

Chapter 1

Introduction: Stock Markets, Investments and Corporate Financial Decision Making

Market fundamentalism . . . contributed directly to the financial crisis and the associated erosion of social capital.

Mark Carney, the governor of the
Bank of England

Companies are not charitable enterprises: They hire workers to make profits. In the United States, this logic still works. In Europe, it hardly does.

Paul Samuelson

Markets are designed to allow individuals to look after their private needs and to pursue profit. It's really a great invention, and I wouldn't underestimate the value of that. But they're not designed to take care of social needs.

George Soros

It is a kind of spiritual snobbery that makes people think they can be happy without money.

Albert Camus

The text is aimed at examining the interplay between stock markets, investments, and corporate financial decision making.

A large firm¹ is typically financed by a combination of *equity* finance, which is raised by issuing shares or stocks as certificates of ownership in the company,² and *debt* finance, or borrowing, which is created by issuing bonds

¹The terms “company” and “firm” are close to interchangeable. “Firm” may carry with it the connotation of professional services (we speak of a law firm) and that the firm is registered and acts under a trade name (“firm” derives from the Italian word *firma*, a signature). The term “company” indicates a firm that is registered under the Corporation Law of the state (the Companies Act in the US and UK). The present text has a tendency to move between the two terms without implying any great distinction.

²The terms “stocks” and “shares” are also pretty much interchangeable. The term “stocks” is more US-inclined; the term “shares” more UK-inclined.

(an “I Owe You”) that obliges the company to return the borrowed amount (the principle) at some designated date together with interest payments over the loan. Such a large firm is likely incorporated as a *legal entity* under the Corporation Law of the state. One implication of incorporation is that the firm’s shareholders as owners of the company have *limited liability* (responsibility) for the firm’s behaviour. By submitting itself to the rules of a *stock exchange*,³ the firm’s shares and bonds can be listed for trading on the exchange. This means that a firm can raise funds by issuing equity and debt (which we refer to as a *primary* market) and thereafter have its stocks and bonds traded second-hand between sellers and new buyers (in what we refer to as a *secondary* market, but which more generally is referred to as the stock market, whose prices are reported daily in the news). The holders of bonds and stocks in a firm are naturally seeking the highest returns on their investments for a given level of risk. Such investors’ *expectation of return*, reciprocally, may be viewed as identifying the firm’s *cost of financial capital*. So firms must seek to invest in projects and ventures that satisfy the risk–return expectations of their sources of finance — as both equity and debt. From such a perspective, we can say that (i) the investment activities of large firms and (ii) the investment activities in their bonds and stocks that take place in stock and other financial markets, are different sides of the same investment coin, connected by the cost of financial capital.

The stock market, in its pricing of the firm’s equity shares or stocks in the marketplace, is making a judgment about the firm’s ability to meet investor expectations. When such expectations are downgraded, investors continue to purchase the firm’s stocks — but at a *lower* price: thus, the stock price declines. At this point, the firm’s current shareholders take a financial loss. Another implication of stock market declines, which became a reality during the global financial crisis (GFC), is that the company is held in law to be viable as an ongoing concern provided that its capitalized value — as determined by the stock market — exceeds its financial liabilities. When the firm’s market value drops below the value of the firm’s financial

³The words stock exchange and stock market are often interchangeable. The three largest in the world are the New York Stock Exchange (NYSE), the London Stock Exchange (LSE) and the Tokyo Stock Exchange (TSE).

obligations, the firm can be declared bankrupt, and allowed to die. From such perspectives, the motive of the firm is the profit motive.

When I was an engineer, I viewed large companies as existing to produce and deliver the goods and services that are associated with their brand names. At my induction as a new petroleum engineer at British Petroleum (BP), a person from human resources (HR) introduced the organizational setup of the company by placing a transparency on the light projector (in the days before PowerPoint presentations). The transparency highlighted the various departments of the company spreading out like spokes on a wheel from a central hub. And there at the center in the hub was the department of HR. For the HR presenter, a firm represented first and foremost a number of people in some cooperative activity. As for the significance of the department of petroleum engineering, the presenter was at first actually unable to locate it on his transparency. Only when he moved the transparency to the right a little did it show up at the very outer edge — literally falling off the end of his perception of the firm.

In this text — in contrast to the concept of the firm as exiting primarily as either a provider of goods and services or as a social construct — we are, in effect, adopting a third perspective of the firm; namely, the firm as that which is sustained by financial markets, provided that the firm continues to meet the market's demands for financial performance.

This perspective leads to a rather impersonal view of firms and financial markets. Indeed, we typically refer not to the individual *people* who manage or are responsible for large firms, or those who are active in the financial markets that provide services for these firms, but to the firms and markets *of themselves* — to the extent, in fact, that we speak of the actions of the organization as of the organization itself — and not of the individuals who are engaged in the organization. In law, the company typically stands as an individual legal entity in its own right.

Motivated by profit, large firms provide us with the enhanced benefits of the material world as we know them: Our cars, highways, hospitals, homes, affordable technologies, etc., as well as financial services such as banking and provision for pensions and insurance services. In return, we are beholden to large firms. In the workplace, we may even feel that we are dwarfed by them. Large firms regularly lobby politicians for policies that accord with their profit motive. We might say that we have created a

self-reliant entity — for better or for worse — that is powerfully motivated to satisfy its pay-masters, which are the financial markets that sustain the firm with finance on conditions that the firm continues to demonstrate its ability to perform financially satisfactorily.

It is an intriguing concept, that the colossal funds made available to financial markets are ultimately derived from the investment savings of “mere” households. The function of financial markets is to gather and transfer these savings to the productive enterprises of firms. Commercial (otherwise known as retail or high street) banks perform this function by gathering our individually not-very-significant savings deposits and making them available as more substantial financial investments. Investment banks⁴ perform the function by liaising with those institutions that manage our additional savings — our savings, for example, in firms that manage our regular contributions such as for retirement and life and property insurance, as well as additional savings we might make in professionally managed funds — and connecting those savings with opportunities to invest in commercial firms that are seeking such funds (through new issues of their stocks or bonds) to finance their investments.

In seeking to enrich ourselves, from time to time, we are perhaps given to invest our valuable savings in opportunities with highly uncertain outcomes (a flutter on a horse race, the lottery, etc.). In these cases, we are “risk-seeking”. We need some excitement in our lives from time to time! Nevertheless, when it comes to making more substantial investments, such as an investment of one’s total wealth, provisions for loved ones, or for retirement plans, the same person is likely to be much more “risk-averse”. The stock market has traditionally rewarded long-term investment. But the markets are “risky” in that they are prone to quite large-scale fluctuations as the economy moves through cycles of prosperity and decline,

⁴An investment bank is an institution that provides financial services for other firms, for example, by providing advice and underwriting the raising of capital for firms (new issues of their equity or bonds). Unlike commercial banks, investment banks do not take deposits. Some names are associated with both commercial and investment banking activity (Citigroup, Barclays, The Royal Bank of Scotland Group), while other names are associated with specific investment banking activities (Goldman Sachs, Morgan Stanley, JP Morgan Chase). In a sense, in the services it offers, an investment bank is to the large firm as the commercial bank is to the individual or small company.

optimism and pessimism — in addition to being prone to self-induced gyrations as market sentiment swings between greed and fear. We may be fearful that the market will encounter a “global financial crisis” from which we cannot recover before we have withdrawn from the market. The interplay between risk (to which we are averse) and high returns (which we are seeking) identifies the essential dynamic at the heart of market behavior.

Thus, in the models, it is assumed that risky investments demand an expected rate of return over and above a *risk-free* rate as offered, say, by a bank deposit rate, or by the government’s short-term treasury bills. The difference between the expected return offered by the market and a risk-free rate is termed the *market risk premium (MRP)*. The expected rate of return on any individual asset j should, therefore, in principle, be determined as the risk-free rate (r_f) plus the *MRP* multiplied by the asset’s sensitivity to the market (which is termed the asset’s beta; β_j ⁵), so that we have the expected return on asset j , $E(R_j)$, as

$$E(R_j) = r_f + \beta_j(MRP). \quad (1.1)$$

Notwithstanding its simplicity, the above equation is referred to somewhat grandly as the “capital asset pricing model”, or the CAPM (pronounced “cap-em”).⁶ Prior to the GFC, a stock *MRP* in the range of 6–8% was commonly referenced. Following the GFC, the concept has become more nebulous. A premium of at most 6% is now regarded

⁵If the asset’s performance has an exposure to the market that equates with the market itself, its beta is equal to 1.0. If the asset’s performance represents only a partial exposure to the market’s performance, the asset’s beta is less than 1.0, whereas if the asset’s performance tends to exaggerate the market’s (positive or negative) performance, the asset’s beta is greater than 1.0. A more formal definition of beta is presented in Chapter 6.10.6.

⁶The idea underlying the CAPM was developed by various US academics at roughly the same time. The idea was first introduced by Jack Treynor (1961, 1962), followed by developments of the idea by William Sharpe (1964), John Lintner (1965), and Jan Mossin (1966), each more or less independently building on the earlier work of Harry Markowitz (1952) on diversification and modern portfolio theory. Sharpe, Markowitz, and Merton Miller (of the Modigliani and Miller propositions fame, see footnote 9 of this chapter) jointly received the 1990 Nobel Prize in Economics for their contributions to the field of financial economics.

as realistic.⁷ The CAPM nevertheless represents the foundation for how academics understand the formation of asset prices in a market.

In reciprocation, it is assumed that the firm's obligation is to obtain a return on its financial capital from shareholders that exceeds or is at least equal to that determined by the CAPM. Thus, consider the three essential sequential decisions of corporate financial investment (the three pillars of corporate finance):

- (i) The “investment” decision: Where should the firm be allocating limited resources of plant, employees, as well as finance?
- (ii) The “financing” (capital structure) decision: Having identified its investment decisions, how should the firm be financing those investments as between debt and equity finance? and
- (iii) The “repatriation” decision: At what point in the firm's life-cycle should the firm be returning the profitable outcomes of its investments to shareholders (as dividends or buy backs of shares)?⁸

For the investment decision, we have the clear guideline: invest in projects that provide shareholders with an expectation of return that exceeds or at least matches the rate implied by the CAPM.

The sequential “financing” and “repatriation” decisions of corporate financial investment identify the circulation of funds (as equity or debt finance) into the company before funds are returned, on a profitable basis, hopefully, to the firm's investors who hold the firm's equity and debt. Franco Modigliani and Merton Miller argued that, fundamentally, the firm's investments determine the firm's value, and declared that the “financing” and “repatriation” decisions of the firm are actually “irrelevant” to the firm's value. They articulated their arguments as the Modigliani and Miller (MM) propositions of the late 1950s and early 1960s, where they argue that the firm's value is the value of its future cash flows in relation to

⁷Reflecting the more downbeat sentiment of that time, *The Economist* newspaper (March 17th, 2012) reported research that indicated a market risk premium closer to 3.5% as more realistically attainable.

⁸In regards to the firm's debt holders, the decision to honour interest repayments and the repayment of the borrowed principal at maturity is typically not regarded as a “decision” as the firm is committed to such obligations by the contractual arrangements of the bond.

risk, and that this value is independent of how the cash flow is ultimately distributed between shareholders and bond holders. Thus, the firm's value is, in principle, independent of its capital structure (its level of debt or leverage). Similarly, the firm's current value should be independent of the future timing of how shareholders choose to return the firm's profitability to themselves. And, thus, the firm's value is, in principle, independent of its dividend policy (or policy of buy backs of its shares).⁹

On the foundations of the CAPM and the MM propositions, traditional finance has attempted to understand financial markets and commercial companies as a mechanistic construct, rather as physicists approach their subject matter. It is on this point that this book takes issue with traditional theory. Stated simply, finance is not physics. The academic's approach falsely assumes that financial markets can be understood as systems within which self-interested maximizers behave in logical ways, which are coordinated by the invisible hand of the price mechanism. This book recognises that finance is more appropriately understood as a field in which investors and finance managers may or may not use rational calculations as the basis of their decision making.

The book opens with an effective dismantling of the traditional mathematical approach used to understand and describe markets and corporate financial behaviour. Thus, Part A critiques how academics have chosen to understand stock price formation founded on the CAPM (Chapters 2–4), while Part B critiques the adequacy of the MM propositions as principles of corporate finance (Chapter 5). Notwithstanding that the CAPM and MM propositions are of themselves perfectly reasonable, we shall argue that adherence to the mathematical development of the principles has created an edifice of finance theory that fundamentally misses the human reality of

⁹The story goes that Merton Miller and Franco Modigliani were set to teach corporate finance for business students despite the fact that they had no prior experience in corporate finance. When they read the material that existed they found it inconsistent so they sat down together to try to figure it out. The result of this was a theorem on capital structure, arguably forming the basis for modern thinking on capital structure. Their Modigliani–Miller theorem is also often called the capital structure irrelevance principle. Modigliani was awarded the 1985 Nobel Prize in Economics for this and other contributions. Miller was awarded the 1990 Nobel Prize in Economics, along with Harry Markowitz and William Sharpe with Miller specifically cited for “fundamental contributions to the theory of corporate finance”.

how markets react and over-react to economic cycles, as investors respond in bouts of psychological greed and fear that are capable of sending markets into self-fuelling upturn “bull” and downturn “bear” markets; and the models miss the reality of how people in organizations actually behave and make important decisions that determine and guide the firm’s direction. Why academic finance has chosen to remain oblivious to these realities is in itself an interesting story.

In the second part of the book (Parts C and D), the mathematics of growth and decline is developed anew, while holding to the realisation that the decisions of organisations rely on the choices of real people with limited information available to them. Thus, in Part C, we refine our understanding of the nature of stock markets and financial growth, the dynamics of risk and return in financial markets, optimal portfolio allocation, stock mispricing, and option pricing (Chapters 6–12). Deviations from the core mathematical models are understood in terms of the mispricing of stocks, induced market cycles of booms and slumps within economic cycles, and the psychology of markets. We conclude that (investment) finance can take us only so far. The rest is economics and the psychology of markets. Part D advances a framework for corporate financial decision making that complements the mathematics of cash flow valuation (Chapter 13) with a framework that captures the distinctly human dimension of corporate financial activity, and what it means to be ethical in our financial institutions (Chapters 14 and 15). Again, we conclude that (corporate) finance can take us only so far. The rest is principles of management and an understanding of organizations.

The final chapter (Chapter 16) concludes with a review of the text.

The text is “academic” in allowing for a fair deal of abstraction and mathematical application. Nevertheless, the hope is that the reader will find the text *enjoyable*: Enjoyable because the shared intellectual journey is found to be worthwhile — as we share observations of how academic thinking in finance has taken shape over 60 years, discover a mathematical behavior of stock price formation, and consider how we might understand corporate financial decision making in the context of such stock price formation.

Let us commence our intellectual journey.