NEW PRINCIPLES OF EQUITY INVESTMENT

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INVESTOR IN PEOPLE

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An abundance of widely accepted folklore is used in the investments industry.

Francis and Kim (2013) *Modern Portfolio Theory*

Most claimed research findings in financial economics are likely false.

Harvey, Liu, and Zhu (2015)

The market is not well anchored by fundamentals. People do not even know to any degree of accuracy what the 'right' level of the market is.

Robert J. Shiller (2000, p. 147) *Irrational Exuberance*

We need empirically valid theories of how business organizations operate, of how investment decisions are actually made.

Herb Simon (1986, p. xv) *Handbook of Behavioral Economics*

The transition from a paradigm in crisis to a new one … is a reconstruction of the field from new fundamentals, a reconstruction that changes some of the field's most elementary theoretical generalizations as well as many of its methods and applications.

Thomas S. Kuhn (1962, pp. 84–85) *The Structure of Scientific Revolutions*

How can the validity of axioms and their implications be tested without referring to observed facts?

Maurice Allais (1988, p. 274)

The difficulty lies not so much in developing new ideas as in escaping from old ones.

John Maynard Keynes (1936, p. vii) *The General Theory of Employment, Interest and Money*

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About the Author

Les Coleman is a finance academic at the University of Melbourne. There he completed a bachelor's degree in Mining Engineering (1974), and a PhD by thesis which was published as *Why Managers and Companies Take Risks* (Springer, 2006). Les also holds a Master of Economics from Sydney University and a BSc (Economics) from London University.

Prior to returning to study in 2002 and then moving into academia, Les worked for almost 30 years in senior management positions with resources, manufacturing and finance companies in Australia and overseas. He started as a mining engineer with Anglo American Corporation in Zambia, and then joined Mobil Oil in Melbourne, where highlights of his career include four years in Mobil Corporation's international planning group at its global headquarters near Washington, DC, and six years as regional treasurer for ExxonMobil Australia. In the last 25 years, he has filled senior investment roles as a trustee of two employee superannuation funds and that of a public offer superannuation fund, a member of the Investment Management Committee of IOOF Holdings Limited and a director of 10 companies involved in finance, retail and distribution, including Australian Ethical Investment Limited and Strasburger Enterprises Pty Ltd. Les has written and spoken widely on finance and investment strategies, and for four years was a weekly columnist with *The Australian* newspaper.

Les has published six books, four book chapters and close to 30 journal articles. His main research interest is applied finance, especially financial decision making by investment funds and firms. This was informed by his diverse industry experience and involved extensive field research, including interviews with almost 60 finance executives in Istanbul, London, Melbourne and New York. These insights enabled him to apply the scientific method to investment: *The Lunacy of Modern Finance Theory & Regulation* (Routledge, 2014) analysed shortcomings in the finance discipline, and was followed by *Applied Investment Theory* (Palgrave Macmillan, 2016) which set out a descriptive model of the practices of professional

investors. He also has an interest in sustainability and risk as decision stimuli, and his book entitled *Risk Strategies: Dialling up Optimum Firm Risk* (Gower, 2009) foreshadowed a body of theory to manage risk strategically (in much the same way as human physiology and physical sciences support modern medical and engineering techniques respectively). He delivers executive education programmes in Australia and overseas, and has received research and teaching awards. Les is a member of the editorial board of three academic journals, and is a joint recipient of an Australian Research Council linkage grant.

Les has three adult children and lives in the coastal hinterland near Melbourne.

New Principles of Equity Investment

1. *Large investors run segregated equity portfolios*, and other investors only infrequently allocate assets. So we can simplify an overly complex task by separating investment from asset allocation, and treat equity investment as ranking candidate stocks.
   - Benchmark, or opportunity cost, becomes equity market return.
   - No relevance for risk-free rate, equity risk premium, systematic risk.
2. *Savers have long investment horizons, but investors lack foresight*: managers and analysts cannot forecast beyond about a year; annual turnover of equities exceeds 100 percent.
   - Limit valuation to a one-year holding period.
   - Discount rate becomes irrelevant.
3. *Equity prices have unique structure*. They are extensive variables comprising multiple complex sub-systems; and information-based claims on future payoffs or intangible contracts.
   - Equities have more in common with currencies than with standard goods
   - Equities' differences from goods in neoclassical economics call for a new price model.
4. *Extensive variables are modelled in other disciplines with time-varying components*. Follows Miller and Modigliani (1961) and others' belief that equity value is influenced via different channels.
   - Four components are proposed for equity prices:
     - *Intrinsic*: Objective, fundamental value of assets in place (on-going firm value).
     - *Transactional*: Specifics of transaction or setting (size, location, agents).
     - *Optional*: Contingent strategic opportunities (similar to real growth options in asset pricing models) and hazard liabilities.
     - *Extrinsic*: Crowd sourced through socialisation of equity markets. Incorporates behavioural biases whose persistence indicates that they meet some economic need.
   - Puzzles of investor reliance on non-fundamental aspects of price are explained away.

(*Continued*)

5. *To predict future equity price*
   - It is not practical to codify qualitative analysis, and fundamental influences vary over time.
   - Capture time-varying non-linear relationships with dynamically conditional error correction model and three-pass regression filter.
   - Rely on lagged firm-specific variables proxying for components above
     - Accounting data measures intrinsic value and exercise of real options.
     - Market data quantifies extrinsic value (especially price).
     - Convex transformations of data (square, semi deviation, standard deviation) value real options.
6. Use risk with dictionary meaning as possibility of value loss:
   - Manage short-term firm-specific risk through Bayes rule, and ESG and SRI filters.
   - Manage longer-term equity risk at portfolio level.
7. Form portfolios that optimise risk-adjusted return from active investment over long-term investor horizon:
   - Diversify across time and sector, and control with downside beta.
   - Apply style tilts, leverage, and staking strategies; incorporate derivatives.
8. Time transactions using theory-supported technical analysis based on price patterns in seasonity and liquidity and logical decision cues.

Fig. 1.1: Summary of *New Principles of Equity Investment*.

1

What this Book is About

> I am to speak of what all People are busie about, but not one in Forty understands.
>
> Daniel Defoe (1710) *An Essay upon Public Credit*

> Money has a power above the stars and fate to manage love.
>
> Samuel Butler (1684) *The Lady's Answer to the Knight*

This book comes with reader advisories. First, it does not merely repackage the contemporary investment paradigm, but develops a new perspective that follows a rigorous research philosophy and is based on field evidence. The investment principles here comprise a descriptive theory that explains observed equity prices and investor decisions, and which captures practices and concepts that have proven their effectiveness through wide application. The two main innovations are to treat equities as contracts that have extensive properties, and are best described by a price model with multiple components; and to limit valuation horizon to a reasonably foreseeable next year. A further distinctive feature of this book is to focus on the central objectives of equity investment, namely: valuation of individual equities, managing exposure to losses, diversification of holdings through an appropriate portfolio and timing buy–sell transactions. This investment paradigm cobbles together well-recognised ideas, and most of its building blocks will be familiar to readers.

The book aligns the best of established theory, empirical evidence and industry practice to operationalise equity investment and match it to practices in the real world. In medicine – which is another archetypal practitioner-driven discipline – this process is termed 'knowledge translation' because it captures real-world evidence from field research and impounds it in theory, which enriches both and ensures that neither

stagnates (Straus, Tetroe, & Graham, 2009). The book also meets a major goal for any new paradigm which is to explain puzzles in the existing paradigm, in this case anomalies that are captured in the behavioural finance (BF) literature.

An improved equity investment paradigm is required because most theories of finance and investment cannot be empirically validated, and this has steadily made them irrelevant. Gaps in understanding of real-world investment are so large as to precipitate regular equity market crashes that usher in global recessions. The direct loss to savers is huge, and there is also significant opportunity cost from loss of investor confidence (Brown, 2013). Optimised investment is a clear and important task, but theoretical gaps and regular crises distort outcomes. Sadly this deficiency in finance has remained true for centuries as shown by Daniel Defoe's comment above in relation to 'trade', or what we term 'finance' today.

This book intuits three shortcomings in the current equity investment paradigm. The first is that its foundations were borrowed from classical economics that was developed for tangible commodities and manufactures with utility; however, equities' market behaviour, however, is quite different. Second is that current finance assumptions are largely based on normative intuitions and lack robust empirical and theoretical support: there is no reason to retain them ahead of more plausible alternatives. Third, the finance world is a lot more complex than we acknowledge: research needs to better comprehend the structure of equities, especially by matching methods of analysis and reasoning to the nature of markets and investors.

The solution offered in this book is pitched to practitioners and researchers with a good grasp of investment, and who seek a coherent strategy and practical framework that they can apply. The book is also suitable as a text for an advanced course in equity investment.

Summary of *New Principles of Equity Investment*

Both the dictionary and common finance parlance see investment as employing money to generate a profit. The last is typically judged against the money's opportunity cost, which is the best return available from an alternative investment of comparable risk. Principles here also take their dictionary meaning as ideas or rules that explain how something happens.

The new principles of equity investment in this book are summarised in the first box. These are based on a variety of precepts established by multiple disciplines and include the following:

i. *Nature and substance of equities*. Equities are qualitatively different to goods sold in traditional markets such as commodities and manufactures. The latter have intensive properties (where each part is identical or they form a single, unified system), whereas equity prices are extensive variables which are the aggregate of complex sub-systems. In addition, goods in traditional markets are tangible products that are exchanged to clear supply and demand. By contrast, equities invest in companies' liabilities or obligations in order to make a series of payoffs. They are promises without any inherent cost, utility or worth, so their prices are of-the-moment and have no endpoint. Equities are unique products, and pricing theory developed for traditional markets is not relevant.
ii. *Social aspects of equity prices*. Although equity markets are decentralised and most trading decisions are made in private, investors monitor other investors' behaviour so that markets are extensively socialised. Thus equity prices incorporate expectations about firms, their market, and exogenous influences, which introduces feedbacks that are typical of closed loop and human-based systems, and so equity prices are crowdsourced.
iii. *Intuitions about investing in equities*. Investment is intertemporal because it requires decisions now whose consequences lie in the future and are contingent on the then unpredictable state of world. In the meantime, return depends on performance of agents and counterparties. Moreover, outperformance requires economically meaningful prediction of price-relevant influences which is not practical beyond a year.
iv. *Investors*. Dominant equity investors are financial institutions, which operate as a global oligopoly. They have a business model based on building funds under management; run mostly long-only portfolios with sticky, investor-determined flows; and invest through risk-neutral employees whose compensation is only weakly linked to performance. Their motivations differ from individual investors who are atomised, loss-averse optimisers of returns.
v. *Investor behaviour*. Flows of investor funds and price-sensitive data are subject to human control, and are frequently involuntary, seasonal and serially correlated which sets up exploitable patterns in liquidity and share prices. Investors interpret data through their

own paradigm (or knowledge base and rules they believe govern market behaviour) which explains heterogeneous responses to identical facts. Price expectations are conditional on lagged data (including prices) and so relationships are time-varying and formed in light of recent data.

vi. Equity investment is an archetypal practitioner–driven process involving complex decision making with Knightian uncertainty. Investors are not passive conduits of random data, but are active, socialised contributors to equity market behaviours; so techniques followed by today's leading investors have evolved towards an optimum. Any theory must be investor-centric.

vii. *Equity price models*. Studies of predictive capability across financial economics and other disciplines show that the most reliable forecasting technique is naïve extrapolation of recent data. Equity prices have multiple, time-varying determinants and are highly volatile; they are a closed loop system which has feedback from investor reactions. Thus predictive models need to be dynamic and conditional on current data. Also, equities are extensive variables which aggregate complex sub-systems; these are common in many fields and are typically modelled with multiple components related to unique features or sub-systems.

viii. *No more than about 10 percent of future equity returns can be predicted*. Data from the real or goods economy has no predictive capability because it is all historical, whereas asset markets – equities, debt securities, commodities and exchange rates – are forward-looking and linked by common endogenous features (such as interest rates and investment) and exogenous features (especially inflation): they co-move.

ix. *Firm accounts report less than half of firms' market value*. Even so, accounts are one of only two objectively reliable datasets about equities, and can partially predict returns. Transactions-based data are the second reliable equity dataset; these, too, can partially predict returns.

x. Since formulation of the current equity investment paradigm by the 1970s, financial institutions have grown to dominate markets and important features of equity markets have assumed greater significance. These include changes in patterns of returns; and incentive problems between shareholders and the many agents in markets and firms, including information asymmetry and moral hazard (Allen & Gale, 2000).

This book links a variety of facts and hypotheses from multiple disciplines to develop an investment paradigm with five central features. First, equities sell in markets driven by socialised expectations and are quite different to tangible goods and services that have immediate, obvious payoff or utility. Equities' intrinsic or fundamental value is a relatively small portion of price, and requires additional explanators which suggests four price components: intrinsic, fundamental value that is derived from firms' ongoing operations; costs and benefits for investors from specific features of particular transactions; real option value from strategic opportunities and hazard liabilities that are contingent on unexpected conditions in the firm's operations and environment; and extrinsic value related to socialisation of equity investors and feedback from market transactions. These are proxied by observable firm-specific value-determining variables, plus indications of strategic opportunities and hazard liabilities that may reshape firm payoffs and price data.

Second, dominant investors run equity-only portfolios whose management is quite separate to the infrequent task of asset allocation. Moreover, their buy–sell decisions are involuntary responses to client cash flows, so investment decisions are based on ranking of equities rather than their absolute value. Third, investors have a constrained holding period of about a year which is imposed by the limit of predictability of firm payoffs and market conditions. This implies that later payoffs are indistinguishable between firms.

Fourth, transaction data – particularly equity prices – have persistent structural features that are related to human and systematic influences on data flows and liquidity. Resulting patterns indicate sentiment and show past valuation extremes, which sets up short-term predictability that is useful in timing transactions. The fifth feature of equity investment is that risk is seen as the possibility of loss. It is managed over the one-year holding period through eliminating risky prospects, and at portfolio level during the decades-long investment horizon.

The proposed paradigm reshapes the objective of investment so it becomes ranking of equities' value. This is less ambitious than intertwining asset allocation and stock selection, and less ambitious than calculating absolute standalone value. The short horizon adds further simplicity by limiting the relevance of discounting and statistical uncertainty. The net is to streamline a task that is too often made overly complex.

The following sections discuss central features of the proposed new paradigm of equity investment.

Why the Basis of Equity Pricing is Unique

The contemporary investment paradigm treats equities as typical of the goods envisaged in classical economic theory as set out in the writings of Marshall (1890), Walras (1900) and others. Their most important dictum for financial economics is:

> when a trader or manufacturer buys anything to be used in production or to be sold again, his demand is based on his anticipation of the profits which he can derive from it. (Marshall, 1890, p. 78)

Thus the workhorses of contemporary equity valuation – especially discounted cash flow analysis, residual income valuation (RIV) and valuation ratios – are based on investors' judgements about future payoffs.

A second dictum of classical economics that is central to modern investment theory is declining marginal utility: 'the only universal law as to a person's desire for a commodity is that it diminishes, other things being equal, with every increase in his supply of that commodity' (Marshall, 1890, p. 80). This inverse relationship between price and individuals' consumption leads axiomatically to a downward sloping demand curve, whose importance was stressed by Thaler (1989, p. 186) in describing an upward sloping demand curve as 'heresy'. Linking the downward sloping demand curve to an upward sloping supply curve forms the law of supply and demand whereby price converges to the curves' point of intersection, and achieves an equilibrium price that matches investors' valuations of anticipated payoffs.

Empirical evidence is clear, though, that equity prices simply do not follow these traditional assumptions. Prices are not only unstable but also more volatile than can be explained by theory (see: Shiller (1992) and related writings). Also, equity demand is procyclical: as prices rise, so does investor support, and this is reflected by momentum in returns.

Atheoretical behaviour by equity prices can be traced to their unique features. First, equities do not satisfy a conventional need or want, but are state-dependent claims on cash flows or wealth. Thus they are information based. In particular, equities lack utility that is related to use or consumption and which can be built up from relatively transparent, tangible factors such as cost of production. A related divergence from normal goods is that equities are relational contracts that involve a series of exchanges over time: a fixed sum is outlaid or committed now in exchange for future returns. This makes them little more than promises, and opens up risks of

loss following non-performance by agents and counterparties and from an unsatisfactory future state. Because cash flows are not contracted, they are uncertain and almost amorphous, so it is impractical to objectively establish their fundamental value (Prasch, 2008). Moreover, even when equities involve different firms or are sold in different markets, they are virtually indistinguishable and readily substitutable, which gives no real limit to supply. Who, for instance, can meaningfully distinguish between the long-term prospects of individual firms, given that most are near identical competitors in oligopolies such as banking, oil, retail and so on? A further unique feature of equities is that financial institutions dominate transactions in financial markets and their decisions are driven by savers' liquidity. The largest investors have little control over decisions to buy or sell equities, which are made involuntarily and independently of value measures. Resulting pressures distort prices.

Further contributing to instability in equity markets is their lack of a stabilising mechanism. This shortcoming contradicts a central scientific principle of 'natura non facit saltum', which is usually translated as 'nature does not make jumps'. This axiom sees nature as changing only slowly, so its properties and governing laws are stable. The intuition is that natural systems are self-correcting through instinctive or involuntary reactions to stimuli: excessive growth in the rabbit population, for instance, boosts the number of foxes and other predators that soon restore balance. This has been relied upon by scientists since it was expounded by Leibniz and Darwin. Importantly for us, generations of financial economists have also relied on it for interpretation of economic systems as implied by the dictum's reproduction on the title page of Marshall's *Principles of Economics*. Unlike natural systems, though, economic systems are driven by human reactions and so incorporate feedback which makes them non-linear and unstable. Despite the concept of an 'invisible hand' that guides economic optimisation, research shows that human decisions are influenced by many identifiable factors including personal traits, situation, mental paradigm and presentation of information (e.g. Kahneman, 2011). This human involvement is neither involuntary nor consistent, and usually exacerbates, rather than dampening, departures from equilibrium in equity markets.

This conclusion is not new, and follows institutional economics where investment is embedded within broad political, social and human systems whose preferences and relationships are time variant (Hamilton, 1919). Thus an early study of investment by British finance journalist Hartley Withers (1917, chapter X) argued that '[stock] price movements are chiefly a psychological question' because they respond to *expected* supply and

demand, rather than actual supply and demand. These expectations do not have a yardstick to be tested against, and equity investment is uncertain because value is inevitably overtaken by unanticipated events. The importance to equity value of exogenously driven possibilities means that investor sentiment can be influenced by price moves so that a rising price attracts buyers and vice versa. Even a century ago, Withers (1917) recognised that 'it is commonplace in the City [of London] that the public only buys on a rising market'.

Equity Investment Involves Ranking Candidate Investments

The most significant development in equity markets in recent decades has been transformation of the dominant investor group from risk-averse individuals who optimise return to institutional investors who compete in a global oligopoly and are risk neutral. This was triggered by mandated or tax-advantaged retirement savings that many countries introduced following the US lead in 1978, and led individuals to contract out their management to professionals (just as people do with other specialist services ranging from car maintenance to health care). In the United States, financial institutions (mutual funds, pension plans, insurance companies and other pooled investment vehicles) now hold around half of all listed shares (of which, mutual funds own 46%; about 16% each for private pension plans and state and local government pension plans; and about 12% each for insurance companies and exchange traded funds: Board of Governors of Federal Reserve System, 2017: Table L213). Similar developments have occurred around the world, and institutional investors now dominate ownership of equities in markets across modern economies (Aggarwal, Erel, Ferreira, & Matos, 2011).[1] These professional investors are active with over 100 percent annual turnover, and have crowded out individuals who now control only a trivial portion of volume.[2]

Institutional investors segregate investments by asset class, so that equity portfolios do not hold other assets except sufficient cash to meet liquidity requirements. Thus equity investment managers make few asset allocation decisions. Moreover, institutions' performance is evaluated against market benchmarks and/or peer group results, so returns of

[1]Not surprisingly, there has been considerable research on impacts of these large investors, with surveys by Edwards and Hubbard (2000), Sundaramurthy, Rhoades, and Rechner (2005), Agarwal, Mullally, and Naik (2015) and others.

[2]Data on trading volume by investor type are scarce. However, Kaniel, Saar, and Titman (2008) show that individuals are responsible for only about 4 percent of trading volume on the NYSE; and Evans (2009) reports NYSE data that put it at less than half that level.