviously requires the presence of a secondary market) is desirable. But, in terms of capital formation, our legal and regulatory attention to public equity markets and the costs we incur to sustain them represent the (very small) tail wagging the (very large) dog. In light of the recently important proportion of the public equity markets represented by venture capital exit and

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8 The arguments will appear familiar to legal scholars, especially those working largely in the micro neo-classical tradition. But the concerns of the two bodies of literature are quite different, and thus may withstand different conclusions from the same arguments. Legal scholars focus on the microeconomic efficiency of corporate and financial rules and regulatory and institutional design without regard to their effect on real economic growth. It is perfectly consistent to conclude that given (or proposed) arrangements are microeconomically efficient without regard to their contribution to real economic growth. The distinctive contribution of the development literature, in contrast, is to assess whether and how the existence, structure, and mechanisms of financial institutions and markets stimulate real economic growth, questions that I have argued ought to become central to the work of lawyers. Lawrence E. Mitchell, The Morals of the Marketplace, 20 Stan. L. & Pol. Rev. 171 (2009); Lawrence E. Mitchell, Fairness and Efficiency (of What?), 2 Berkeley Bus. L. J. 153 (2005).
the relative unimportance of those markets for capital formation purposes, we should engage in substantial rethinking of the way we structure and regulate our equity markets and the governance of corporations that underlies them. The questions raised and inferences drawn give rise to the need for more theoretical and empirical inquiry.

Part V concludes.

II. The Paradox

In recent work, I presented data establishing that the public stock market has historically been an insignificant factor in directly financing corporate productivity, at the same time that internal corporate resources in the form of retained earnings have precipitously declined since the late 1960s. Yet a large and growing body of empirical and theoretical literature argues that there is a demonstrable link between the level of development of a nation’s financial institutions (including public stock markets) and real economic growth. Much of the literature reports correlation rather than causation, but studies increasingly have attempted to establish a causal link from finance to growth. While the literature, directed primarily to policymaking in emerging economies, ranges across all types of financial institutions, regions, and countries, it is undisputed that the public stock market has a larger presence and plays a larger role in the United States than perhaps in any other country.

A paradox is thus presented. How can it be that the United States public stock market correlates with long-term economic growth, let alone acts as a causal factor, if it

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9 Throughout this paper, unless otherwise indicated, the term “stock market” or “equities market” is limited to the U.S. public equities market.

10 Lawrence E. Mitchell, The Legitimate Rights of Public Shareholders, 66 Wash. & Lee L. Rev. 1635 (2009); Mitchell, Who Needs the Stock Market?, supra note __. Throughout this paper, unless otherwise qualified, I use the terms “industry,” “business,” and “productive business” to mean non-farm, non-financial, non-real estate businesses.

11 While the correlation may appear obvious, some economic theorists have argued that economic growth leads financial development, such that while correlations may appear at some point in time, they would not necessarily exist during significant periods of a nation’s economic development. See, e.g., JOAN ROBINSON, THE RATE OF INTEREST AND OTHER ESSAYS (1952); R.I. MCKINNON, MONEY AND CAPITAL IN ECONOMIC DEVELOPMENT (1973). See generally sources discussed infra Part III.


13 While initially this literature focused on banks, the study of the role of stock markets in economic growth has become increasingly important. Philip Arestes and Panicos Demitriades, Financial Development and Economic Growth: Assessing the Evidence, 107 The Econ. J. 783 (1997), noting relatively recent attention paid to stock market. Various methods to assess the importance of the U.S. public stock market are used in the literature, primarily market capitalization and volatility. Id. As I will later argue, both of these metrics are flawed. See infra Part IV.
doesn’t provide meaningful financing for industrial production? The literature on finance and growth doesn’t directly address this question. To the extent it provides indirect answers, they are principally the familiar and related ones of increased informational efficiency, mobilized savings, capital allocation, and improved liquidity. But it still leaves open the question of how these stock market benefits are tied to financing production, apparently assuming that, using proxies like stock market capitalization or volatility and GDP growth, the increased liquidity generally goes to this end. In particular, while these growth proxies are useful and informative, the question of capital allocation is typically assumed as a logical consequence of these other factors, not as a result of tracing flows of funds from equity markets into (and out of) real economic production.

Little of this work concludes that the stock market stimulates growth independent of the presence of developed financial intermediaries, especially banks. To the extent that a significant role is attributed to the stock market at all, it rests principally in its ability to diminish information costs and increase liquidity (which, after all, are closely related). This literature does not, however, link any increase in liquidity, propensity to invest, or any other particular benefit attributed to the public stock market to financing production.

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14 By the term “industrial,” I shall mean throughout this essay non-farm, non-financial business, which obviously includes, among other things, the service sector of the economy.

15 I will discuss the problems with using aggregated GDP growth to demonstrate the financial contribution to economic growth infra at note __. I also assume, for purposes of this argument, that historical U.S. GDP growth is not simply a result of population increases.

Ang, supra note __ at 554, 567, notes that one of the major problems with existing empirical studies is the aggregation of data with respect to financial intermediaries and markets, leading perhaps to inadequate representations of the size of the financial sector, and masking the roles of different components of the financial system (banks, stock markets, nonbank intermediary institutions) which, when disaggregated, might result in different conclusions with respect to each component.

It is important to note here that my focus is on the United States. The analysis for developing nations sometimes presents significant differences, and cross country studies (the dominant mode of analysis) face empirical and conceptual difficulties. Ang, supra note __; Ross Levine, Finance and Growth: Theories and Evidence, 1A HANDBOOK OF ECONOMIC GROWTH (Philippe Aghion and Steven N. Durlauf, eds., 2005). Indeed, Ang argues that in order better to understand the relationship between financial institutional development and growth, scholars must pay closer attention to the institutions and histories of specific nations. Ang, supra at 567.

16 Principally in the form of stock buybacks and dividends. Mitchell, Who Needs the Stock Market?, supra note __.

17 See, e.g., Thorsten Beck and Ross Levine, Stock Markets and Growth: Panel Evidence, 28 J. Banking & Finance 28 (2004), concluding that the stock market is linked to economic growth but conceding that their attribution of an independent role to the stock market is debatable. Indeed, it is probably unreasonable to expect the existence of developed stock markets in the absence of other financial institutions. But for a fascinating history of securities regulation in active markets even before industrialization, see STUART BANNER, ANGLO-AMERICAN SECURITIES REGULATION, CULTURAL AND POLITICAL ROOTS, 1690-1860 (1998).
My answer is that stock markets are not necessary, in and of themselves, to finance industrial production and, as I shall note, may create distortions in production incentives that are detrimental to economic growth.\footnote{For a more extended analysis of this last point, see LAWRENCE E. MITCHELL, CORPORATE IRRESPONSIBILITY: AMERICA’S NEWEST EXPORT (2001).} But stock markets do seem to have some relevance to economic growth beyond the direct financing of production. In brief, it appears that the public stock market serves two possible growth-related functions. First, it provides exit for investors in new businesses through IPOs, and thus plays a role in stimulating business creation and technological innovation.\footnote{Obviously this is a production function, but so highly specialized in the form of business creation that for purposes of this paper I describe it as something other than the quotidian financing of corporate production.} I will conclude, however, that, at a minimum, the empirical literature has yet to make a persuasive case for the relationship between this form of exit and economic growth and that in any event the argument is overdetermined. A second function may be that the public equity market provides (or at least prior to the Panic of 2008\footnote{I shall, throughout this paper, refer to the ongoing financial crisis as the Panic of 2008. See LAWRENCE E. MITCHELL AND ARTHUR E. WILMARTH, JR., THE PANIC OF 2008: CAUSES, CONSEQUENCES, AND IMPLICATIONS FOR REFORM (forthcoming 2010).} provided) indirect financing for business by the following mechanism: financial institutions raise public equity;\footnote{See Mitchell, Who Needs the Stock Market?, supra note __, for federal flow of funds data showing that, in contrast to all other corporations, financial corporations do raise significant amounts of external equity capital.} they use the resulting proceeds as a base from which to lend money to productive corporations. Whether my description of this more specialized and indirect function of the stock market is accurate requires significant additional research and is sufficiently complex to deserve a paper of its own. Thus I leave this second possibility for another day.

The implications for law, policy, and legal scholarship of my conclusion that the primary growth function of the stock market is to stimulate investment in new industries by providing exit, not more generally to finance industrial production, are several. First, the broad implications for corporate governance are important. Leaving aside the stock market \textit{per se}, the development literature has not shown any significant relationship
between corporate governance and industrial growth.  

This calls into question the purpose of corporate governance law and demands a reexamination of the enterprise as a whole. At least with respect to public corporations, that purpose is largely to ensure efficient management through monitoring and providing protection for minority shareholders. Thus, and second, it calls into question our model of public stockholders as “investors” in, or “owners” of, corporate equity, in the sense that they anticipate their profits from the distribution of corporate earnings. Theories like the famous Miller-Modigliani irrelevance theory of capital structure, developed at a time that American industrial corporations possessed significant retained earnings to back their distributions to public stockholders, are undermined by the evidence that those retained earnings have disappeared and that shareholder returns are overwhelmingly based upon capitalized expectations, leaving a highly speculative trading market in which traders gamble on the basis of debt-generated future profits. Indeed, in the absence of retained earnings (replaced with debt), one can begin to understand the public equities market as something of a Ponzi scheme, with large returns to public shareholders continuing as long as corporations can continue to borrow money, but failing when credit dries up. If public shareholders (by which I mean minority, non-controlling public shareholders) essentially

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22 La Porta, et. al., do find that, taken together with other work examined in this paper (e.g., King and Levine, Levine and Zervos, and Levine (1998) that there is a link between the nature of a legal system and economic development. Their own findings support that conclusion that corporate governance law is a function of legal systems which affects the capital structure of corporations. Rafael La Porta, Florencio Lopez-De-Silanes, Andrei Shleifer, and Robert W. Vishny, Law and Finance, 106 J. Pol. Econ. 1113 (1998). See also Rafael La Porta, Florencio Lopez-De Silanes, Andrei Shleifer, and Robert W. Vishny, Legal Determinants of External Finance, 52 J. Fin. 1131 (1997) (finding that legal systems have significant effects on the sizes of capital markets, but without conclusions as to the real economic consequences of these findings).


24 See infra Part IV.a.i.

25 To some extent the quality of this observation depends upon the efficiency of public equity markets. If those markets are truly efficient, the choice between dividends and capital gains, at least from a stockholder’s perspective, should be irrelevant. See infra Part IV. As I will argue, from the corporation’s perspective, however, the differences can be significant.

26 The failure of credit in the absence of retained earnings seems to me a highly plausible explanation, if only partial, of the deep recession that followed the Panic of 2008.
are irrelevant to industrial production, the legal and economic justifications for our contemporary treatment of shareholders (and, for that matter, financial creditors), and the recent move to increased shareholders’ rights, require fundamental reconsideration.\textsuperscript{27}

There are also deeper structural issues for lawyers to address. If the public stock 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. As Keynes noted: “It is usually agreed that casinos should, in the public interest, be inaccessible and expensive. And perhaps the same is true of Stock Exchanges.”\textsuperscript{28} It may be, for example, that we conclude that most public equities serve as financial commodities rather than financing instruments. If so, perhaps we need to focus our intellectual and regulatory resources on those aspects of the market that do actually make an important social contribution, and substantially diminish the attention that we pay to the broader public market. At the very least, a question is raised with respect to the amount of resources we devote to secondary market regulation in light of the apparently modest growth stimulus it provides. Do we really need the entire public stock market superstructure to maintain entrepreneurial and venture capital initiatives? We might also find that certain types of financial institutions, like banks and insurance companies, are more important than are equity markets to real economic growth, and work to create regulatory incentive structures that more efficiently channel financing in that direction (including, perhaps, financing from public equity markets to financial intermediaries). The effect of nonbank financial intermediaries, especially those generally classified as institutional investors, on economic growth, is virtually unexplored,\textsuperscript{29} leaving open the question of their appropriate regulation in light of their contributions, if any, to economic growth. Or we might develop a better understanding of how public equity markets could better serve economic growth if we find ways to tie market activity more directly to financing production.

Attention to macroeconomic issues may also help to shape our broader regulatory debate. For example, in their examination of the finance-growth nexus, Philip Arestes and Panicos Demetriades consider the effects of financial deregulation, one of the policy consequences that has followed determinations that a positive relationship exists.\textsuperscript{30} But, as they describe the Latin American experience following financial deregulation:

\begin{footnotesize}
\begin{enumerate}
\item For my own contributions to this effort see Mitchell, \textit{The Legitimate Rights of Public Shareholders}, \textit{supra} note __.
\item \textit{JOHN MAYNARD KEYNES, THE GENERAL THEORY OF EMPLOYMENT, INTEREST, AND MONEY}, 158-9. It may be that our attitudes toward gambling have changed. \textit{See 2009 STATE OF THE STATES: THE AGA SURVEY OF CASINO ENTERTAINMENT, THE AMERICAN GAMING ASSOCIATION (2009) available at http://www.americangaming.org/assets/files/uploads/aga_sos2009web_FINAL.pdf} (reporting polls indicating that 81\% of Americans believed casino gaming was acceptable for themselves or others). In light of the stock market’s potentially negative effect on the real economy, such attitudinal changes should probably have no effect on our ideas about the stock market.
\item Ang, \textit{supra} note ___ at 568.
\item Kindelberger identifies financial deregulation as one of the shocks that can initiate financial manias leading ultimately to panics. \textit{CHARLES KINDLEBERGER, MANIAS, PANICS, AND CRASHES} 36 (4\textsuperscript{th} ED. 2000)
\end{enumerate}
\end{footnotesize}
Real interest rates in many cases exceeded 20%, a number of ‘bad’ debts and waves of bank failures and other bankruptcies ensued along with extreme assets volatility, and the whole financial system reached a near collapse stage. . . . As a result, real sectors of these economies entered severe and prolonged recessions. On the whole, financial liberalisation in these, and other, countries had a destabilizing effect on the economy and was abandoned. Financial liberalisation unleashed a massive demand for credit by households and firms that was not offset by a comparable increase in the saving rate. Loan rates rose as households demanded more credit to finance purchases of consumer durables, and firms plunged into speculative activities in the knowledge that government bailouts would prevent bank failures. . . . The only type of savings that did increase was foreign savings, i.e. external debt. This, however, made the liberalized economies more vulnerable to oscillations in the international economy . . . .”

If any of this sounds even vaguely familiar to legal scholars today, the case for attention to macroeconomic concerns already has been made.

**III. The Functions of the Stock Market: The Relationship between Finance and Growth**

**a. Overview**

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.” While this literature frequently is dated to Joseph Schumpeter’s 1911, THE THEORY OF ECONOMIC DEVELOPMENT, in which he argued that a nation’s economic growth is highly correlated with its development of financial intermediaries, significant interest in the subject has increased over the last twenty years, with a virtual explosion in scholarship, both theoretical and empirical. While much of the effort, especially the early work, focuses primarily on developing countries, attention also has been paid to developed Western economies, including that of the United States, both for comparative purposes and for analysis on their own.

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31 Arestes and Demetriades, *supra* note __ at 790-91. Kindleberger’s similar discussion of the 1997 East Asian crisis is particularly illustrative of this point. KINDLEBERGER, *supra* note __ at 143.


Much of the work has focused on banks, although substantial attention also has been paid to the relationship between stock market development and economic growth. The evidence of a relationship between finance and growth is most ambiguous with regard to stock markets, with the strongest evidence that developed stock markets encourage economic growth relating to the liquidity they provide. Gerard Caprio and Asli Demirguc-Kunt note that “the effect of stock market development on firms’ financing decisions is theoretically inconclusive,” and little empirical evidence exists. As is typically the case, though, the devil is in the details, especially since the volume of empirical studies have grown in the interim. There does appear to be empirical support

34 Ang, supra note _- at 568. But see Levine, supra at 714 (claiming that the literature is focused too greatly on equity markets). Levine’s seminal paper in the area dealt with banks. Robert G. King and Ross Levine, Finance and Growth: Schumpeter May Be Right, 108 Q. J. Econ. 717 (1993). I think it is sufficient to say that over the past several years, both equity markets and banks have received significant attention.


for the propositions that (i) stock market activity is important for economic growth,\(^{38}\) (ii) stock market development has some weak growth effects in developed countries,\(^{39}\) (iii) stock market development increases private investment in selected developing countries,\(^{40}\) (iv) more active stock markets facilitate external financing and thus growth,\(^{41}\) that (v) the effect of stock market development on growth depends upon the development of a country’s legal system,\(^{42}\) (vi) stock market effects on growth, while positive, are small compared to those of banks,\(^{43}\) (vii) it doesn’t seem to matter whether banks or markets are used to effect economic growth,\(^{44}\) (viii) stock markets complement banks in stimulating economic growth,\(^{45}\) (ix) stock markets distort real economic decisionmaking and can have negative growth effects,\(^{46}\) and (x) the U.S. stock markets benefit from real GDP growth, with insufficient evidence to show the opposite causality,\(^{47}\) among other conclusions.


\(^{39}\) Harris, *supra* note __; Levine and Zervos, *supra* note __ (although Levine has more recently criticized this study while qualifying his conclusions; Beck and Levine, *supra* note __).


\(^{41}\) Asli Demirguc-Kunt and Vojislav Maksimovic, *Law, Finance, and Firm Growth*, 53 J. Fin. 2107, 2134 (1998), although it appears that profits and rates of return on capital are lower in such countries.


\(^{45}\) Beck and Levine, *Stock Markets, Banks, and Growth*, *supra* note __.


\(^{47}\) Arestis and Demetriades, *supra* note __ 790 (1997); Arestis, Demetriades, and Luintel, *supra* note __.
More generally, there is significant debate over the circumstances under and the extent to which financial development stimulates economic growth, with answers turning on the level of a nation’s economic development and the provenance and development of its legal system, among other factors. For example, Peter Rousseau and Paul Wachtel suggest that the data used in these studies provide only “fragile” support for the hypothesis that finance leads growth. Philip Arestis, Panicos Demetriades, and Kul Luintel find “clear evidence to suggest that in the U.S. financial development does not cause real GDP in the long-run.” There is even debate in the literature as to the extent it focuses on the stock market in contrast to other financial institutions. Indeed Ross Levine notes as a major weakness of much of this literature that “it focuses on equity markets,” although it is worth noting that this is a relatively recent development and that Levine himself has increasingly focused on stock markets.

Perhaps of special interest to legal scholars, one of the weakest bodies of empirical evidence is the relationship between the stock market, corporate governance,
and economic growth. To date, no strong empirical correlation has been found.\footnote{Levine, \textit{Finance and Growth}, supra note \_\_ at 874. \textit{But see} the interesting discussion in Randall K. Morck and Lloyd Steier, \textit{The Global History of Corporate Governance: An Introduction}, NBER Working Paper No.W11062, \url{http://papers.ssrn.com/sol3/papers.cfm?abstract_id=652361} (2005), including their conclusion that “Financial development seems intimately tied to corporate governance,” but acknowledging the ambiguity of the evidence. \textit{Id.} at 40. Gerard Caprio, Jr. and Ross Levine assert: “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.” Gerald Caprio, Jr. and Ross Levine, \textit{Corporate Governance in Finance: Concepts and International Observations}, in \textit{FINANCIAL SECTOR GOVERNANCE: THE ROLES OF PRIVATE AND PUBLIC SECTORS} (Robert E. Litan, Michael Pomerleano, and V. Sunderajan, eds., 2002). It seems reasonable that such a statement might be true, but it seems unsupported by any evidence in the paper that follows.} Levine, perhaps the leading advocate of the finance-growth relationship, notes in two important literature reviews that he is “not aware of models that link the role of stock markets in improving corporate governance with long-run economic growth,”\footnote{Levine, \textit{Financial Development and Economic Growth}, supra note \_\_ at 698; Levine, \textit{Finance and Growth}, supra note \_\_ at \_\_.} although he recently has asserted in work with Gerard Caprio that good corporate governance does indeed play a role in economic growth.\footnote{Caprio and Levine, \textit{supra note \_\_}.}

Corporate governance is, after all, where finance intersects with the legal regulation of the corporation, and if corporate governance plays little role in stimulating economic growth, it might be worthwhile to engage in serious rethinking of our rules relating to shareholder voting, board composition, corporate control transactions, executive compensation, and the like.\footnote{Corporate governance is, of course, a matter of state law. Federal securities regulation plays perhaps an even more important role in joining finance to the corporation, and matters of securities law will be considered where appropriate.} With these preliminary considerations in mind, I will now turn to an analysis of the largely macroeconomic arguments that link the development of financial institutions to economic growth, turning in Part IV to the specific role of the public equities market.

\textit{b. The Basic Arguments}

Although the empirical work in this area generally has been done only over the last twenty years, the state of play leads one reasonably to conclude that there is substantial evidence of correlation between financial development and economic growth as a general matter, even if causality and the contributions of specific financial institutions is not as well established. The correlation appears obvious, although the research sustains the conclusion. Thus, before turning to the more specific ways in which the public equities market may or may not contribute to American economic growth, it makes sense to turn to a more detailed examination of 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.\footnote{Ang, \textit{supra note \_\_}, also provides an excellent literature review, including sophisticated critiques of the empirical methodologies used and suggestions for improved analysis.}
Taken as a whole, the bulk of existing research suggests that (1) countries with better functioning banks and markets grow faster, but the degree to which a country is bank-based or market-based does not matter much, (2) simultaneity bias does not seem to drive these conclusions, and (3) better functioning financial systems ease the external financing constraints that impeded firm and industrial expansion, suggesting that this is one mechanism through which financial development matters for economic growth.\footnote{Levine, Finance and Growth, supra 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.}

Several different theoretical approaches have been used to evaluate the finance-growth nexus.\footnote{The empirical approaches have included “broad cross-country 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 __ at 868. While I will engage the empirical evidence where appropriate, it is not my purpose here to evaluate the strengths and weaknesses of each approach. For such an analysis, see id.} I will concentrate on what Levine refers to as the “functional approach,” which appears best to fit an analysis of the purposes of the market, corporate governance and financial regulation.\footnote{Ang also employs the functional approach. Ang, supra note __.} 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 monitoring managers; (4) pooling and deploying savings; and (5) providing mechanisms for the exchange of goods and services.\footnote{Levine, Financial Development, supra note __ at 691.} Levine identifies “two channels” through which each of these financial functions might affect economic growth; capital accumulation and technological innovation.\footnote{Ang, describes these channels as “the capital accumulation channel and the total factor productivity . . . channel.” Ang, supra note __ at 538.}

Despite Levine’s careful categorization, it appears that the principal growth-related functions of financial markets generally boil down to the reduction of information and transactions costs, with other benefits either subsidiary to, or closely related to, these. As I will conclude, these are not mechanisms that require a broad public stock market, nor do they demand a system of corporate governance in which shareholders are permitted to exercise what are generally described as ownership rights, except for traditional fiduciary duties. Perhaps most important, the case for the stock market’s role in capital accumulation in the industrial sector is weak.\footnote{See infra Part IV.} The case for technological...
innovation is somewhat stronger, but the mechanisms of stimulating technological innovation are debatable.

i. Financial Markets Facilitate Risk-Sharing

Markets provide mechanisms for risk sharing. The literature explains how financial development facilitates the risk-sharing capital markets that contribute to real economic growth.64 Briefly put, capital investment entails information and transactions costs, which in turn present two types of risk: liquidity risk and “idiosyncratic risk.” 65 Both risks are straightforward, although their relationship to economic growth is a bit more complex. Liquidity risk entails the possibility that an investor will be stuck with an undesirable investment. Information asymmetries may be sufficiently great as to prohibit most potential investors from undertaking an investment in a particular enterprise with a sufficient degree of confidence to commit to a long-term position in that enterprise, and transactions 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.66 The emergence of financial markets ameliorates these problems by enhancing liquidity, thus encouraging savers to invest in higher-risk projects both with greater information provided by the market and the comfort of knowing that relatively low-cost exit is available, while 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.67

In reviewing the literature, Levine notes that banks are fully capable of aggregating savings and deploying them in a diversified manner, with a mix of low-return low-risk investments and high-return risky investments, while resolving information problems and providing liquidity to small investors.68 Nonetheless, at least some scholars

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64 It is worth noting that the macroeconomic and microeconomic arguments on these points are quite similar. The difference is that the microeconomic literature is concerned with the efficiency of individual and institutional behavior, while the macroeconomic literature is concerned with economic growth and employment.

65 Levine, Financial Development, supra note _ at 691. Liquidity risk generalizes over all investments. Idiosyncratic risk relates to investment in particular projects.

66 Levine, Financial Development, supra note __ at 692.

67 _Id._ at 693. The effect of excess savings over investment is a long-standing one. See MITCHELL, THE SPECULATION ECONOMY, supra note ___ at 99 (describing early 20th century American views on the stagnation of the French economy).

68 NAOMI LAMOREAUX, INSIDER LENDING: BANKS, PERSONAL CONNECTIONS, AND ECONOMIC DEVELOPMENT IN INDUSTRIAL NEW ENGLAND 82 (1994).
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, an argument made quite nicely by Asli Demirguc-Kunt and Vojislav Maksimovic. The effect of diminished liquidity risk may, it is argued, facilitate capital accumulation and encourage technological innovation, thus leading to economic growth.

But there is significant debate in the literature regarding the respective importance of public equity markets and financial institutions in stimulating growth. With regard to Levine’s principal point regarding risk reduction, it is clear that both financial intermediaries and stock markets can perform the function of information accumulation and transmission that helps to diminish liquidity risk. Banks in particular may have an advantage in this regard, although arguments have been made suggesting that the incentives of participants in stock markets to obtain information may increase with market size. But, as Levine is careful to note: “[E]xisting theories have not yet assembled the links of the chain from the functioning of stock markets to information acquisition, and finally to aggregate long-run economic growth.” Of course this should be no surprise, at least in the United States, if the public equity market doesn’t serve an important role in financing industrial production.

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 financial intermediaries, without some of the distortions created in equity markets.


70 Levine, Financial Development, supra note _ at 695. See also Ang, supra note __ 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 European Econ. Rev. 139 (concluding that stock market activity has only a weak effect on growth); Beck and Levine, supra note __, concluding that banks and stock markets stimulate growth but conceding that their evidence could be interpreted in a manner that fails to privilege either form of financial institution. But see Ross Levine and Sara Zervos, Stock Market Development and Long-Term Growth, 10 World Bank Econ. Rev. 323 (1996)(finding evidence from cross-country growth regressions that stock market development correlates with long-run economic growth)(the methodology used in Levine and Zervos is criticized in Beck and Levine); Asli Demirguc-Kunt and Ross Levine, Stock Market Development and Fiancial Intermediaries: Stylized Facts, 10 World Bank Econ. Rev. 291 (1996)(noting that countries with well-developed stock markets tend to have well-developed banks).

71 Andrei Shleifer and Robert W. Vishny, A Survey of Corporate Finance, 52 J. Fin. 737, 772 (noting 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. John R. Graham, Campbell R. Harvey & Shivaram Rajgopal, The Economic Implications of Corporate Financial Reporting, 40 J. Acc. Econ. 3 (2005); John R. Graham, Campbell R. Harvey, and Shiva Rajgopal, Value Destruction and Financial Reporting Decisions, 62 Fin. Analysis J. 27 (2006); Philippe Aghion and Jeremy C. Stein, Growth vs. Margins: Destabilizing Consequences of Giving
The literature suggests that the stock market’s relationship to economic growth is indirect at best. But the importance of liquid capital markets, fueled by access to information, seems to be a well-supported theory, at least as a correlative to economic growth, and it is thus premature entirely to dismiss the importance of public equity in economic development.

**ii. Stock Markets Allocate Capital**

The second principal argument linking financial development and economic growth is the role of financial markets and intermediaries in allocating capital. This is where the paradox with which I began this paper is most evident and most difficult to resolve. The development literature ties the capital allocation function of financial markets tightly to its first function, its role in overcoming informational problems. As Levine puts it, “high information costs may keep capital from flowing to its highest value use.” Financial institutions thus serve to obtain, use, and disseminate information with respect to investment opportunities. Financial intermediaries, in particular, may be particularly effective in identifying entrepreneurs who are likely to succeed. Schumpeter assigned this role to banks and, as I will discuss in Part IV, venture capital funds appear to have played a significant role in fulfilling this function in the late twentieth century. Nonetheless, as I discuss below, the literature fails to trace a direct connection between

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73 I say “appear to” rather than “have” because the proportion of new business financing attributable to venture capital is quite small. Allen N. Berger and 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. __ (1998), and 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. Paul A. Gompers, Corporations and the Financing of Innovation: The Corporate Venturing Experience, Fed. Res. Bank of Atlanta Econ. Rev., 4th Quarter 2002; Paul A. Gompers and Josh Lerner, The Venture Capital Revolution, 15 J. Econ. Persp. 145 (2001); Samuel Kortrum and Josh Lerner, Assessing the Contribution of Venture Capital to Innovation, 31 Rand J. Econ. 674 (2000). Kortrum and Lerner estimate that the ratio of venture capital to research and development (which are close substitutes in innovation) was on average 3% between 1983 and 1992, and that venture capital can be attributed to 8% of innovation during that time frame. It almost goes without saying, but is worth noting, that venture capital is highly concentrated in high technology industries, especially information technology and, to a lesser extent, biotechnology. Finally, as I will later discuss, venture capital tends to come in at a stage in small business development where the innovation has substantially been developed, although this observation says little about its utility in stimulating innovation in the first place.

74 *Infra* Part IV.
capital formation in public equities markets and the actual financing of productive capital.

In addition to the importance of information discovery to capital allocation, the related role of liquidity also appears to be important, as nicely shown in relatively new data discovered by Rousseau and Richard Sylla regarding the late nineteenth century New England stock market. But the literature has yet to establish strong connections between a functioning stock market and economic growth. Indeed, while Levine notes that the allocation of capital is one of five functions that developed financial markets perform to stimulate growth, his discussion of capital allocation in his two excellent literature reviews is buried in a brief subsection of his discussions on information risk, which is related to liquidity and thus to the first function identified above.

To be fair, the literature logically treats efficient capital allocation as dependent upon investors’ access to good information, but appears to presume that well-disseminated good information, or good information collected by financial intermediaries, logically will result in the efficient allocation of capital, although the mechanisms are unclear. In addition to the literature identifying stock markets as performing this function there is also significant literature suggesting that developed stock markets can hinder economic growth by discouraging the search for information, discouraging investment in human capital, and distorting managerial incentives through market mechanisms resulting in a misuse of productive capital. I will focus especially on the latter point in Part IV.

### iii. Stockholders Monitor Corporate Performance and Motivate the Market for Corporate Control: Herein (specifically) of the Relationship between Corporate Governance and Financial Growth

The third functional aspect of financial markets identified by Levine as providing theoretical support for the nexus between financial development and economic growth is the role those markets play in monitoring and controlling corporations. As a general

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79 Graham, Harvey and Rajgopal, *The Economic Implications*, supra note __; Graham, Harvey and Rajgopal, *Value Destruction*, supra note __.
proposition, the concern is 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 -- and is best known under the rubric of agency costs. 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 begs the question of the social role of efficient corporate governance. The macroeconomic answer is that agency costs in the absence of efficient corporate governance 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, with correspondingly lower levels of GDP. Thus, from a macroeconomic perspective, the monitoring argument is intimately linked to questions of capital formation and allocation. Seen in this light, the problem of monitoring public corporations is parasitic on the question of whether the public equity markets perform the capital allocation function that lies at the heart of their existence. If they do not, or not importantly so, then the monitoring argument becomes circular: Public equity markets create monitoring problems that wouldn’t exist in the absence of public equity markets. So what?

It is worth noting that, in the absence of public markets, the monitoring problem would not necessarily evaporate because the focus shifts 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. The subject of monitoring, while important, has been rather exhaustively studied, and I don’t intend in this paper 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.

iv. Mobilizing Savings

The fourth attribute Levine attributes to finance in fostering economic development is the ability of well-developed financial institutions to mobilize the savings of dispersed individuals by aggregating capital for investment. Such mobilization helps

80 The starting point of the intersection between the financial economic literature on corporate governance and the legal literature is Michael Jensen and William R. Meckling, Theory of the Firm, Managerial Behavior, Agency Costs and Ownership Structure, 3 J. Fin. Econ. 305 (1976).


82 Levine, Financial Development, supra note __ at 698; Levine, Finance and Growth, supra note __ at 879.
to diminish information and transactions costs which might otherwise create excessive market friction and misallocation of resources, and thus again is parasitic on the first function identified. 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.83 The contribution of finance to growth in this context is to facilitate the allocation of capital to its highest-value users and in so doing stimulate innovation as well as, Levine states, to stimulate savings by providing higher returns to capital.84 Nonetheless, the strength of this function in stimulating economic growth lies in the actual allocation of capital by financial institutions to productive enterprise. This, as I have noted, is a significant question with respect to the public stock market, and is the central question to be explored below.

Several points should be immediately apparent from this distinct treatment of savings mobilization. While, analytically, it can be treated 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. Moreover, the argument does not importantly distinguish between equity and debt, nor could it, at least in the case of the United States, as I have demonstrated, 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 markets, and indeed historically in the U.S., banks and other financial intermediaries (not to mention trade creditors and the commercial paper market) have played a vital financing role.85

v. Facilitating Exchange

The role of financial institutions in facilitating exchange is a bit more puzzling and perhaps less central to a discussion centering on the importance of corporate and financial regulation than the role of the stock market more broadly. Levine begins his theoretical survey with Adam Smith’s famous discussion of the shift from barter to

83 Levine, Financial Development, supra note ___ at 699; Levine, Finance and Growth, supra note ___ at 879-80.

84 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. In Finance and Growth, he states the point, id. at 879, without discussion. 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. Levine, id. at 880. There is also evidence that well-developed equity markets reduce the rate of return to capital. See infra Part IV.

85 Mitchell, Who Needs the Stock Market?, supra note __.
money as a means of lowering transaction costs. Lower transaction costs facilitate industrial specialization because specialization requires more transactions than does a more integrated environment. Citing Naomi Lamoreaux and Kenneth Sokoloff’s study of a nineteenth century market for trading patents, he concludes that similar financial devices can continue to develop to lower transaction and information costs. Existing theory does not necessarily conclude that the result is greater innovation as much as a broader set of available “production processes that are economically attractive.” In any event, this particular point seems relatively unimportant to my inquiry here and I mention it primarily for completeness.

IV. Analysis

Having laid out the principal arguments used to connect the development of financial markets and institutions to economic growth, I now proceed to evaluate the arguments that I believe are central to the claim that public stock markets stimulate economic growth; the risk sharing and capital allocation arguments. While the literature is both theoretical and empirical, my own conclusions are primarily, although not exclusively, theoretical claims. I largely ignore the informational and transactions costs arguments. Although one could argue that in the absence of the informational and monitoring benefits public equity markets provide there would be no such markets, this claim only matters if we find that the public equity markets play an important role in capital formation. Moreover, for purposes of discussion, I take the informational and transactions costs arguments as theoretically sound on their own terms.

Recall that the third of Levine’s conclusions is that “better functioning financial systems ease the external financing constraints that impeded firm and industrial expansion.” This is tightest of his three links between financial development and economic growth. But it is not enough, as the theoretical literature does, to rely upon indirect results of financial development, like informational efficiency and improved

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86 Levine, Financial Development, supra note __ at 700-01; Levine, Finance and Growth, supra note __ at 880-81.


89 I have been at pains, especially in the footnotes, to highlight some of the parameters of the debate over the empirical results. I am not especially qualified to evaluate these arguments, but the very real controversies over methodology suggest the tentative nature of the conclusions reached.

90 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. Harris and Raviv, Capital Structure, supra note __ at 351.

91 See supra note __.
liquidity. Nor is it sufficient, as the empirical literature does, to link 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 does play a limited and indirect, although possibly important, role in financing production.

This leads me to the conclusion that the most likely resolution of the paradox is the generally accepted proposition that the existence of liquid public equity markets stimulates new business development and technological innovation by providing exit opportunities for entrepreneurs and early investors. Economic growth is, for purposes of this discussion, assumed to follow as a matter of course. But this answer requires more extended critical analysis than it is usually given. One question is the extent to which a public stock market is necessary, or at least highly useful, to encourage the early investment of capital for productive purposes in light of empirical and theoretical evidence suggesting the frequency and utility of other means of early financing. I conclude that it seems to be somewhat useful, although not without significant qualification resulting from an examination of other questions.

a. Risk Sharing -- What Kind Of Risk?

Recall that the development literature, like the corporate literature, emphasizes the role of financial institutions in overcoming information asymmetries and facilitating liquid markets. The macroeconomic literature connects this with economic growth by arguing that this function of financial institutions overcomes barriers to investment by all but a small number of participants and thus helps to create the circumstances under which broad investment in productive enterprise occurs. The point seems so obvious that to challenge it would be foolish, and I do not intend to do so. But its relevance is parasitic on questions of the nature of the risks shared, which in turn depends 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 it is that 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 markets, as the principal financial institution under investigation, indeed fulfill this goal.

Assume that shareholders do, in a meaningful way, take the risk of failure resulting from poor corporate production and innovation, and that they do so in part because they have access to information that permits intelligent decisionmaking with respect to their potential risk and return and facilitates the transfer of shares among investors. The central question is how they assume their risk. They do so by purchasing stock, but well before the seminal work of Graham and Dodd, it was widely

92 Well, not quite as a matter of course. A substantial proportion of the newly financed enterprises have to achieve economic success, or at least the proportion of those that do must be sufficiently large to compensate for the failure of others.

93 BENJAMIN GRAHAM AND DAVID L. DODD, SECURITY ANALYSIS (1934).
acknowledged that the purchase of stock in a single public company was a poor investment strategy. That argument has been refined over time into what is generally known as modern finance theory. Portfolio theory, as its first important contribution initially developed by Harry Markowitz in 1952, addressed the question of how an investor should maximize the value of his investment. The answer was to achieve a balance between moderating variance and return on his investment 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. By so doing, that is to say, by diversifying their investments, 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.

The argument that sustains portfolio theory meshes nicely with the explanation of the relationship between developed financial markets and economic growth. The market’s role in providing liquidity makes diversification possible, and financial theory tells us that this in fact is the only prudent way for most people to invest. So the diversification function, facilitated by liquid financial markets’ abilities to overcome information asymmetries, is important not only to the market’s effect on economic growth, as the macroeconomic argument claims, but also to the welfare of individual shareholders as demonstrated by the microeconomic perspective. But the finance-growth literature seems to 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. The capital asset pricing model followed relatively quickly on the heels of Markowitz’s work. As William Sharpe observed in his famous contribution to the creation of CAPM, 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 nondiversifiable risks. What risks are nondiversifiable? Those that exist in the


96 Easterbrook and Fischel also credit limited liability with making diversification possible. FRANK H. EASTERBROOK AND DANIEL R. FISCHEL, *THE ECONOMIC STRUCTURE OF CORPORATE LAW* (1991). A discussion of limited liability is beyond the scope of this work. My concern in this article is with financial risk.


98 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.

market itself, like risks of inflation, market bubbles, major political events, the impact of economic cycles, the unavailability of credit, and the like. So far, so good.

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, those institutions would, as they do, 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 alpha, that is, 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. There would, in other words, be little need for the risk specialization services provided by shareholders, which is to assume systematic risk.

Put yet another way, the logic of finance theory seems to lead to the conclusion that the only risks in which shareholders specialize are the risks that they themselves, aggregated in the institution of the market, create, since it is they, and not banks or public debtholders, who are uniquely dependent upon beta for their returns. Consequently, it seems as if the risk-specialization role of public shareholders, and thus the importance of

100 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, 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 (1992), doesn’t affect the financing activities of financial institutions nor does it importantly affect the debt market. See Fischer Black, Bank Funds Management in an Efficient Market, 2 J. Fin. Econ. 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. See Hazen, at 988 (arguing that the rise in speculative short term investments has led to an increase in irrational market activity).

101 I don’t mean to suggest that systematic risk would be entirely eliminated or that financial institutions would not suffer in their investments from systematic risk. What I do mean to suggest is that the return demanded by financial institutions, whose profits would come not 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. I do think it is fair to note that 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.
the stock market, becomes harder to justify. The logic of risk-specialization is a consequence of the existence of the market, not a justification for it.\textsuperscript{102}

Now I confess that this reasoning moves a bit too quickly. Despite the claims of portfolio theory, or at least those made on behalf of portfolio theory, stockholders still buy stock in specific companies, and still 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.

But the logical end of the specialization argument returns us to the premise that stockholders provide financing for industrial production. And that is precisely the question at issue, the answer to which is suggested by the data. For those data demonstrate 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.\textsuperscript{103} While the argument from finance theory is elegant and is logical within its assumptions, the assumptions fall 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 an historically contingent fact, largely unrelated to the financing of productive enterprise.\textsuperscript{104} 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.\textsuperscript{105} 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.

\textit{i. The Mythology of Capital Gains}

The source of stockholder gains also presents an issue. Stock market volatility has increased dramatically since 1980, during the same period in which a precipitous drop in internal resources was matched with a run-up in borrowed funds.\textsuperscript{106} Empirical

\textsuperscript{102} As I discuss, \textit{infra}, this was historically true during the greatest period of American industrialization before the emergence of the modern stock market. And while the failed conglomerate movement of the 1960s suggests the perils of overdiversified corporations, the great 19\textsuperscript{th} century industrialists did at least vertically integrate their businesses as a protection against volatility in various supply markets.

\textsuperscript{103} Mitchell, \textit{Who Needs the Stock Market?}, supra note __. Since the data demonstrate a dramatic recent decrease in retained earnings, it is fair to ask whether the historic reliance on internal financing can continue. In light of current economic conditions, I think it is reasonable to suspect that many corporations will begin again to retain earnings to support their stock prices, much as they did in the early part of the 20\textsuperscript{th} century. \textit{See infra} at __ for a discussion of the earlier era.

\textsuperscript{104} M\textsc{itchell}, \textsc{t}he \textsc{s}peculation \textsc{e}conomy, \textit{supra} note __.

\textsuperscript{105} Mitchell, \textit{The Morals of the Marketplace}, supra note __.

\textsuperscript{106} Mitchell, \textit{Who Needs the Stock Market?}, \textit{supra} note __.
evidence increasingly points to a managerial focus on short-term stock prices during this period, even at the expense of business development, culminating in the dramatic increase in stock buybacks from 2004 to 2007, a period during which the S&P 500 spent more (in the aggregate, and more as a simple majority of corporations) on stock buybacks than on productive capital, and dramatically more than on research and development.  

The historical record demonstrates a significant shift in investment style. 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. 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, 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). For example, in its 1955 Annual Report, it noted the low annual turnover of 19%, stating that “[t]his is to be expected, of course, in a cash market of an investment character.” Low turnover meant low commissions and low profits for the specialists who controlled the NYSE, and it went on to complain that the Federal Reserve Board, through a lack of understanding of the importance of securities credit, had raised margin requirements twice that year. The annual report describes that the Exchange “devoted increasing effort to research and education in this area . . . . [I]t should be made clear that an excessively high level of initial margin requirements, at a time when there is only a modest amount of credit employed by the securities industry, can be harmful to the nation’s entire economy by adversely affecting the liquidity of our


108 As recently as the late 1950s, investing for dividends was the dominant style. See e.g., New York Stock Exchange and Affiliated Companies, Annual Report for 1955 (available at the New York Stock Exchange Archives).

109 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 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. Edwin J. Perkins, From Wall Street to Main Street: Charles Merrill and Middle Class Investors (1999). The biography, apparently the first on Merrill, is a bit hagiographic but does provide some support for the idea that Merrill popularized common stock investing in a fairly conservative way.
While buying stock on margin could in fact be consistent with the desire for dividends, it is significantly more related to investing for capital appreciation. Explosive market development in the succeeding years, with a marked turn to investing for capital gains, demonstrates the success of the NYSE’s programs, despite the failure of the Fed significantly to reduce (and even sometimes to increase) margin rates.\(^{111}\)

This shift to capital gains investing has significant implications for corporate finance and governance. The famous Miller-Modigliani irrelevance theory which, although debated, has wide adherence, holds that, transactions costs and taxation aside, dividend policy should be irrelevant to share price. Once the issuer has disclosed its investment policy, the ratio of dividend payouts should be irrelevant to shareholders, because, among other things, share value depends upon the earning value of the company’s assets, and the financing of those operations, whether from retained earnings, debt, or new equity issues, shouldn’t matter. Thus investors should be rationally indifferent between receiving dividends and capital gains.\(^{112}\) 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. Thus one could receive dividends over the long term by holding onto the stock, or receive them now by selling the stock and receiving the equivalent of those dividends in the form of capital gains, that is, the proportion of the selling price that at least in part captures the seller’s share of present and future retained earnings as well as future dividends. Thus, the shift to shareholder expectations of profits from capital gains should be untroubling because irrelevant.\(^{113}\)

Understanding this argument in light of the contemporary belief 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 a risky proposition. Because they will only come in the future, they do not exist at the time that a stockholder sells his shares for capital appreciation. And, as a matter of financial reality, they are only as good as the assumptions one makes in

\(^{110}\) NYSE Annual Report for 1955, \textit{supra} note __.


I don’t 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.

\(^{112}\) Indeed, 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 payments or an increase in the market value of their holdings of shares.” Merton Miller and Franco Modigliani, \textit{Dividend Policy, Growth, and the Valuation of Shares}, 34 J. Bus. 411 (1961).

\(^{113}\) The last sentence is my own inference.
applying various valuation models to the corporation’s earnings and cash flows. 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. Moreover, as the data show, retained earnings have more or less disappeared from the books of industrial corporations, so 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.

The disappearance of retained earnings might well have significant implications for the continuing legitimacy of the Modigliani-Miller theory, and thus the lack of concern from both a financial and governance perspective as to whether public shareholders are rewarded with dividends or capital gains. Miller and Modigliani published their papers in 1958 and 1961. Retained earnings constituted between 40% and 61% of corporate balance sheets in 1961, little changed from 1958. In a very real sense at that time, capital gains appear to have been supported by real deferred dividends, held as retained earnings, and while one assumes that market movements also affected stockholder profits, there were balance sheet assets to support stock prices. Thus the irrelevance demonstrated by Modigliani and Miller makes perfect sense, even in light of the fact that valuation methods all are, necessarily, future-oriented. The situation is dramatically different where, as we see in 2005, retained earnings constituted 11% of corporate balance sheet equity, following a steady 30 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 would seem to cast it in an entirely different, and far less persuasive, light.

114 Marco Pagano, Fabiano Panetta, and Luigi Zingales, Why Do Companies Go Public? An Empirical Analysis, 53 J. Fin. 27, 28 (1998), studying a sample of Italian corporations, 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.

115 As to stock price movements, it is worth noting that volatility, expressed as turnover, was very low. See the historical table from 1900 to the present at http://www.nyxdatalabs.com/nysedata/asp/factbook/viewer_edition.asp?mode=table&key=22. Froot, et. al., supra note __, make a careful argument that distinguishes mere turnover from real volatility, arguing that while turnover has significantly increase, 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. 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.

116 Miller and Modigliani’s work was designed to show the irrelevance of dividend policy on stock prices. They were, throughout, careful to account for the need to finance both dividend payments and corporate investments either through retained earnings, current income, or debt.
The dividend irrelevance provision recently has been challenged head-on in a provocative article by Harry DeAngelo and Linda DeAngelo. Their 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, because 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 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.” Thus DeAngelo and DeAngelo’s critique does not appear to undercut my argument.

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 as a real economic matter when the nature of the risks are closely examined. For analysis shows that those risks primarily are risks of the capital markets, not the risks of a productive economy. But this conclusion may not be significant if risk reduction – no matter the nature of the risks – in fact helps public equity markets to allocate capital to productive use. As I will now explore, public equity markets appear to have a role in allocating capital, but (i) the empirical evidence does not yet clearly support this conclusion, and (ii) the extent to which public equity markets allocate capital is overstated and indirect.

b. Stock Markets Allocate Capital—Or Not

At this point it seems appropriate to return to the paradox with which I began, and 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 that public equity capital does not

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118 Miller and Modigliani, *Dividend Policy*, supra note __ at 424.

119 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 and Modigliani, *supra* note __ 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.
appear to have done so except under certain narrowly specific circumstances.\textsuperscript{120} If equity
doesn’t provide finance, it doesn’t seem likely that it can be an important factor in
allocating capital.\textsuperscript{121} This perhaps explains the relative paucity of studies making strong
causal claims from stock market development to economic growth. Nonetheless, the
literature does make a good case for the correlation between stock market development
and economic growth,\textsuperscript{122} and makes the issue worth examining.

The role of public equity markets in allocating capital and, indeed, financing
productivity, is the weakest link in the literature. Some of this 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
determine. 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, in
a recent paper, Thorsten 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 because it fails to measure liquidity and
also because it anticipates growth that has not yet occurred, and the latter because it
measures little other than the quantity of listings which, standing alone, says little or
nothing about economic growth.\textsuperscript{123} But turnover also suffers as an adequate 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 recent financial crisis has shown
us that liquidity can be used for no better purpose than to purchase speculative derivative

\textsuperscript{120} 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. Zhangkai Huang, Colin Mayer, and Oren Sussman, \textit{How Do Firms Finance Large
Cash Flow Requirements?}, available on ssrn.com (2007). Gilchrist, Himmelberg, and Huberman find that
equity issuances increase in response to stock price bubbles. Simon Gilchrist, Charles P. Himmelberg, and
See also Malcolm Baker, Jeremy C. Stein, and Jeffrey Wurgler, \textit{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” find investment constrained when stock prices
are low due to non-fundamental causes). Gilchrist, \textit{et. al.} discuss some of the other literature suggesting
that the cost of external equity does have a meaningful influence on corporate investment.

\textsuperscript{121} There is an argument that creditors follow the stock market in evaluating credit and providing debt.
See Fischer Black, \textit{Bank Funds Management in an Efficient Market}, 2 J. Fin. Econ. 323, 329 (1975)
(arguing that in an efficient market, a 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 that, if this it correct, the credit markets are misguided.

\textsuperscript{122} Ross Levine and Sara Zervos, \textit{Stock Market Development and Long-Run Growth}, 10 World Bank
Development, Societal Norms and Legal Institutions} 14 J. Int’l Fin. Markets, Institutions and Money 165
(2004)(negating Levine and Zervos’s findings when controlling for legal and societal factors).

\textsuperscript{123} Beck and Levine, \textit{Stock Markets, Banks, and Growth}, supra note __ at 428.
securities. In any event, 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 thus 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 depreciation, or additions to assets carried at cost. 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.

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. But problems remain. For example, Klaus Neusser and Maurice 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, 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.

i. Reducing the Cost of Capital (information again)

In an influential paper dealing with financial markets broadly considered, Rhaguram Rajan and Luigi Zingales, taking a micro-economic perspective, present empirical findings based on differences between industries within individual countries to

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124 See, Mitchell, Who Needs the Stock Market?, supra note __, for an example of this approach.


126 Klaus Neusser and Maurice Kugler, Manufacturing Growth and Financial Development: Evidence from OECD Countries, 80 Rev. Econ, and Stat. 638 (1998); King and Levine, supra note __.


128 To be fair to Neusser and Klugel, manufacturing certainly assumes greater importance in their multi-country study than if would in the U.S. alone.

suggest that financial development indeed has a causal relationship to economic growth through the capital allocation function.\textsuperscript{130} 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 . . . ,” although they acknowledge the obvious fact that “[i]t is ultimately the availability of profitable investment opportunities that drives growth . . . .”\textsuperscript{131}

They conclude that financial development causes growth in this manner with respect to industries that are heavily dependent upon external financing. This on its face appears to be tautological. But among these industries, they include newer firms.\textsuperscript{132} 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,”\textsuperscript{133} 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.\textsuperscript{134} I explore the relationship between public equity markets and business creation in detail in Part IV.b.

Rajan and Zingales use broad measures of financial development, but given that their principal control case is the United States it may be that they implicitly assume the importance of the stock market (although they also acknowledge the absence of strong causal claims for stock market influence alone).\textsuperscript{135} 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.\textsuperscript{136}

\textit{ii. Binding Management—Legal Norms}

Asli Demirguc-Kunt and Vojslav 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

\textsuperscript{130} Rajan and Zingales, \textit{Financial Dependence}, \textit{supra} note __.

\textsuperscript{131} Rajan and Zingales, \textit{supra} note _- at 560-1.

\textsuperscript{132} I will discuss the financing of relatively new firms \textit{infra} at Part IV.

\textsuperscript{133} Rajan and Zingales, \textit{supra} note __ at 560.

\textsuperscript{134} Shleifer and Vishny, \textit{supra} note __ at __. also note the importance of external equity finance to new enterprises.

\textsuperscript{135} Rajan and Zingales, \textit{supra} note __ at 561.

\textsuperscript{136} Rajan and Zingales, \textit{supra} note __ at 569.
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.137

While their findings are interesting, one conclusion is of particular interest. They note that in countries with active stock markets and well-developed legal systems, rates of return on invested capital tend to be lower, an observation they attribute to the discount provided by the decreased risk such systems provide.138 This leads to lower retained earnings and therefore a greater dependence on external financing. But this conclusion must be taken carefully. The data they examine run from 1980 to 1991. My own data also show a steadily decreased accumulation of retained earnings during this period. It has also been suggested that the American stock market achieved its greatest efficiency after the 1970s,139 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.


138 Asli Demirguc-Kunt and Vojislav Maksimovic, Law, Finance, and Firm Growth, 53 J. Fin. 2107 (1998). The positive flip side of this is, of course, that the cost of capital is lower in such countries.

Even acknowledging the dramatic drop in retained earnings during this period, it is data covering this same later period that Rosseau and Paul Wachtel use to show the weakness of the finance – growth nexus. Taking Demirguc-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 demonstrate 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.  

iii. Equity in a time of Distress

In a recent paper, Zhangkai Huang, Colin Mayer, and Oren Sussman empirically evaluate two theories of capital structure that have important implications for the capital allocation argument. 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 which have been subjected to significant cash flow shocks. What they find is consistency 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 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 the period 1988 – 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?

140 Mitchell, Who Needs the Stock Market, supra note __, esp. Appendix B.

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 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.

iv. Financing New Enterprise – The Historical Evidence

Another possible, and perhaps more straightforward (or at least more conventional), explanation is that the public equity market is a necessary stimulus to industrial creation.\textsuperscript{142} While public stockholders don’t provide investment capital, what they do when purchasing stock is to buy the shares of retained earnings, or in the absence of retained earnings, the claims on earnings, of those that do. 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.\textsuperscript{143}

On its face, this 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,\textsuperscript{144} but


\textsuperscript{143} While many new businesses fail, the medium-term survival rate of new businesses is not inconsiderable. \textsc{Alicia Rob, Janice Ballou, David Desroches, Frank Potter, Zhanyun Zhao, and E.J. Reedy}, An Overview of the Kauffman Firm Survey: Results from 2004-2007 Data, Ewing Marion Kauffman Foundation (2009) (longitudinal survey of close to 5,000 new businesses from 2004-2007 found that of the sample businesses begun in 2004, close to 90% were still in operation in 2005, 80% in 2006, and 73.4% in 2007. Those firms that did survive saw profits more than double and revenues nearly triple over the three year period); SBA Office of Advocacy, Frequently Asked Questions (Sept. 2009) (“according to new Census data, 69 percent of new employer establishments born to new firms in 2000 survived at least two years, and 51 percent survived five or more years.”); Amy E. Knaup, Survival and Longevity in the Business Employment Dynamics Data, Monthly Labor Rev. 50 (May 2005) (“The data show that, across sectors, 66 percent of new establishments were still in existence 2 years after their birth, and 44 percent were still in existence 4 years after.”); Brian Headd, Redefining Business Success: Distinguishing Between Closure and Failure, 21 Small Bus. Econ. 51, 54 (2003) (“66 percent of new employers survive two years or more, 50 percent survive four years or more, and 40 percent survive six years or more”).

\textsuperscript{144} See, e.g., Berger and Udell, The Economics of Small Business Finance, supra note __.
rather to stimulate business formation by providing exit 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 several problems with this argument. 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. Yet it clearly is not the case that all capital was aggregated in the form of debt, and in fact, in some industries like railroads, significant public equity was raised. Indeed recent scholarship demonstrates that more public equity than previously thought may have provided initial capitalization for some segments of American industry, although not as the principal source.\footnote{145}

In addition, it seems historically true that, at least in the early years of the 20th century, widespread corporate exit was a function more of contingent opportunity\footnote{146} or tax incentives than planned business behavior at the time of corporate formation. While takeover 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, 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 position of both enterprises.\footnote{147}

\footnote{145} Sylla, Rosseau. Rousseau and Wachtel, examining the role of financial intermediaries conclude that financial intermediaries played a significant role in economic growth in five industrialized countries (including the U.S.) during the period 1870 to 1929. Peter L. Rousseau and Paul Wachtel, Financial Intermediation and Economic Performance: Historical Evidence from Five Industrialized Countries, 30 J. Money, Credit and Banking 657 (1998). They do not examine capital markets, like equity markets, in part because of data limitations.

\footnote{146} MITCHELL, THE SPECULATION ECONOMY, supra note __ at __.

\footnote{147} For a history of European industrial development from the perspective of founding families and their ownership perpetuation see HAROLD JAMES, FAMILY CAPITALISM: WENDELS, HANIELS, FALCKS, AND THE CONTINENTAL EUROPEAN MODEL (2006). 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. Julian Franks, Colin Mayer, Paolo Volpin, and Hannes F. Wagner, The Life Cycle of Family Ownership: A
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. Thomas Navin and Marian 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. 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. The more-or-less forced public offering of shares of the New York Central Railroad following Cornelius Vanderbilt’s death and its control passing to his son, William, is another illustration of this phenomenon.

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. And it appears to be the case that, over the past forty years, equity capital has overwhelmingly been replaced with debt. 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, that creditors were providing the bulk of the risk capital that had not been generated from the early investments of entrepreneurs. Now 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.


149 I agree with their conclusion. MITCHELL, THE SPECULATION ECONOMY, supra note __.

150 MORRISON AND WILHELM, supra note __ at 167.

151 Mitchell, Who Needs the Stock Market?, supra note __ at __.

152 Mitchell, Who Needs the Stock Market?, supra note __ at __.
but with potentially significant adverse consequences to the debtholders. Again, the established existence of legal forms, along with the ability of creditors to self-protect through contract, doesn’t necessarily make this a problem of fairness as between the different financial claimants. 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 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 importantly, it may be that a broad and active public market in industrial securities may not be compatible with healthy long-term corporate, and thus economic, growth.¹⁵³ 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.

v. Financing New Enterprise – The Contemporary Argument

The capital allocation function discussed in the finance and growth literature 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.¹⁵⁴ 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

¹⁵³ For a consideration and nuanced rejection of this view, at least for larger firms, see Randall Morck, Andrei Shleifer, Robert W. Vishny, Matthew Shapiro, and James M. Poterba, The Stock Market and Investment: Is the Market a Sideshow?, 1990 Brookings Papers on Economic Activity 157 (1990). It is worth noting that this study was completed before the bubble decade of the 1990s took place and the substantial increase in stock market volatility and buyback activity during the beginning of the 21st century. See also Baker, Stein, and Wurgler, supra note ___; Gilchrist, Himmelberg, and Huberman, supra note ___; Kenneth A. Froot, Andre Perold, and Jeremy C. Stein, Shareholder Trading Practices and Corporate Investment Horizons, 5 J. App. Corp. Fin. 42 (1992).

¹⁵⁴ Berger and Udell, using 1993 data, show that equity represented 49.63% of small business (fewer than 500 employees) financing while debt represented 50.37%. However, approximately 31.33% of the equity was supplied by the “principal owner,” while the balance came entirely from other “members of the start-up team,” family, friends, and occasionally “angels.” Only 1.85% of small business finance was represented by venture capital. Debt was provided substantially by financial institutions with a significant portion from trade credit and the balance largely by the principal owner. Allen N. Berger and Gregory F. Udell, Small Business Credit Availability and Relationship Lending: The Important of Bank Organisational Structure, 112 The Econ. J. F32, F34-35, Table 1. Berger and Udell are careful to note that their statistics are averages, with high variance, with high-growth firms receiving substantially more venture capital.
only to the firm’s founders. Since we can assume that many entrepreneurs lack sufficient capital to self-finance their business creations, 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.

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-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 an economic growth perspective.

a. Capital Structure and the Need for Equity

Is equity required to finance new risky ventures? 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. But the equity sources are limited. Almost two-thirds comes from the “principal owner,” an additional almost 13% from friends and family, and just over 3.5% from angel finance. “Venture capital provides 1.85% of small

155 Andrei Shleifer and Robert W. Vishny, A Survey of Corporate Governance, 52 J. Fin. 737, 765, noting that “we do observe equity financing primarily for young, growing firms . . . .”

156 Although Colombo and Grilli, studying high-tech start-ups in Italy, find that 84% of start-up funding was from the personal capital of entrepreneurs, relatives, and friends. Massimo G. Colombo and Luca Grilli, Funding Gaps? Access to Bank Loans by High-Tech Start-Ups, 29 Small Bus. Econ. 25, 31 (2007).

157 Again it appears to be the case that business formation during nineteenth century industrialization presents an empirical counter-example to this assumption. Navin and Sears, supra note __; Rousseau and Wachtel, Financial Intermediation, supra note __; MITCHELL, SPECULATION ECONOMY, supra note __.

158 “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.” Rajan and Zingales, Financial Dependence, supra note __ at 565. Allen N. Berger and 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 and Finance __ (1998)(noting that equity financing tends to be used for high risk firms with largely intangible assets while debt financing is more common for low-risk firms with tangible assets.); Claudio Michelacci and Javier Suarez, Business Creation and the Stock Market, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=335925 (2002), arguing that the stock market encourages business creation as well as innovation and growth through a “virtuous circle” of recycling “informed capital”).

Colombo and Grilli note 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. Massimo G. Colombo and Luca Grilli, Funding Gaps? Access to Bank Loans By High-Tech Start-Ups, 29 Small Bus. Econ. 25, 27 (2007).
business finance."¹⁵⁹ Since investors will demand returns commensurate with their risk, and since such returns are characteristic of equity, one would think so.

But this may not necessarily be 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.¹⁶⁰ 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 they imposed fixed costs upon a start-up business that it might well be unable to meet.¹⁶¹ Although some venture capitalists finance with debt, the debt is typically convertible into common stock, and it is to exit rather than current returns that venture capitalists look for their profits. 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,¹⁶² and would be no more likely to finance with preferred stock if ready exit were unavailable.

Debt may provide other advantages as start-up capital. Stewart 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.¹⁶³ He begins with the proposition that corporations facing risky investment decisions are less likely to have

¹⁵⁹ Allen N. Berger and Gregory F. Udell, Small Business Credit Availability and Relationship Lending: The Importance of Bank Organisational Structure, 112 The Econ. J. F32, F34 (2002). Berger and Udell note that despite these averages, there are substantial differences among individual firms. 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. They also note that when insider finance runs out, external debt is the likely next step.

¹⁶⁰ Berger and Udell, Economics of Small Business, supra note __ at 626 (noting “surprising” amount of debt provided to young start-up companies by financial institutions.)

¹⁶¹ Some studies suggest that, over time, interest rates and collateral requirements even for small business borrowers diminish due to the nature of relationship banking. Allen N. Berger and Gregory F. Udell, Relationship Lending and Lines of Credit in Small Firms, 68 J. Bus. 351 (1995).

¹⁶² See Black and Gilson, supra note __, noting that venture capitalists choose between convertible preferred stock and convertible debt.

¹⁶³ But see LAMOREAUX, supra note __ at 9 (arguing that banks are less likely to finance risky ventures when they lend at arms'-length).
their market value diminished by issuing risky debt than those with less risky options. He bases 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. 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 interests 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. 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. In this state of affairs, according to Myers, shareholders could “borrow the entire value of the firm.” 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 with positive net present value, since its return will go to the creditors. 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.

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.” 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. 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.”

Finally, and perhaps most importantly, Myers drops his assumption that discretionary investment has no effect on the variance of a corporation’s market value. 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: “The impact of risky debt on the market value of the firm is less for firms holding investment options on assets that are risky

\[164\] Stewart C. Myers, *Determinants of Corporate Borrowing*, 5 J. Fin. Econ. 147, 167 (1977).

\[165\] Myers, *supra* note __ at 152.

\[166\] Myers, *supra* note __ at 154.

\[167\] Myers, *supra* note __ at 164.
relative to the firms’ present assets. In this sense we may observe risky firms borrowing more than safe ones.”

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.

This is not to claim that debt is a perfect substitute for equity, and indeed even Myers observes that “after a point the firm cannot borrow more by offering to pay a higher interest rate.” This suggests that there is a continuing need for at least some equity investment in high-risk start-ups.

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. 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. Another is that, as with equity-finance start-ups, there is always an initial valuation of the company which 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.

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168 Myers, supra note ___ at 167.

169 Berger and Udell, Economics of Small Business Financing, supra note ___ at 626, comment on the “surprising” amount of finance provided by lenders to new businesses.

170 Myers, supra note ___ at 154.

171 For a broader argument that equity and debt are complements and not substitutes see John Boyd and Bruce Smith, The Coevolution of the Real and Financial Sectors in the Growth Process, 10 World Bank Econ. Rev. 371 (1996).

172 Andrei Shleifer and Robert W. Vishny, A Survey of Corporate Governance, 52 J. Fin. 737, 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.” Carpenter and Petersen, supra note ___ at F38, note a body of literature highlighting the importance of collateral to lenders.

173 But see Colombo and Grilli, supra note ___ at 27 (that interest rates on debt are unlikely to be high enough to compensate lenders for risk of failure in technology-based start-ups); Carpenter and Petersen, supra note ___ at F59 (to same effect).
None of these appear to be satisfactory answers.\textsuperscript{174} At some level of risk, debt (and preferred stock), functionally become common equity although without equity’s participation. Under these circumstances, the putative debtholders possess the same incentives to behave in the same manner as equityholders (if the debtholders have negotiated for equity-like control rights),\textsuperscript{175} 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.\textsuperscript{176} Moreover, the existence of intangible assets wouldn’t satisfy these imaginary lenders.\textsuperscript{177} Valuations are intrinsically 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.\textsuperscript{178}

If debt is an unlikely instrument with which to finance entrepreneurs who lack capital, it does appear that equity may be necessary.\textsuperscript{179} Robert Carpenter and Bruce

\textsuperscript{174} 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. 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 (Asli Demirguc-Kunt and Ross Levine, eds. 2001), 143, 157.

\textsuperscript{175} The situation of a “controlling debtholder” 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.

\textsuperscript{176} 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 and Grilli, supra note __ at 28 note the converse, that start-up lending presents a moral hazard problem as entrepreneurs might undertake riskier projects after debt financing to the lenders’ disadvantage.

\textsuperscript{177} Allen. N. Berger and 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. 613 (1998); Colombo and Grilli, supra note __ at 28. However, Berger and Udell’s work establishing the informational benefits to 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. Allen N. Berger and Gregory F. Udell, Relationship Lending and Lines of Credit in Small Firm Finance, 68 J. Bus. 351 (1995).

\textsuperscript{178} 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. Colombo and Grilli, supra note __ at 41. 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.

\textsuperscript{179} Berger and Udell, Economics of Small Business Financing, supra note __ at __, provide 1993 data showing that funding from the principal owner, commercial banks, and trade creditors, constitute 70.10%
Petersen provide 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, they note that, once public, most firms finance internally and rarely go back to public equity markets.) But Allen Berger and Gregory Udell note the surprising amount of debt raised by start-up companies, although typically institutional lenders come in later than lenders who have a relationship with the business’s founders. 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.

\[b. Exit: The Key to Capital Formation?\]

\[i. The Importance of Venture Capital\]

Venture capitalists provide funding to allow businesses to develop, typically at a stage at which major innovation already has occurred. Although venture capital has not received as much attention as other forms of finance in the scholarly literature, it is clear that, in the U.S., venture investments are concentrated in high technology and other especially risky ventures. While these form only a very small proportion of new business ventures, it is these corporations, when they succeed, that seem to make the most substantial contribution to economic growth. Recent data published by the National Venture Capital Association show that 21% of 2008 U.S. GDP was generated by venture capital of a small business’s total funding. The principal owner equity is on average 31.33%, compared to venture capitalists at 1.85%. Equity constituted 49.63% of financing and debt provided the balance. While the data are from a single year, and Berger and Udell are appropriately cautious about the quality of the data, it is striking that small business (which obviously includes start-up businesses) appear to be financed much in the same way they always have, and that external equity funding (external, that is, to the founders) plays a very small role.


\[181\] 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.

\[182\] This conclusion obviously says nothing about whether it is the ideal form of financing new enterprise, but its success in that endeavor is strong evidence in its favor.

Baumol, Litan, and Schramm, defining 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. William J. Baumol, Robert E. Litan, and Carl J. Schramm, Good Capitalism, Bad Capitalism, and the Economics of Growth and Prosperity (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.

\[183\] Berger and Udell, supra note __ at __, point 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.
capital-backed companies. Job growth in venture-backed companies also has been significantly greater than that in the entire private sector.\textsuperscript{184} 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 30 years\textsuperscript{185} and it would therefore stand to reason that a large proportion of successful venture-backed companies remain in a stage of rapid growth. But it is nonetheless clear that venture capital has been important to stimulating a significant amount of GDP and job growth.\textsuperscript{186}

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, without this important qualification, that recent industrial innovation, especially in the venture-heavy technology and biotechnology industries, would not have been financed in the absence of venture capital. Nonetheless, I have promised to follow the money, and it appears that $456 billion of venture capital has

\begin{itemize}
\item \textsuperscript{184} \textit{VENTURE IMPACT: THE ECONOMIC IMPORTANCE OF VENTURE CAPITAL-BACKED COMPANIES TO THE U.S. ECONOMY} (IHS Global Insight; Fifth edition, 2009).
\item \textsuperscript{185} Samuel Kortum and Josh Lerner, \textit{Assessing the Contribution of Venture Capital to Innovation}, 31 RAND J. Econ. 674, 676 (2000).
\item \textsuperscript{186} See also Leslie A. Jeng and Philippe C. Wells, \textit{The Determinants of Venture Capital Funding: Evidence Across Countries}, 6 J. Corp. Fin. 241,245 (2000), for 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. Hellman 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 Hellman and Manju Puri, \textit{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 and Robert D. Hirsch, \textit{The Venture Capitalist: A Relationship Investor}, 37 Cal. Mgmt. Rev. 101 (1995).
\end{itemize}

been invested in 27,000 companies over the past 38 years. 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 real capital 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, 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 think that, at least before the public offering stage, withdrawals are negligible. 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, although convertible debt with modest fixed interest payments are also common. Even so, venture capitalists look for their returns on exit, not during their investment period. So I will proceed with the most reasonable inference from the data, that venture capital has recently become an important stimulus to real economic growth.

\textit{ii. The Importance of Going Public}

This leads to the vitally important question of what motivates investors to give money to venture capitalists, and what motivates venture capitalists to invest. The clear answer is, of course, the expected higher returns from venture investments than from, say, public equity investments. The predominant, although not exclusive, means of venture exit is through IPOs. But I have been arguing that the public equity market, which is the traditional avenue through which venture capitalists exit and reap the returns

\footnote{V\textsc{enture} \textsc{impact}, \textit{supra} note \textcircled{\textup{187}}.}

\footnote{Franklin Allen and Wei-ling Song, \textit{Venture Capital and Corporate Governance}, in \textsc{corporate} \textsc{governance} \textsc{and} \textsc{capital \ flows} \textsc{in} \textsc{a} \textsc{global} \textsc{economy} (Peter K. Cornelius and Bruce Kogut, eds. 2003). Sometimes venture capitalists purchase convertible bonds, which do require the steady payment of interest. Bernard S. Black and Ronald J. Gilson, \textit{Venture Capital and the Structure of Capital Markets: Banks versus Stock Markets}, 47 J. Fin. Econ. 243 (1998). As Black and Gilson also point out, exit (at least through IPOs) 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, typically over a period of several years. \textit{Id.}}

\footnote{George W. Fenn and Nellie Liang, \textit{New Resources and New Ideas: Private Equity for Small Business}, 22 J. Banking & Fin. 1077 (1998). Fenn and Liang, in this examination of data sources available for the study of venture capital, note that one major data provider 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.” \textit{Id.} at 1080.}
for which they have invested, may not be as important for capital formation as is generally believed to be the case. The questions then arise 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? Bernard Black and Ronald 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. Leslie Jeng and Phillipe 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. (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 only for 20 years and thus a relatively new financial development, using as data sources smaller subsets of this period.

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

Berger and Udell, supra note _ at __.

Hellman notes that, from 1996 through 2004, exit by acquisition was more common than exit by IPO. Thomas Hellman, IPOs, Acquisitions, and the Use of Convertible Securities in Venture Capital, 81 J. Fin. Econ. 649 (2006).

Black and Gilson, supra note __; Jeng and Wells, supra note __.; Paul A. Gompers and Joshua Lerner, Money Chasing Deals? The Impact of Fund Inflows on Private Equity Valuations, 55 J. Fin. Econ. 281 (2000); Paul A. Gompers, Venture Capital Growing Pains: Should the Market Diet?, 22 J. Banking & Fin. 1089 (1998). Jeng and Wells test “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. Id. at 242. See also Douglas Cumming, Grant Fleming, and Armin Schweinbacher, Liquidity Risk and Venture Capital Finance, 34 Fin. Mngmt. 77 (Winter 2005).

Black and Gilson’s primarily rely on data from 1978 to 1996, Black and Gilson, supra note __, and Jeng and Wells study the period 1986 to 1995. Jeng and Wells, supra note __.

Robert Cressy, Are Business Startups Debt-Rationed?, 106 The Econ. J. 1253 (1996). While Cressy was examining debt financing, it seems logical to conclude that the same holds true for equity-financed start-ups. Luigi Zingales discusses the importance of human capital to new, equity-based, businesses during the 1990s. Luigi Zingales, In Search of New Foundations, 55 J. Fin. 1623, 1640-43 (2000), where he uses the example of British advertising agency Saatchi and Saatchi to demonstrate how U.S. fund managers owning 30% of the company’s stock were foiled when, after a disagreement over compensation, the founding chairman left the firm and started a rival company. Firms self-select for bank financing based upon human capital and lenders respond. Cressy goes further to argue “that the correlation between financial capital and survival is spurious.” Cressy, supra at 1266.
economic development, we might agree that IPOs enhance efficient contracting between venture capitalist and entrepreneur, as Black and Gilson do, 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.

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. While this is an interesting fact, it says nothing about why the rate of return was so much higher in the IPO context. 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 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 the time extremely high from an historical perspective. 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 prices higher in a particularly speculative environment.

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195 That is, as long as micro-efficiency is measured by returns to equityholders.

196 Hellman, supra note __, sees the resolution at least in part in the types of convertible securities used by venture capitalists.

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

198 Jeng and Wells, supra note __ at 254.

199 Its relevance is also diminished by the fact that it as an isolated piece of data. Jeng and Wells give no such data for other years. 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. James C. Brau, Bill Francis, and Ninon Kohers, The Choice of IPO versus Takeover: Empirical Evidence, 76 J. Bus. 583, 586 (2003). They also note that the premia for takeovers of high-tech firms (which are more likely to chose the IPO exit option) are not significantly lower than for IPOs of firms in that category.

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

201 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.
is supported by a study performed by Marco Pagano, Fabio Panetta, and Luigi 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. 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. While their study is necessarily limited by the available data, their identification of managerial motivations is consistent with the theory I’ve articulated. And, while nationally limited, they argue that their results can be extrapolated.

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, suggesting investor over-optimism and opportunistic timing by issuers. 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. 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 cyclicality of IPO pricing. Interestingly, too, Tim Loughran and Ritter document a

202 Marco Pagano, Fabiano Panetta, and Luigi Zingales, Why Do Companies Go Public? An Empirical Analysis, 53 J. Fin. 27, 28 (1998). Indeed as to diversification, they note that entrepreneurs tend not to sell out substantially in the IPO but supranormal turnover in the control group happens within three years following the IPO. This may also imply that the exit option is not as important as the literature treats it to be. For the important role of investor sentiment in the U.S. IPO market see Michelle Lowry, Why Does IPO Volume Fluctuate So Much?, 67 J. Fin. Econ. 3 (2003); Philippe Aghion, Patrick Bolton, and Jean Tirole, Exit Options in Corporate Finance: Liquidity versus Incentives, 8 Rev. Fin. 327, 346 (2004). See also Douglas Cumming and Jerry McIntosh, Boom, Bust, and Litigation in Venture Capital Financing, 40 Williamette L. Rev. 867 (2004) (discussing cyclicity of IPO market and venture financing); Douglas Cumming and Jerry McIntosh, Venture-Capital Exits in Canada and the United States, 53 Toronto L. J. 101 (2003)(discussing exit more broadly); Joshua Lerner, “Angel” Financing and Public Policy: An Overview, 22 J. Banking & 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).

203 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 and Udell, Economics of Small Business, supra note __ at 634.

shift over time in firms going public, toward firms with negative earnings. 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. Alon Brav and Paul 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 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. 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 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. 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 I have shown substantial retained earnings held by American corporations, earnings which 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

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

208 Gompers and Lerner, *Really Long-Run Performance, supra note __.*
disappearing. 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. Underpricing transfers money from the corporation to secondary buyers as well 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. 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.

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. Strategic buyers are unlikely systematically to misprice a company. In the first place, strategic 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 and needs for growth. Thus strategic buyers are more likely to “get it right” than the market as a whole, suggesting that in terms of broader economic growth, strategic acquisitions might be more beneficial from a macroeconomic standpoint than IPOs.

History again suggests that exit through an IPO may not be optimal from a productivity and growth perspective. 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 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. At least as significant, the 1920s, which was a decade of major innovation, saw a substantial number of highly-priced IPOs from companies which had little operating history and ceased to exist after the 1929 Crash. 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 high multiples, only to collapse when the bubble burst in 2000. 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


216 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.

217 MITCHELL, THE SPECULATION ECONOMY, 95.

218 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 in *The Evolution of the U.S. Financial Industry from 1860 to 2007: Theory and Evidence*, (Nov. 2008) available at http://pages.stern.nyu.edu/~tphillip/papers/finsize/pdf, 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. See id. at 6, 24. See also Jovanovic and Rousseau, *Two Technological Revolutions*, 1 J. OF EURO. ECON. ASSOC. 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.


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 recent 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 has happened since 1978. At the same time, while strategic acquisitions of venture-backed companies were down, they nevertheless continued. While this turndown may well be temporary, a recent 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. Indeed, some evidence suggests that this is precisely the case. In 2009, there were 262 acquisitions of venture-backed companies in contrast to only 13 IPOs. 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 which could also have limited acquisitions. It is too early to understand the significance of this information, but it is consistent with the possibility that exit strategies for venture capitalists may be changing.

iii. The Growth Benefits of Strategic Merger

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 offering. The important point, as I noted in Section IV.a, 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 or market sentiment.


223 See Ritter, *supra* note __; Brav and Gompers, *supra* note __.
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 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.

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 that 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.

iv. Entrepreneurial Exit

I have spent time discussing the relationship between the public equity markets and venture capital, but would be remiss in failing to discuss the role the former play in more historically traditional exit. For the record is clear that public equity markets have long provided exit for entrepreneurs and their heirs. But the historical role the markets have played has been somewhat different. Rather than ensuring high returns, it provided a way for entrepreneurs to diversify their investments by monetizing and reinvesting portions of it and, perhaps more important, have given the second and third generations a way of creating incentives for professional managers to replace untalented or uninterested heirs. Each of these reasons 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 IV.b.iv. Recall that Navin and Sears, in their still-influential paper, argue the reverse causality of finance and growth, 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.
Now 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 was far less motivated by desires for exit than it was for business combination purposes. 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 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 Article, is the question I’ve already discussed of whether IPO exit is best from the standpoint of economic growth and job creation. As I’ve noted, that is not a question I can answer within the parameters of this Article, 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. Summary

In summary, 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

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224 M I T C H E L L, T H E S P E C U L A T I O N E C O N O M Y
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 some qualification, or at least substantial contextualization. Even accepting 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, does not necessarily lead to the conclusion 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 about the managerial maturity of such companies, all going 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.

V. Conclusion

A question familiar to scientists and inventors is whether, and how best, to use their discoveries. The question applies as well to legal scholars. The use of economic analysis in business and financial law has led to vitally important insights in the organization and regulation of individual and institutional economic behavior. But, as I hope to have demonstrated in this Article, that work is incomplete, not on its own terms, but in terms of the kinds of contributions legal scholars have the potential to make to the creation of a stable and growing economy that creates jobs and sustainable wealth over generations. That potential cannot be realized alone by microscopic—microeconomic—focus on institutional and regulatory design. We must be ever mindful of the purposes for which we engage in that enterprise. It is not enough to assume that what may be efficient at the micro level serves society well at the macro level. Both recent events and the historical literature are replete with examples of individually efficient behavior that results in collective disaster. This alone suggests the need for a legal approach to economic issues that integrates macroeconomic theory and evidence with microeconomic solutions. That this is important even in the intervals between disasters, the periods of ordinary economic and financial development, when economic growth is most likely to occur and when future catastrophe may be foreseen and perhaps avoided, should be obvious.

A close look at the public equity markets in the U.S. is revealing. While it is impossible in a work of this nature to examine thoroughly all of the many theoretical and empirical arguments, I hope to have demonstrated that the assumptions we make about those markets in our ordinary work may be misplaced or, at the very least, not obviously correct. To the extent they are wrong, they have the potential to be quite dangerous, as legal and public policy is built upon an unstable foundation. I believe I have made a case for revisiting the structure and regulation of the public equity markets, and the underlying regulation of the corporations that provide them with inventory. Analysis suggests that the primary function of those markets is more to stimulate than to finance new business

225 I have not addressed the financing of research and development in larger corporations, which itself is the subject of a significant literature and beyond the scope of this article.
growth, and that once corporations achieve a measure of economic success, the formation of most of their productive capital occurs outside of those markets, leaving the secondary markets as at best a neutral, and at worst a distorting, influence on economic productivity. If this conclusion is even partially correct, significant work remains to be done to create a richer picture of the incentives and disincentives law and regulation can create for individual behavior that serves our overall welfare; in particular, how the public equity markets should be regulated in order either to acknowledge the limited economic growth functions they currently provide or to enhance their role in stimulating real economic growth. In the same manner, we need to reexamine our approach to other important economic institutions; banks, institutional investors, and other financial intermediaries, as well as the incentives and disincentives we create for the behavior of investors, managers, and market professionals and how they relate to real economic growth. These matters simply are too important to the future of our economy, our nation, and future generations, to be ignored.