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4. Valuing equities in the UK and the US: Fashions and Trends

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Introduction

The dot com boom and bust of the year 2000 made equity valuation a hot topic. How had share prices and intrinsic values got to be so far apart? Was it something to do with the way in which shares were valued? Unable to use book values – high tech firms had no tangible assets, with no earnings or dividend track record to go on, analysts turned either to multiples of turnover – they did have sales – or to gazing into a crystal ball and forecasting cash flows. These cash flow forecasts turned out to be on the optimistic side, assuming that each firm in the industry was going to be a winner. When investors realised that not everyone could monopolise market share, the valuation bubble burst.

More recently, in the credit crunch, the same thing happened. Analysts, this time bond analysts, thought they had cracked how to value collateralised mortgage obligations (CMOs). Using sophisticated methods – as sophisticated as discounted cash flow seemed in the 1960s – they valued highly complex instruments using complex models which, they tended to forget, had some pretty major assumptions built in. When, for example, the correlation coefficients they had assumed, or the credit ratings they had relied on, proved not to be the right ones, the market prices for CMOs moved very far away from their theoretical values.

This chapter looks at how investors have changed the way in which they value shares over time. The four key ways were book value, dividend and earnings yields, Price Earnings Ratios and discounted cash flow. The chapter explores an early dependence on book value, the assets to back the nominal value of the shares and on dividend yields, with shares being valued as bonds, with a higher yield to reflect their more uncertain income. As firms became more profitable, dividends no longer represented the underlying earnings of firms. This was particularly true in the US, where firms did well out of World War I and reinvested the majority of their earnings. Earnings yields and even Price Earnings Ratios were in common use in the Wall Street boom of the 1920s – with growth firms being allowed stratospheric Price Earnings Ratios – and after the Crash as static multiples of earnings which were no longer expected to grow.

In the UK, earnings were treated as a backdrop to dividends until the 1960s. A number of factors can explain this tardiness with respect to the US. First, UK firms had a historical tendency to payout most of declared profits as earnings, so there was no big divide between earnings and dividends. Second, British firms did not experience the rapid growth that US firms did in the 1910s and 1920s. Third, profit and loss statements in the UK left a lot to be desired until the second half of the twentieth century. And finally, British taxation made it hard for investors to work out what earnings per share were, after corporate taxation and before personal taxation. It was much easier under the US tax system. As a result, it was not until the second half of the 1960s that the British adopted Price Earnings Ratios. Discounted cash flow, invented by actuaries and engineers in the nineteenth century, was recommended as a valuation method after World War II. But it was not until computers had made the calculations easy and the Capital Asset Pricing Model allowed easy estimation of the

discount rate that both British and US corporate analysts began to concentrate on discounted cash flow valuation. Equity analysts, on the other hand, although they recognise discounted cash flow method as the most likely to give a good estimate of intrinsic value, have not let go of the relative valuation tools, price to book, dividend yield and the most popular Price Earnings ratio.

Investors and markets

We begin by looking at the types of investors and the kinds of securities they bought, in particular, new issues in the late nineteenth and early twentieth centuries.

In Britain, equity investors originally consisted of wealthy¹ businessmen investing in companies with which they were personally connected (Maltby 1999, p.34), although by the mid- to late-nineteenth century increasingly efficient stock exchanges, both in London and the provinces (in terms of trading stocks and shares) and improved access to financial information through rapid growth in financial periodicals, allowed other types of investor to emerge (Preda 2001; Vissink 1985)

By 1888, *The Statist* was able to identify four different types of shareholder, varying from the pure investor to the outright speculator. *The Statist's* bona fide speculator and premium hunter were in shares for the short-term, seeking to make capital gains on price movements. This still left two kinds of investor. First, the informed business man, happy to receive a reasonable dividend from his investment in a company with which he was probably involved, as a director or customer (Maltby 1999, p.35).² Such an investor looked to 'his security first and his interest next, and is content with four or five per cent when security is assured' (*The Statist*, 14 July 1888, p. 42). Second, the greedy shareholder, often typified as 'the minister of religion, the shopkeeper's widow, the retired naval or military officer, the pensioned civilian' (*The Statist*, 7 July 1888, p.10), wants seven or eight per cent and thinks that ten or twelve

per cent is attainable, believing this to be ‘tolerably safe’ (*The Statist*, 7 July 1888, p.10). New issue prospectuses, such as those with flowery language, reports with maps attached to them, and of companies with figureheads on the boards of directors were, according to *The Statist*, designed to bamboozle investors.

In the US, early common stock investors were primarily bankers and industrialists. It was not until after the merger boom of 1897 to 1904 that common stocks began to be held by substantial numbers of investors (Baskin and Miranti 1997, p. 193; Davis 1966, p. 264).³ The market was generally more speculative than in the UK with ‘the stock exchange .. a battleground for bulls and bears intent on locking horns at every available opportunity’ (Geisst 1999, p. 101). Speculators dominated dividend seekers as share prices rose and fell dramatically during each market cycle, fuelled by share price manipulations and insider trading. Conservative investors bought bonds. Speculators or naïve investors bought shares in the hope of amassing wealth as the industrialists and bankers had done. Capital gain was their goal.

In summary, then, while the emphasis of the American nineteenth century investor was on domestic investments, primarily bonds, for their British counterparts, particularly in the second half of the nineteenth century, ‘the world was their oyster’ (Rutterford, 2006).

New Issues

Nineteenth century shares were mostly bought on issue, since new companies were coming to the market all the time. New issues could be divided, as could investors, into speculative and investment grade. The financial information available to investors was initially in the form of a prospectus, purely descriptive for speculative issues, and with some financial information for the investment grade issues.

Speculative investments were typically in new companies, requiring investment capital to develop a good idea. By the 1860s, mines were the new speculation. For example, although the prospectus for the Cwm Dwyfor North Wales Copper & Silver Lead Mining Company, issued in 1868, contained the report of an 'expert' who claimed 'I consider this a proper and safe investment for capitalists', the prospectus appealed fair and square to capital gain seekers by comparing the mine to one already traded on the stock market: 'The Great Laxey Lead and Copper mine at a cost of £4 per share on 15,000 shares is now saleable at from £19 to £24 per share' (Rothschild Archive: RAL XIII/230). Later in the century, the prospectus for the vastly oversubscribed Burma Ruby Mines issue of 1889, offered for subscription by N.M. Rothschild & Sons Limited, promised, not dividends but only the capacity to 'yield a large amount of wealth'. This promise proved unfounded, as evidenced by the inclusion of shares in Burma Ruby mines in a (long) list of 'valueless shares' in the Estate of Sir Everard Hambro on his death in 1925 (London Guildhall Library: MS519219). Speculators bought in the hope of capital gain, guided by market psychology and, if lucky, by insider information.

Investment grade shares, on the other hand, consisted mainly of existing companies coming to the market seeking funds to pay for industry consolidation⁴ or to allow the vendor to realise part of his profits and provide funds for expansion. The 1886 prospectus for the highly profitable Arthur Guinness & Co., Limited, gave as reason for the flotation the fact that the firm had attained enormous proportions and would doubtless grow still further, determining the 'present proprietor to seek some relief from the constant attention and strain which his position as sole owner unavoidably entails' (Rothschild Archive: RAL XIII/230).

Investment grade companies typically made profits and were in a position to pay dividends from flotation. The standard approach to capitalizing these going concerns was to issue debentures and/or preference shares up to the balance sheet value excluding goodwill and to issue ordinary shares to the vendors against goodwill. Any surplus money provided a small amount of working capital. This meant that those ‘outsiders’ wishing to invest in investment grade limited liability companies were offered debentures or preference shares yielding a small premium over Consols rather than ordinary shares. In contrast, speculative companies tended to issue only ordinary shares, since they had no ongoing income out of which to pay debt interest or preference dividends.

We now turn to individual valuation methods, from book value, dividend and earnings yields to Price Earnings Ratios and, finally, discounted cash flow.

Book Value

Both British and American investors in shares were concerned with security of capital, which was deemed to provide backing for the market value: ‘The value of an investment depends upon several circumstances: which are, the liability of the investment to depreciation in value, or to entire loss’ and ‘the annual return in the shape of rent, interest, dividend or other produce, which is obtained for the money invested’ (Ward, 1852: 5). Which took priority depended upon the risk aversion of the investor and their recent experiences. Ward, writing before limited liability became general, could assert: ‘Many persons prefer security of capital to a large annual return for their investment’ (Ward 1852, p. 1). Graham and Dodd, writing in the aftermath of the stock market crash of 1929, believed that ‘the typical investor was concerned primarily with the safety of principal and secondly in the continuance of income’ (Graham and Dodd 1934, p. 52). Le Maistre, in the more optimistic mid-1920s,

commented: ‘the value of a going concern depends on its dividend paying capacity rather than on the book value of its assets’. Nevertheless, he devoted two chapters of his investment text to balance sheets and argued that success was broadly reflected therein (le Maistre 1926, p. 154). By this he meant that the potential investor could check to see whether his nominal investment was backed by real assets or, in US terminology, was ‘watered stock’. It was considered of vital importance to investors in ordinary shares that the book value of their shares should be above par, particularly as, in Britain, new shares could not be issued below their nominal amount. If a company’s assets depreciated in value, whether mines or plant and machinery, it was felt essential to create cash reserves out of any profits remaining after dividend payments. Reserves were also required to hedge against unforeseen contingencies: ‘a wisely conducted company will always retain sufficient funds in hand to meet unforeseen emergencies’ (Stacey 1923, p.41).

In Britain, much attention was paid to the balance sheet. There were a number of reasons for this. First, from the 1840s onwards, a large number of journals and books were published on railway investments, which included detailed analyses of balance sheets, as, for example, *Ward’s Treatise on Investments* (Ward, 1852: 172). How much to depreciate assets was discussed in a number of treatises, such as Samuel Laing’s *On Deterioration of Railway Plant and on the Policy of Establishing a Reserve Fund* (Baskin and Miranti 1997, p.144). Second, in Britain, the profit and loss account, when provided, gave only limited financial information, being required to disclose only dividend payments to investors and transfers to reserves until after the Second World War.⁵ The profit figure was typically stated after (undisclosed) tax, depreciation, and other expenses and a sales figure was not provided. The balance sheet, on the other hand, did give some estimate of value in terms of fixed assets and

stock in trade, although Stacey (1923, p. 23) warned that most assets in the balance sheet were at directors' valuation.

When looking at asset backing, tangibles such as property, plant and equipment were preferred to intangibles such as goodwill. In the new issues of the late nineteenth and early twentieth centuries, ordinary shares were often issued against goodwill with preference shares and debentures financing tangible assets. Brief balance sheets were provided in share prospectuses to highlight this fact. For example, in the prospectus for the issue of securities in Geo. Trollope & Sons, and Colls & Sons, Limited, formed from the combination of two building businesses in 1904, the capital of the new company was to consist of £250,000 nominal in ordinary shares (taken by the vendors in part-payment of the purchase price) and £200,000 of new money in the form of 5½ per cent cumulative preference shares issued to the public. Of that £200,000, only £50,000 went to the company to provide working capital, the remainder going as cash payment to the vendors. The net assets of the company (including the £50,000 cash) were valued, in the usual course of business, at £286,000, thereby creating a large goodwill element in the initial balance sheet (Guildhall Library: MS19097).

As companies grew, undistributed profits and reserves could be used to write off goodwill. Le Maistre suggested that, if goodwill represented more than one quarter of the issued capital, a return on capital of 20 per cent should be required in order for a sum to be set aside each year to amortise goodwill as well as allowing for a 10 to 12 per cent dividend as a percentage of par value (le Maistre 1926, p. 230). However, he was more than happy with the concept of goodwill as applied to brand names such as Beecham's Pills and Veno's cough mixture. What investors had to worry about was goodwill created by over-payment for assets acquired when the

company was set up, something which could not be recouped. Potential investors were urged to look carefully to see if the vendors had taken too much of the new money, leaving insufficient working capital with which to meet future business requirements (Stacey 1923, pp.52-3).

British companies' balance sheets gradually became more opaque as far as estimates of share value were concerned. Hidden reserves, a tradition begun in the nineteenth century and challenged (unsuccessfully) in 1906 by shareholders in *Newton v Birmingham Small Arms Company*, meant that asset values were often understated with respect to their market values. Shareholders were given no indication of the size of hidden reserves, nor were directors obliged to disclose them when asked (Maltby 2003, p. 27). Hidden reserves were deemed to be in the shareholders' best interests, allowing companies to provide what investors most desired: stable dividends and a stable share price (Young 1919, p. 44). Also, by the 1920s, the trend towards amalgamations and global expansion of companies, begun in the late nineteenth century, had gained such momentum that the unconsolidated accounts provided by British holding companies were increasingly uninformative:

their ramifications are often so vast and intricate that no one has any real knowledge of their position except a few directors and high officials. It is impossible for even an expert stockbroker to make a reasonable estimate of what such shares are worth, and to buy them is a pig in a poke. It may be a very good pig, but to buy it at a guesswork price is not business.

(Caudwell 1930, p. 94)

Caudwell went on to give the example of Courtauld's American branch, known to be a major part of the Courtauld group but for which no accounts were published (Caudwell 1930, p. 101). Complaints multiplied (Stacey 1923; Withers 1930) but little

was done until the Companies Act 1948.⁶ This led commentators to conclude: ‘too much attention should not be given to balance sheets’ (Caudwell 1930:, p.101).

In the United States, the issue of the relevance of book value, as companies grew, also concerned investors. Graham and Dodd (1934, p. 332) cited the case of F.W. Woolworth’s, which started off public life in 1911 with \$50m of goodwill against \$50m nominal of share capital. By 1925, reserves had been used to write down the goodwill to a notional \$1. An American, Ruskeyer, commented: ‘it is a paradox of business that those concerns with a genuine goodwill, for reasons of conservatism, carry it at little or nothing among their assets, whereas those without real goodwill have an inflated item under that heading in the balance sheet’ (Withers 1930, p.57). However, American balance sheets were usually less opaque than those of their British counterparts. Consolidated accounts became the norm in the United States after a wave of amalgamations in 1897 to 1904 following anti-trust legislation (Kobrak 2002, p.4; Baskin and Miranti 1997, p.194). Consolidated income statements of majors such as United States Steel gave revenues, expenses, and taxation in more detail than did their British counterparts, partly due to the ‘fair rate of return’ concept applied to US utilities (Kobrak 2002, p. 8), allowing a more accurate picture of asset backing and profitability to be gained, although standards varied substantially between companies.⁷ British companies, by comparison, gave limited financial data, concentrating on dividend payments and asset backing. All else was deemed superfluous. As *The Accountant* scathingly remarked as late as 1935, commenting on the 34 page accounts of Bethlehem Steel: ‘It reminds us of that form of examination questions: say all that you can about...’ (Maltby 2003, p. 21).

So, in the early twentieth century, estimating share value through book value, whilst of interest to investors on both sides of the Atlantic, was harder in the UK than in the US. The general lack of consolidation of company accounts meant that, prior to the 1948 Companies Act, British balance sheets failed to provide group, as opposed to company, book values. Those American companies, such as the conglomerates, which provided consolidated sets of accounts could be valued more easily using book value than could British companies. British analysts, such as those studying Courtauld above, could not even begin to make appropriate adjustments

Dividend yield and earnings yield

Dividend yield

Speculators based their investment decision on impressions rather than hard facts. Investors had more to go on, for example, from the prospectus or the accounts of a company with a history, they could glean details of dividends already paid. They were able to estimate dividend per share, disclosed in the prospectus or accounts of a company with a history behind it, as a percentage of nominal value, and make, or be provided with, some estimate of the extent to which the dividend was covered by earnings.

From their inception, shares as securities were viewed as variants of bonds: 'A common stock is a bond which provides future payments indefinite in number and amount' (Preinreich 1938, p. 273). Dividends were the equivalent of bond interest, declared as a percentage of the nominal or par value of the shares. The par value of shares was equivalent to the par value of bonds. Although shares had no defined maturity date, neither did many government bonds; and, in any case, many companies in the nineteenth century lasted only a few years (Shannon 1954). This left the main perceived difference between bonds and shares as being that investors in the former

were promised a regular fixed interest rate whereas investors in the latter hoped for, but were not guaranteed, a higher dividend income.

Investors were clear as to the difference between dividends declared as a percentage of nominal value and their yield as a percentage of market value, or opportunity cost. For example, in a report to London investors by the Australian brokers, Lennon and Cape, describing the 14 shares listed on the Sydney Stock Exchange in 1861, the Rate of Last Dividend and the Interest Return per annum were given in two separate columns of the report (Guildhall Library: MS18000, 1863, 973).

By the late nineteenth and early twentieth centuries, a number of benchmarks were used to analyse dividend yields. First, the dividend cover was of relevance. How protected was the dividend by earnings? For example: 'James Book & Co (1915) offered preference shares covered five times by profits' (*The Economist*, 17 November 1928, p. 901).⁸ Analysts adopted the same approach for equities and, quite early on, compared dividend yields with earnings yields, both as a percentage of nominal share capital. A broker's circular, designed for private circulation but inadvertently sent to all Guinness shareholders, was enthusiastic about the planned share placement, commenting: 'the dividend should therefore not be less than 18 per cent for this year and the earnings should reach 24 per cent' (Bailey, 2003: 10)

Investors also considered the industry in which they were investing when assessing dividend yields.⁹ Le Maistre, ex-Deputy Secretary to the Government of India's Public Works Department and the author of a splendidly lucid text on investment, offered simple guidelines for investment in terms of appropriate dividend yield for different types of investment:

The yield which investors as a whole are prepared to accept,...as compared with the yield obtainable for Consols, naturally varies to a marked degree with

different industries, but is fairly constant for each industry over a series of years, and naturally, the greater the risk, the higher the yield expected.

(le Maistre 1926, p.259)

According to le Maistre, dividend yields varied from 4½ per cent to 5 per cent for well-established banks and insurance companies, through to 10 per cent plus a margin for mining shares, the margin being to replace capital, due to the finite life of the investment.

The dividend yield was also considered to be instrumental in putting a floor on share prices: ‘In established securities, such as Imperial Tobacco or Shell, there is a point below which the market price is never likely to fall – that is, the point at which the investor buying is bound to be attracted by the dividend yield’ (*The Economist*, 10 November 1928, p. 854).

As well as looking at bond yields and dividend yields at the individual security level, these were also compared at the market level to identify whether a market or sector was appropriately priced. In the UK, this comparator was usually considered to be the yield on Consols or, later, on long-term gilts: for example, the *Investor’s Chronicle* argued in 1949 that, if the differential between dividend yields and gilt yields became too small, there was an effective ‘amber light on industrials’ (*Investors’ Chronicle*, 1949:, p.73). An alternative comparison was with the yield on a fixed interest security issued by the same company or, in the US, a high quality corporate bond index yield.¹⁰

We now look at the differences in use of dividend and earnings yields between the UK and the US, concentrating on four aspects: dividend payout, compound growth, quality of accounts and taxation.

Dividend payout

The percentage of earnings paid out as dividends, also called the dividend payout ratio, differed between British and American companies. In Britain, the thought process behind the income statement went as follows: to try to achieve a stable profit year on year, through the judicious use of hidden reserves, so as to allow a stable dividend pattern; to place most of the difference to depreciation or other disclosed reserves, and retain only a (small) residual balance as unappropriated profit. As well as pandering to the British investor's obsession for stability, 'Profits should not appear to fluctuate too violently in the interests of all concerned, with the exception perhaps of the merely temporary shareholder' (*The Accountant*, 3 October 1925, quoted in Maltby 2003, p. 10). An additional impetus for this approach was provided by the tension between capitalists and workers: companies should be seen to be profitable enough to pay adequate dividends, but not too profitable. As the Labour MP, Ernest Bevin, remarked ominously, 'reserves .. are really the unpaid wages of industry' (*ibid.* p. 11).

In the US, the tradition was to pay out two-thirds of profits as dividend leading to a more unstable dividend stream and allowing a build-up of large, notionally unappropriated, profits.¹¹ 'First class American companies , on the whole, are conservative in their financial policy' (Caudwell 1930, p. 129). Graham and Dodd concurred:

The typical English, French, or German company pays out practically all the earnings of each year, except those carried to reserves. Hence they do not build up large profit-and-loss surpluses, such as are common in the United

States. Capital for expansion purposes is provided abroad not out of undistributed earnings but through the sale of additional stock.

(Graham and Dodd 1934, p. 331)

Graham and Dodd argued that the British priority given to dividend policy stemmed in part from the requirement, included in the Companies Act 1929, that shareholders approve dividend payments at the annual meeting and that this carried ‘an exceedingly valuable reminder to the management of its responsibilities, and to the owners of their rights, on this important question’ They contrasted this position with a lack of US shareholder control over dividend policy which, they claimed, ‘*fails* to produce the stable dividend rate which is its avowed purpose and the justification for the sacrifice it imposes’ (Graham and Dodd 1934, p. 335).¹²

Compound growth

One reason for the low dividend payouts in the US was the immense local US market protected by high tariffs, as well as rapid industrial progress in the US throughout the 1920s (Caudwell 1930, p. 123). The growth experienced by many US companies had led to increasing earnings diverging more and more from stable dividends. After the First World War, British companies were forced to come to terms with a strong pound, inflation and labour unrest. British investors after the First World War were grateful if dividends were maintained at pre-war levels. US firms, on the other hand, had benefited from the First World War in terms of increased demand for their goods; for example:

old-time favourites such as General Electric and National Biscuit, and many others – e.g., American Can, Corn Products – that had been transformed from second-grade to well-entrenched enterprises by the prosperity of World War I.

These [enterprises] formed the aristocratic group admiringly referred to as the 'blue chips'.

(Graham *et al.*,1962, p. 410)

Fisher, in his 1930 text defending increased share price levels and, in particular, the New York Stock Exchange boom, explained that attitudes to earnings had changed during the 1920s. There were now expectations that earnings of American corporations would increase on account of technical progress within industry, that less risk was attached to those earnings than formerly (given a long-term rising trend) and, also, that earnings ploughed back instead of declared as dividends were accumulated at a compound rate of interest 'so to speak' (Fisher 1930, p. xxii). Dividend yields were no longer relevant in a world where dividends were maintained at 5 per cent, whilst earnings kept up to 10 per cent or even 25 per cent (Fisher 1930, p.79).

This compound interest argument had been put forward in 1925 by Lawrence Smith, in his highly influential text, *Common Stocks as Long-Term Investment*. In this book, Smith reported the results of tests comparing the income and capital gains that could have been made on portfolios of 10 different common stocks, relative to the returns on bonds or commercial paper, over a number of 20-year periods between 1866 and 1922. He showed that, regardless of whether an inflationary or deflationary environment had prevailed, equities revealed themselves to be a better investment than fixed-interest securities in terms of both income and capital gains. Smith explained this as being due to the effect of compound interest, at a rate of almost 2.5 per cent per annum, over the long term. He suggested that the source of this 2.5 per cent compound interest was three-fold: population growth (since the 1820s, this had averaged over 2.4 per cent per annum; secular trend growth from the constantly accelerating speed of modern life; and the 'human factor'. This human factor referred

to corporate managers, who were on the side of stockholders rather than bondholders; were increasingly professionalised; and returned a portion of earnings to surplus account to invest ‘this increasing surplus in productive operation’ (Smith 1925, p. 77). As Keynes put it, in his review of the book, ‘there is an element of compound interest operating in favour of a sound industrial investment. Shares work out better than bonds by more than the difference between the apparent rates of interest on each.’ (Keynes 1925, p. 157) In other words, shares did better than their initial dividend yield suggested. Bonds did worse than the quoted bond yield, with high interest rates eroding their capital values, and inflation making the real worth of their depreciated capital even lower. By contrast, ‘An investment in Common Stocks is an investment in real values’ (Keynes 1925, p. 157).

Smith’s empirical study triggered the realisation, in the US, that earnings were not merely a cushion for dividends, but that undistributed profits also generated future, larger dividends and share price rises. Earnings were worthy of study in their own right and shares could be expected to rise in value over time, particularly in periods of growth and inflation. Wall Street was quick to switch to earnings as the primary factor employed when assessing investment values. As Graham and Dodd observed: ‘Common stock values have come to depend exclusively upon the earnings exhibit.’ (Graham and Dodd 1934, p.350) Keynes also took these lessons to heart, returning to the insurance companies with which he was involved to recommend an increase in the percentage of investment funds devoted to shares (Scott 2002, p. 82). However, he was not optimistic that the results would be quite so impressive when returns on British securities were studied:¹³

I have the impression that it might not turn out quite so favourably to ordinary shares, partly because our businesses have, for obvious reasons, not gone

ahead at quite the same pace, and partly because American industrial concerns may have been rather more conservative than ours in the division of profits.

(Keynes 1925, p. 158)

In other words, Keynes recognised that differences in dividend payout policy and in profits growth between American and British companies could explain valuation differences. Indeed, despite Keynes' acceptance of the relevance of earnings to share valuation, his misgivings prevailed. The British attachment to dividend yield proved hard to give up. Dowrie and Fuller were able to comment in their 1950 US investment text:

the dividend rate was at one time accepted as the dominant factor in the valuation of all but the most highly speculative shares and to a large extent this emphasis has continued in the security markets of other nations.

(Dowrie and Fuller 1950, p.504)

Quality of accounts

Another factor in the different emphasis between the UK and the US on dividends and earnings was the quality of accounts. In the UK, the content of the income statement was very limited, the dividend payment being the key disclosure and the profit figure given as an afterthought, designed mainly to provide cover for the dividend. Turnover figures did not have to be disclosed until as late as 1976 in the UK (Toms and Wilson 2003), with companies arguing that their competitors could misuse this information. As far as the balance sheet was concerned, the failure to make consolidated accounts compulsory until 1948 meant that the true book value of all subsidiaries' assets could often not be estimated. Thus, it was difficult to estimate profit ratios such as return on sales or return on assets, with any confidence. In the US, by contrast, companies, particularly the railroads and the major monopolies such

as US Steel, provided detailed accounts from the early 1900s. The emphasis in these accounts was sales less costs, leaving earnings available to the different classes of investor clear to the analyst. Sales and earnings could be tracked from year to year, without the hidden reserves so beloved of British company directors. British investors looked to the dividend as the only trustworthy number in the accounts. American investors were able to gain extra information from the company's earnings figure.

Taxation

Another influence was tax. In the US, companies and individuals were taxed separately. This system allowed companies to report earnings after corporate taxes, taking no account of individual income tax or capital gains tax. The concept of 'net earnings' was clear to all. In the UK, the company did not exist as a separate taxable entity until the introduction of corporate tax in 1965. Companies paid income tax on behalf of investors, who might then be liable for additional tax, according to their individual income. This made it difficult to estimate income tax after 'company' tax but before 'investor' tax. May, in a paper attempting to compare American and European equity values, commented:

From the British point of view, American company profits are subjected to double taxation, the corpus of company profits not being a separate taxable entity in England. Hence to make British earnings comparable with those of other countries, we show them before tax.

(May 1939, p.736)

In practice, this meant that it was possible for US companies, but not for their UK counterparts, to estimate earnings after corporate tax and before personal income tax.

In summary, the continued British preference for dividend yield as a key valuation, compared with the move by US investors in favour of earnings, can be attributed to a number of differences between their respective environments. One difference was to do with dividend payout policy; in the UK, earnings were mostly paid out as dividends, making earnings a cushion for dividends rather than, as in the US, a separate element in the income statement. A second difference was the difficulty British investors had in determining the true earnings figure from the accounts, due to the unconsolidated nature of accounts and a lack of a sales figure hampering profit analysis; in the US, by contrast, the major companies provided detailed income statements and consolidated balance sheets. A third difference can be explained by differences in British and US growth rates. British companies failed to grow dramatically in the post-First World War period. Profits were viewed as cyclical, reverting to a long-term mean, whereas in the US, Smith and Fisher highlighted the long-term growth trend in earnings of many American companies from World War I to the Depression of the 1930s. A final difference was to do with the British taxation system which made it more complex than in the US to identify corporate earnings after corporate tax but before personal income tax.

Earnings yield

In the UK, the emphasis on dividends, backed by earnings and assets, as a means of appraising shares lasted through to the 1950s and 1960s:

The British investor is interested first and foremost in employing his funds so that he gets a good yield. He is far-sighted about this; he does not fall into the simple trap of owning shares with high immediate yields but he goes for the securities which are likely, in his opinion, to give him a good return on his money next year or the year after that.

(Investors' Chronicle, 27 October, 1951, p.994)

Dividend yield was also a major determinant of share value in the US but only up to the mid-1920s. Graham and Dodd offered evidence for this when they argued that increased dividends led to increased share prices, regardless of the pattern of earnings over time. They cited the relative share price performance of two railroad stocks, Atchison and Union Pacific, where the more liberal dividend policy of Union Pacific between 1915 and 1924 caused a greater share price increase than for Atchison, despite the fact that the latter had the greater earnings per share during that period and the greater book value (Graham and Dodd 1934, p. 336). Graham and Dodd maintained that retained earnings were of little value to the investors; they critiqued companies such as United States Steel as being singularly ineffective in using their large accumulated surplus to any good effect (Graham and Dodd 1934, p. 329).

Most American investors, however, had, by the mid-1920s, turned their attention from dividends to earnings for the purpose of valuing all types of common stock. For example, a Rowe & Pitman broker's circular from August 1928, titled *Aviation Shares*, reveals the differences in approach to valuation of American and British companies. The two American companies covered, United Aircraft and Transport Corporation and Curtiss-Wright Corporation, were discussed in the context of earnings relative to share price and relative to assets. For example:

It is estimated that the earnings of Curtiss-Wright, Keystone & Curtiss-Robertson, which have net assets of \$31,810,000, for this year will amount to about \$8,600,000 which is equivalent to more than \$1 per share on 6,500,000 shares of common stock, after paying \$2 per share on 1,000,000 class A. These figures do not include possible earnings from the flying services and

airport companies which have net assets of \$46,650,000. The present price of Curtiss-Wright common shares is 28¾.

(Baring archive, MS203276/6, p. 2)

In comparison, the analysis of the five British aviation shares centred, as usual, on dividend yield, as supported by earnings and assets:

The dividend yield on Rolls Royce is naturally low (at 4%), seeing that the Company earns nearly twice the amount of its dividend rate and that its net assets amount to nearly 40/- per share (compared with a 51/3 share price) without including its holding in Rolls-Royce of America which has never been shown on the balance sheet as an asset.

(Baring archive, MS203276/6, p. 4)

PE ratios

Intrinsic value

In the US, in the 1930s, historically low share prices after the Crash of 1929 encouraged American authors of investment texts to put forward methods of estimating intrinsic value for individual shares for use in determining which stocks to buy.¹⁴ Graham and Dodd defined intrinsic value to be ‘that value which is justified by the facts’ as distinct from ‘market quotations established by artificial manipulation or distorted by psychological excesses’ (Graham and Dodd 1934, p. 17). They acknowledged that market values could deviate from intrinsic values, but believed that these two values would converge for ‘shares in which the popular interest is keen enough to promise a fairly swift response to value elements which he [the analyst] is the first to recognise’ (Graham and Dodd 1934, p. 22).

The search for intrinsic value was greater in the US than in the UK, partly due to the cynicism shown by British economists such as Keynes¹⁵, and partly due to the fact that Wall Street experienced a greater fall in 1929 than did the London Stock Exchange. In London, share prices had recovered their 1929 levels in nominal terms by 1934. In the US, this did not happen until 1953 (Shiller 2001). Graham and Dodd believed that there were plenty of opportunities in the depressed markets of the 1930s and 1940s to buy shares with an intrinsic value well above their market price. To estimate intrinsic value, Graham and Dodd preferred to look at earnings rather than dividends. They also, as did other Americans, capitalised those earnings. Thus, the rather ad-hoc British comparison of dividend yields across securities was transformed into a share valuation methodology. By capitalising earnings, Americans could compare the intrinsic value with the market value, and estimate by how much, in value terms, the share was cheap or dear. A yardstick of 10 times earnings was the accepted standard of valuation (Graham and Dodd 1934, p. 451). Dowrie and Fuller confirmed the existence of the ten times earnings rule of thumb, saying that this allowed corporations to pay 6 to 7 per cent as dividends. Nevertheless, by 1950, they considered a maximum multiple of 15 appropriate for the ‘soundest and most stable stock, without the adoption of a speculative attitude’, but referred in shocked tones to financial journalists who had suggested a characteristic multiple for the General Electric Company of 40 (Dowrie and Fuller 1950, p. 514).

Value versus Growth

The argument as to the appropriate earnings multiple boiled down to one issue: were firms essentially stable, meaning that they exhibited ‘resistance to change and hence greater dependability for the results shown in the past’ (Graham and Dodd, 1934: 38) or were they on an upward earnings trend, warranting higher capitalisation multiples

or more complex valuation metrics, the rosier their future prospects? The British were very much of the stability school. They believed that markets went up and down but that steadiness of dividends and earnings was paramount. It was foolhardy to value shares on expected growth:

A new system of valuing shares has come into fashion. We used to calculate the yield on them according to the dividend paid. Then we proceeded to the much more scientific and correct system (if we are not quite certain that profits have not been overstated) of valuing them, not by the dividend paid, but by the rate of profit earned. ... But from this quite sensible step, another one, which takes valuation into the realm of dreams was easy – the step which values shares not by what the company is earning, but by what it may be expected, or hoped, to be going to earn some day.

(Withers 1930, p. 142-3)

In the US, those of the ‘stability’ or ‘value’ school (Graham and Dodd 1934; Dowrie and Fuller 1950; Evans and Barnett 1940) argued for constant earnings capitalisation multiples that took average historic earnings into account. For example, as late as 1962, Graham *et al.* (1962, pp. 510-11), after ‘long and prayerful thought’, came up with the formula of dividing the ten year average earnings by twice the high grade bond yield to determine a central market value, around which the price would oscillate. Until the mid-1950s, they had the advantage of showing that, in the long run, markets did indeed oscillate around a long-run average; the Standard & Poor’s index did not recover its 1929 peak value until 1953. Post World-War I growth seemed a temporary aberration in a century-long analysis.

Those of the 'growth' school¹⁶ argued that historic average earnings were not an indicator of future potential. The most recent earnings were a better indicator of the future than a long run historic average. Graham and Dodd gave a tongue in cheek analysis of the typical Wall-Street method of analysing earnings during the boom years of the 1920s:

1. Find out what the stock is earning. (This usually means the earnings per share as shown in the last report.)
2. Multiply these per-share earnings by some suitable 'coefficient of quality' which will reflect:
 - a. The dividend rate and record.
 - b. The standing of the company – its size, reputation, financial position and prospects.
 - c. The type of business (e.g. an electric light company will sell at a higher multiple of earnings than a baking company).
 - d. The temper of the general market. (Bull market multipliers are larger than those used in bear markets.)

The foregoing may be summarised in the following formula: Price = earnings per share x quality coefficient.

(Graham and Dodd 1934, p. 351)

This quality coefficient or earnings capitalisation multiple became known as the Price Earnings ratio or P/E multiple.

Graham and Dodd's cynicism stemmed from the high P/E ratios achieved on some stocks during the 1920s boom years. For example, General Electric Company

traded on a P/E multiple of 95 in 1930 (Dowrie and Fuller 1950, p.500). Graham and Dodd believed that investors had lost sight of intrinsic value and were blindly following Smith's recommendation of buying a diversified portfolio of industrials that would, as in the past, outperform bonds. Smith had provided no valuation metric, so there was no idea of a cheap or dear price. Any price for 'blue chip' industrials was the right price. Although not yet formally articulated as a 'hypothesis', investors in the 1920s essentially believed in the efficiency of stock markets. There was no need to determine a share's intrinsic value; the market price was the fair price for the share, whatever that might be. As Fisher argued, 'We are in a dynamic world where the old conception of any fixed ratio of earnings to prices of stocks as a proper ratio must yield to the demands of the shifting scales of industrial effort', while 'New and promising inventions explain high P/E ratios' (both quotes, Fisher 1930 p. 90). Thus was born the new era of investment theory, 'conspicuously reticent on the mathematical side' (Graham and Dodd 1934, p. 314.).

In the UK, investors continued to think of intrinsic value in terms of dividend yields backed by earnings right up to the 1960s. Although consolidated accounts were produced from the mid-1930s on by some companies, and generally required by the 1948 Companies Act, UK analysts did not switch to P/E ratios until 1965, when corporation tax finally allowed the separation of corporate and personal taxes. By 1966, *The Economist* was using P/E ratios with aplomb: 'Holders of Jaguar A shares can reflect on a P/E ratio of under 8, the best in the industry' (*The Economist*, 12 February 1966, p.648). Prospective P/Es were also calculated, not on the most recent earnings but those expected for the year to come. *The Economist* found that: 'at 19/3d, Viyella's P/E ratio on this year's likely profits is around 25' (*The Economist*, 14 September 1968, p. 76), while the new issue of Copydex was discussed in the

context of its prospective P/E ratio (*The Economist*, 14 September 1968, p. 78). Only a few years before, new issues had still been priced, in Britain, on prospective dividend yield.¹⁷

Both value and growth schools used the P/E ratio as a key valuation metric. Value investors such as Graham and Dodd used the P/E ratio to show how the intrinsic values of low P/E shares were above their market values. Proponents of the growth school argued that high P/E was a sign of future growth and encouraged investors to buy high P/E stocks in the expectation of profiting from that future growth. By the late 1960s, the P/E ratio had become, and is still, the most common valuation metric on both sides of the Atlantic. However, today, it is generally accepted that the best method, in theory, for determining intrinsic value is discounted cash flow.

.Discounted cash flow

Estimating the present value of all future dividends (for the shareholder) or of all future operating cash flows (for the corporate acquirer) is now taught in all major investment and finance text books (e.g., Damadoran 2006; Brealey and Myers 2003; Koller *et al.* 2005), and is used in many, if not all, broking firms, as the theoretically appropriate method for determining intrinsic value. And yet, discounted cash flow as a valuation methodology has been very slow to become accepted, both in the UK and the US. In this section, we look at when discounted cash flow was first conceived, and then discuss why it took so long to be implemented in practice.

The concept of the intrinsic value of a share being the present value of all the future dividends first emerged in the mid-nineteenth century. There were two separate literatures, that of actuaries, engineers and land valuers, developing discount tables to value shares or assets according to mathematical formulae; and the

economists and academic/practitioners who came to this approach via interest rates and opportunity cost of funds. In the UK, Armstrong, a mining engineer, used discounted cash flow to value mine leases and, indeed, mining companies for flotation (Pitts 2001). Sutton (1882) prepared the first text book for the Institute of Actuaries, including a section on varying annuities.¹⁸ Todhunter (1901), an actuary, and Guild (1931), an American academic practitioner, both developed models of share prices assuming constant growth rates in perpetuities, Todhunter considering an infinite dividend stream growing at a constant rate and Guild capitalising a finite constant growth stream and the terminal value being the present value of a future P/E multiple.

The application of discounted cash flow to share valuation acquired some impetus in the US immediately prior to the Second World War. Preinreich (1938) developed a model in which earnings were expected to grow over a finite period on an expanded capital base and argued that only discounted cash flow techniques could value such growth firms correctly. Williams, generally credited with popularising the dividend valuation model, wrote his PhD on this topic whilst at Harvard University; the thesis was published as *The Theory of Investment Value* in 1938. In the preface, he defined investment value (his equivalent of intrinsic value) as ‘the present worth of future dividends, of practical importance to every investor because it is the *critical* value above which he cannot go on buying or holding, without added risk’ (Williams 1938, p. viii). In the book, he provided potential investors with ‘algebraic budgets’ using estimates concerning future growth, earnings and the capital structure of a company. However, the economist Fisher had already considered share values in present value terms (1907, 1930) and used this framework to try to explain rising prices in the 1920s:

Since every stock price represents a discounted value of the future dividends and earnings of that stock, there are four reasons that may justify a rise in the price level of stocks:

- (1) Because the earnings are continually plowed-back into business instead of being declared in dividends, this plowing-back resulting in an accumulation at compound interest, so to speak;
- (2) Because the expected earnings will increase on account of technical progress within the industry;
- (3) Because less risk is believed to attach to those earnings than formerly;
- (4) Because the 'basis' by which the discounting has been made is lowered.

(Fisher 1930, p.xxii)

In practice, the early use of the dividend valuation model was limited to simplistic growth assumptions or even no growth at all. Williams (1938) estimated a 'true' value for the common stock of General Motors Corporation. Assuming that the earnings of common stock could be expected to flatten out and fluctuate narrowly around \$3.52, and a dividend distribution of 83½ per cent of earnings (past performance, somewhat modified), he estimated 'normal' dividends of \$2.90 which, capitalized at 5¼ per cent, gave an investment value of \$55¼ (Williams 1938, pp. 395-408).

Multiples, according to Preinreich, were only appropriate in a stable world:

the time-honoured method of appraising a security through the simple process of dividing the annual earnings by the desired rate of return leads to an acceptable result only in the case of a bond or a share of stock in a corporation which has reached the limit of expansion.

(Preinreich 1938, p. 274)

Despite these developments, multiples continued to be the dominant valuation approach, although taking expected earnings and dividends into account, rather than relying on historic averages. Where forecasts were available, prospective ratios were used, as for example in pricing new issues, or future average expected earnings estimated as input into a 'normalised' or trend P/E. This did not really solve the problem of valuing companies with varying growth rates. One difficulty was obtaining tables of dividends showing different growth rates for different periods. Economists Clendenin and Van Greave (1954) produced a set of discount tables for valuing growth shares in the *Journal of Finance*; Durand (1957) and Gordon (1962) popularised the formula for infinite growth at a constant rate, sometimes referred to as 'Gordon's Growth Model.'

By the late 1960s, the 'nifty fifty' US stock market boom was in full swing. Companies such as IBM were forecast to have stratospheric future growth. The hunt was on for how to use growth valuation models in practice. Bauman (1963) published more detailed tables in a monograph entitled *Estimating the present value of common stocks by the variable rate method*. Written at the height of the stock market boom, it attempted to help investors puzzled by large gains being achievable from highly-rated stocks becoming even more highly rated, on a P/E basis, whereas there were 'only modest profits from well-entrenched high quality companies bought at prices between 12 and 16 times current earnings' (Bauman 1963, preface). Bauman argued that the present value of future dividends approach would only now begin to 'revolutionize investment thinking' for three main reasons: electronic computers, recently developed, would allow present value tables to be used to value individual stocks; the

increasingly divergent growth rates of dividends and earnings had reduced the relevance of P/E ratios and dividend yields as valuation metrics;¹⁹ and the fact that common stocks had become more popular with institutional investors meant that there were more investors ‘able and willing to use sophisticated and elaborate analytical techniques, including the present value approach, in arriving at investment decisions’ (Bauman, 1963: preface).

The valuation approach of considering shares to be worth the present value of their future dividend stream did not supplant the simpler metrics. This was partly because of the difficulty of forecasting the numbers to put into the formulae; ‘Increasing emphasis on earning power correspondingly increases the roughness of any calculation of intrinsic value, because estimation of earning power must place great emphasis on future expectations and in consequence is particularly dependent on intangible, qualitative forces’ (Dowrie and Fuller, 1950: 269-70). It was also partly due to the fact that choices of discount rate were arbitrary.²⁰ The present value approach was also blamed for over-pricing ‘growth stocks’. Graham *et al.* argued that ‘no clear-cut arithmetic sets a limit to the present value of a constantly increasing earnings power. Such values could become ‘worth’ any value set upon them by the market’ (1962: 409). Worse, ‘Our view is that in many of these cases the valuation process itself has given a speculative character to the purchase of these shares’ (Graham *et al.*, 1962: 58). Just as in the late 1990s, choice of valuation methodology appeared to influence the estimated intrinsic values and market prices of growth stocks.

The discounted cash flow model failed to really take off in the US until the 1980s and 1990s and the most recent stock market boom. The application of the Capital Asset Pricing Model, postulated in the 1960s (Sharpe, 1964; Lintner, 1965),

allowed analysts to estimate an appropriate risk-adjusted discount rate for each share's discounted cash flow valuation, replacing the ad hoc approach used by Bauman (1963) and others. And yet, most equity analysts continued to use the P/E ratio. There are a number of reasons for this. First, the number of companies to be analysed by each analyst far exceeded the number of projects analysed by any one company. Forecasting cash flows for each company being analysed was too time consuming a process. Second, the market crash of 1974 gave reason to the 'value' school once more, giving ratios another lease of life. Third, the dividend valuation model is highly sensitive to the dividend input, the more highly valued the share and the lower the dividend yield, the more sensitive the model is to small changes in estimates. Only when corporate financiers introduced the approach of valuing companies at the operating level and not the dividend level was this problem resolved (Copeland, 1990). Finally, as in the era of 'nifty fifty stocks', the share valuations of the late 1990s could not be explained by ratios. New sectors such as the Internet spawned companies with no balance sheets or earnings to speak of. Analysts were forced to turn to forecasting cash flows, and to assume high growth rates, to be able to determine values close to market prices. This trend was an international one. But it is still the case that although corporate finance analysts prefer discounted cash flow, equity analysts remain wedded to market multiples, be they price to book ratios, dividend yields or P/E ratios.

Conclusion

This chapter has traced the history of equity valuation techniques from the late nineteenth to the late twentieth century. I have shown how investors initially tried to value shares using book value and dividend yield using bond valuation techniques

applied to riskier equities. They looked for asset backing and a dividend yield higher than that for bonds, which came ahead of shares in the queue for income.

The chapter has highlighted how US analysts switched from dividend yield to earnings yield and the P/E ratio much earlier than in the UK due to a traditionally lower payout ratio and high profits during and after World War I. Edgar Laurence Smith, writing in 1925, showed how an equity portfolio would have easily outperformed a bond portfolio in the early twentieth century due to the miracle of compound growth, that is, the miracle of reinvested earnings. Investors began to value shares using Price Earnings ratios, with growth firms valued at stratospheric multiples in the boom of the late 1920s, with P/E ratios of over 100 deemed acceptable for the new high-tech industries. Plus ça change.... British analysts lagged behind, treating earnings as a backdrop to dividends, partly due to higher dividend payout ratios, partly due to poor disclosure in profit and loss accounts, partly due to complex taxation making earnings after corporate tax difficult to calculate and partly because British firms had less profits to analyse!

Discounted cash flow was recommended as early as the 1930s for equity valuation but was slow to come in as it required computer technology which was not commonly available until the 1980s I can remember trying to value a bond's cash flows using a computer the size of a room when working at an investment bank in the 1970s! But even though discounted cash flow is the methodology taught in universities and used by equity analysts, the old-fashioned methods – which offer relative values rather than intrinsic values- are still the most commonly used.

Notes

1 Investors required wealth since the high individual nominal value of shares (perhaps £100) excluded less wealthy investors from acquiring them (Jefferys 1954). Later issues of shares with nominal values of 5/- (25p) or even 1/- (5p) (in the boom year of 1927 (Thomas, 1978, p.33)) put ordinary share investment within the reach of a greater number of individuals.

2 For example, the Geo. Trollope and Colls issue of 1899 gave preferential treatment to applications from their customers, and the 1913 issue for shares in Claudius Ash Sons & Co., Limited, merchants and manufacturers of mineral teeth and dental materials, offered preferential treatment to members of the dental profession. The 1928 placing of Solignum shares was initiated by writing to the customers asking for expressions of interest (London Guildhall Library: MS18000, 1899, 1913 ,1928).

3 For example, between 1910 and 1920, the number of shareholders in United States Steel increased from 22,000 to 104,000 and, for American Telephone & Telegraph, from 35,000 to 120,000 (Sturgis, 1924, p. vi).

4 For example, The Thames Iron Works and Shipbuilding and Engineering Company was floated in 1899, the year in which it acquired John Penn & Sons.

5 For further discussion of the provision of profit and loss accounts and balance sheets by English companies in the nineteenth and twentieth centuries, see Rutterford (2011), especially Appendix I.

6 The 1929 Companies Act required information to be given on investments in subsidiaries and amounts due to and from them. Also, goodwill had to be separately stated (Edwards 1989, pp. 134-6).

7 For example, Graham and Dodd (1934: 43-4) criticised over half the ‘important enterprises’ of the United States for failing to disclose, separately, sales, net earnings, depreciation, interest charges, non-operating income, income taxes, dividends paid, and surplus adjustments, with Pocohontas Fuel Company providing no income statement at all.

8 Although the ‘times covered’ method was condemned as ‘thoroughly objectionable’ by Graham and Dodd (1934, p. 106) and criticised, much later, by the *Investors’ Chronicle* (1949: 21).

9 This industry approach began with railroads, but was soon extended to bank shares, insurance company shares, mines, and utilities, as well as industrials. For an early example, see Ward (1852).

10 Although Smith (1925) in his comparison of US common stock returns and bond returns also used short-term commercial paper as a benchmark. Raynes (1928, 1937) in comparable studies on UK data used equivalent corporate fixed interest securities from the same companies as the ordinary shares chosen.

11 Graham *et al.* 1962, p. 482) cite an average of roughly two thirds as the norm between 1871 and 1930.

12 However, allowing for reserves, the dividend policy of British firms does not seem to have differed too much in practice from that of their US counterparts.

13 Although studies by Raynes (1928) (updated in 1937) found that ordinary shares did outperform the bonds from the same industrial companies when looking at the twenty-five year period to 31 March 1927.

14 These texts were aimed at university students who were future entrants to the burgeoning security analysis industry, professionalised by the creation of the Chartered Financial Analysts and their journal, the *Financial Analysts’ Journal*.

15 Keynes compared the stock market to a beauty contest and to a casino. He believed that stock market prices were influenced more by speculative factors than by the real worth of assets (Andersen 1983-4:, p. 282) and that fair value analysis was a waste of time for all but a subset of stocks (Poitras, 2002, p.15).

16 The ‘stability’ and ‘growth’ schools still live on under the more modern pseudonyms of ‘value’ and ‘growth’.

17 Although certain sectors, such as banks and utilities, continued to be valued in terms of dividend yield (Barker, 1999).

18 Soldofsky (1966), in a survey of share valuation models, cites Sutton as the first source of varying annuity tables. Faulhaber and Baumol (1988) refer to the work of a German forester, Faustmann (1849), in which he applied present value theory to optimising the value of forestry land.

19 Graham *et al.* (1962, p. 18) had been reluctant to admit that the falling dividend payout ratio, observable from the 1940s onwards, was not a temporary phenomenon.

27 For example, in the numerous articles published in the *Financial Analysts’ Journal* and *The Journal of Finance* in the 1950s, discount rates of between 5 and 9 per cent were used, with little reason given.

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