11 The semiotic basis of financial valuation

A detour through the history of financial ideas

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11.1 Introduction

Financial assets are *sui generis* commodities, an expression initially coined by Karl Marx.[1] One can buy and sell listed securities on a market. These securities are unique in that their prices are not related to an underlying cost of production. One of the first elements of a systematic theory for the financial system is to understand the valuation process. The aim of this chapter is to discuss how financial valuation in conceived by different analytical traditions. The argument I will put forward is that financial valuation has a profound semiotic basis. This may sound like trivial point.[2] Nevertheless, the great majority of the financial theory has failed to acknowledge it.

Financial valuation is mostly perceived as a technical information-gathering process about future events. In mainstream finance, there are voluminous debates about whether this information gathering is efficient or not. However, from a linguistic point of view, any "information gathering" necessarily relies on interpretative perspectives about reality. These perspectives are semiotic organizations and can be framed as *ideologies*.[3] Valuation is thus based on systems of signs that actualize reality as much as they interpret and signify it. Semiotic approaches suggest that both knowledge and action are organized through signs. Financial valuation is ideological in the sense that it sets forth representations about our world as well as actions immanent in these interpretations.

The discussion of this chapter starts with a technical definition of the discounted cash flow formula, which serves as the starting point of the valuation of financial assets (Section 11.2). It then continues with how this formula is understood by mainstream financial theory (Section 11.3). John Maynard Keynes' approach is discussed as one that goes beyond mainstream finance (Section 11.4). Keynes' argument points towards the semiotic character of valuation but fails to make full use of the critique it embodies. The discussion proceeds to the case of John Dewing, indicating that the pragmatist tradition embodied in his work paved the way for the performative turn in the understanding of finance (Section 11.5). The essential point, however, had already been made by Marx in the late 19th century, fusing the performative nature of financial valuation with the organization of capitalism as a system of power (Section 11.6).

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11.2 The main principles of financial valuation

11.2.1 The textbook case

I will take common stock as the starting point of the discussion.[4] In technical terms, common stock is a first-level financial "derivative". Its value is based on (or "derived" from) the underlying profit-making capacity of the company, in the form of an expected income stream to be materialized in the future. This is the standard textbook definition of how a common stock is to be valued. There is thus a separation between the security itself and the underlying capacity of the firm to produce profits, or to exploit labour power, to use Marxian jargon. This separation is equivalent to a swap agreement,[5] as becomes evident in Figure 11.1. The buyer of the equity of the firm, as owner of the corresponding fraction of the equity capital, acquires the right to an anticipated future stream of distributed dividends (income flows). There is thus a swap agreement between the buyer – the investor who provides an initial money advance equal to the price of the equity M at the time of the purchase, and the seller, the company, which commits to provide a future flow of dividends DIV_t: M_1'', M_2'', M_3''…[6]

Figure 11.1 is a simple illustration of the well-known capitalization process. It also offers the standard discounted cash flow formula that appears in every finance textbook. The value M of the share (M is the amount of money that

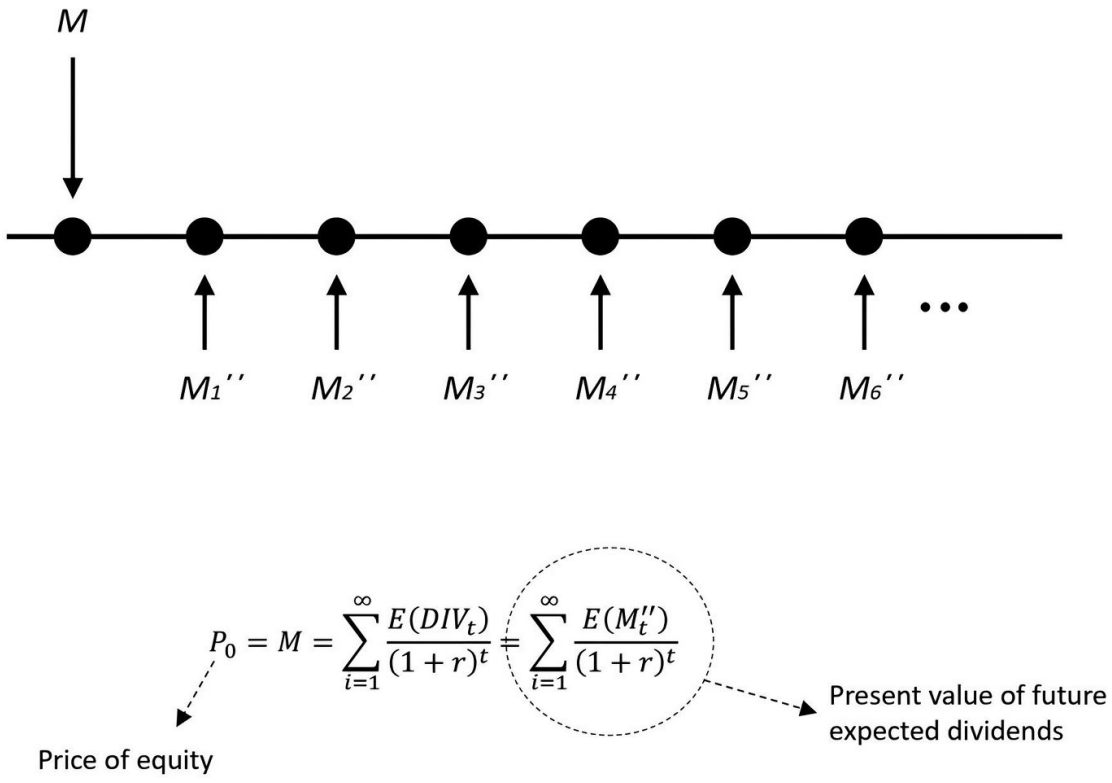

Figure 11.1 The common stock as a swap and the discounted cash flow valuation formula.

buys the equity) is equal to the present value of all possible future dividend payments M''_t on the basis of a "proper" discount interest rate r which captures the risk, as well as the perceived opportunity cost of time.

The history of this formula is perhaps as long as the history of capitalism. Actuaries, engineers and land valuers developed discount tables to value shares or assets in a practical application of the logic of the mathematical formula in Figure 11.1. Economists and practitioners came to this approach via interest rates and the opportunity cost of funds. For instance, in the UK, William Armstrong, a mining engineer, used discounted cash flow to value mine leases and, indeed, mining companies for flotation as early as 1850.[7] The development of financial markets placed the discounted cash flow model at the heart of financial transactions. The formula was explicitly developed in the 1920s by Irving Fisher and Alfred Marshall, and later in the 1930s by Paul Samuelson and Kenneth Boulding. However, the principle of capitalization had already played a key role in the analysis of Marx and Thorstein Veblen.[8]

The aim of this section is not to offer a history of the idea of capitalization, but to contrast the technical simplicity of this equation with the difficulties involved in it being applied in practice. For a long future series of income flows, even minor adjustments in the numerator or denominator can lead to extreme variations in the present value. Forecasting future profitability and the related risk (discount rate) for a series of potential economic and social events and outcomes is a very shaky and uncertain calculation. Just to offer an example, a recent article by FT Alphaville on the valuation of Tesla robotaxis illustrates the point.[9] The article suggests that the high market valuation of Tesla could be explained by the assumption that autonomous vehicles in general (and "robotaxis" in particular) could radically transform society sooner than anticipated when they are adopted in large volumes. This estimate is based on several assumptions about the potential success of autonomous vehicles (including regulation approval) and the ability of Tesla to overcome technical difficulties, competition and to deliver the perceived number of vehicles. Alternative scenarios offer very different streams of future income, and thus similarly different estimates of the fair present value of the company. Hence, the title of the article "Tesla robotaxis are worth $700bn, or $870bn, or zero".

11.2.2 A detour through Marx's analysis: From the discounted cash flow to the interest-bearing capital

Readers who are not particularly interested in Marx's analysis can skip this section. The point will complement the argument in Section 11.6.

The above principle of capitalization played a key role in Marx's analysis of the joint stock company. It is related to the well-known circuit of interest-bearing capital. The argument I will make in this section is that the circuit of interest-bearing capital in the third volume of *Das Kapital* does not illustrate the role of a fraction of the capitalist class (e.g., industrial capital in relation to banking capital) – as is usually assumed. It is rather an analytical development

of the circuit of capital discussed in the first volume of *Das Kapital* once the financial system is introduced in the exposition of Marx's conceptual system. In other words, *the circuit of capital becomes the circuit of interest-bearing capital* at a more concrete level of analysis which, according to Marx's argument, is summarized by the following expression:

$$M - \left[M - C_{Mp}^{Lp} \ldots P \ldots C' - M' \right] - \left(M + M'' \right) \tag{11.1}$$

The Formula (11.1) is a general expression embodying the circulation of commodities and money as a manifestation of the movement of capital and the related capitalist economic and social relations. It introduces a new social practice expressing the terms that allow capital as a social relationship to be actualized in the joint stock company. This practice is based on the interplay between two different roles: the "money capitalist" (=the investor) and the "functioning capitalist" (=the manager representing the capitalist firm), to use Marx's terminology (Marx 1991: 504). The realm of the functioning capitalist is the inner tier of Formula (11.1) – everything that happens within the brackets – within the capitalist company. At a very abstract level, the functioning capitalist gets a sum of money M from the money capitalist. The functioning capitalist then appears on the commodity market as the possessor of money M which is used to buy commodities (C), which consist of means of production Mp and labour power Lp. In the process of production P these commodities are "productively" used up within the domain of capital to generate an output C', whose value exceeds that of C. The functioning capitalist sells the output C' and receives a sum of money M'. Part of money M' is returned as dividend M'' to the money capitalist and the process repeats itself. We now have a full circuit, which is how production of goods is organized under the dominance of capital.

At a first sight, Formula (11.1) looks different from the discounted cash flow equation in Figure 11.1. Marx's intention is to trace the transformations of value. He adopts this perspective to make an analytical statement related to the debates of his time. Capitalist production is not just the production of useful things but a specific social relation that expresses itself in the form of money as an end in itself or "money which begets money" (Marx 1990: 256). This perspective from the viewpoint of money was appropriate for Marx's plan of exposition of categories in *Das Kapital* as well as being useful for the critiques, debates and polemics in which he wanted to engage. However, it may be misleading as a perspective of a social practice that in fact involves a range of different roles. An alternative way to capture the circuit of interest-bearing capital can thus be the following:

$$IOU - \left[M - C_{Mp}^{Lp} \ldots P \ldots C' - M' \right] \tag{11.2}$$

In Expression (11.2), which is equivalent to (11.1), the money capitalist as an investor appears as the owner of a financial title or obligation, an IOU, which has been issued by the functioning capitalist representing the capitalist company. The value of the IOU is based on certain representations of the capitalist exploitation process within the brackets. Marx (1991: ch. 25) argues that capital is fictitious, not in the form of an arbitrary detachment from capitalist production, but as a genuine representation of all social events related to exploitation. This understanding of capital as fictitious capital can be more adequately presented by a balance sheet in the context of some elementary accounting. Figure 11.2 is an extension to Equations 11.1 and 11.2 and summarizes the point. The IOU is an asset for the investor, but a liability for the company (in both cases, this is the equity of the firm). The asset appears as detached from the elements of production of surplus value (within the brackets in Formulas 11.1 and 11.2). Figure 11.2 is the everyday appearance of the circuit of interest-bearing capital. It does not follow the flow of money (as Marx did in his exposition), but makes a clear distinction between the different roles involved in the process.

11.3 Mainstream finance

It is commonplace in financial discussions, mainstream or not, to argue that markets are complex social settings, historically and culturally shaped. Financial markets co-ordinate the multiplicity of decisions made by heterogenous creditors and debtors. Attaching a value to a financial security is an action. But what sort of action?

Mainstream finance[10] adopts an empiricist problematic of knowledge discovery and information dissemination.[11] There is no semiotic interpretation involved in these processes, but only the revealing of simple and transparent truths waiting to be discovered by investors about what affects future cash flows and expected returns. This reality is assumed to be presaged in the financial valuation itself – bounded, identifiable and knowable. To discover the appropriate price, investors should accurately estimate the so-called fundamentals.

Investor (capitalist of money)			Company (functioning capitalist	
Assets	Liabilities		Assets	Liabilities
IOU			Prepayments (Lp)	IOU
			Property, plant, and equipment (Mp)	
			Raw materials (Mp)	

Figure 11.2 A balance sheet presentation of the circuit of interest-rearing capital.

Notes: Wages are assumed to be a prepayment but typically do not appear on the balance sheet. They are considered a cost and appear in the income statement. This simplified balance presents Marx's circuit of interest-bearing capital.

The latter are typically defined as the set of variables and models that determines future cash flows and the related risk, so that the discovery of fundamentals provides the "intrinsic value" of the equity. Efficient markets will then assure that this knowledge is disseminated so that the present value *M* will match the intrinsic value. In the Tesla example of the above section, the correct estimate of Tesla's present value will prevail in the market among numerous alternative scenarios. As Ross (2002: 129) put it:

> to the extent to which prices are the consequence of the actions of agents they reflect the information of those agents and, to that extent, there is nothing more that the investor can gain from analyzing prices or, for that matter, the public information available to other investors.

The "beauty" of the above neoclassical approach to finance is that it does not rely on any rational homo economicus or presumed psychological type of behaviour. All that is required are profit-seeking (so "rational") and well-resourced arbitrageurs. In liquid markets, these arbitrageurs will almost immediately eliminate any discrepancy between demand and supply and reduce aberrant price differentials to their intrinsic level.

In this line of thought, efficient markets do not imply errorless markets. This is a standard misconception of the efficient market hypothesis (EMH). Efficient markets are correct markets, *conditional* of the existing information. In fact, mainstream financial theory accepts that the future is shrouded in fog, with markets deemed efficient when they correctly reflect current information. Financial decisions necessarily rely on theories and models to allocate investment resources. These theories allow financial agents to visualize and imagine the future and thus define the economic fundamentals, which then dictate the intrinsic value for every financial asset. Economic fundamentals are not singular: different agents might set different expectations. They are also invariably incorrect, as the model-based future forecasts are never certain. The discounted cash flow model in Figure 11.1 makes it clear that stock valuations depend on estimations of the earning power of companies many years into the future. This forecast, along with the choice of a proper discount rate, will almost certainly be incorrect: "the market prices must always be wrong to some extent" (Malkiel 2011: 106). Efficient markets cannot foretell the future, but they provide the best prediction given the available information. In the above Tesla example, things in the future might be very different from the fundamental value of the company today, but this does not mean that markets are not efficient from a neoclassical point of view. *Ex ante*, the market must always be right, and valuation becomes a technical process of knowledge discovery and information gathering. Market efficiency does not imply flawless or correct markets. It simply suggests that no one person or institution can consistently know more than the market. This is a fundamental ontological condition of mainstream finance.

The conventional challenge to the efficient market hypothesis is that arbitrageurs might not be able to play their role. What if there are limits to arbitrage?[12]

If this is the case, psychological assumptions about investor rationality become important, because markets are not perfectly efficient and thus no one can guarantee that prices reflect intrinsic values. Behavioural finance essentially adopts the mainstream framework, but casts doubt on the ability of markets to effortlessly assess correctly all information in real time. Market can send persistent signals that may not reflect the best available estimate of fundamentals, and there may be reasons why arbitrageurs cannot correct these errors. This is an aspect of the ongoing internal debate on the empiricist methodology of mainstream finance.

11.4 Keynes and the invitation to semiotics

There have been thinkers – not to mention practitioners – who have felt uncomfortable with the mainstream analytical framework. Keynes was among those. My reading of his work suggests that he supported an approach that goes beyond behavioural finance: this conclusion, however, is open to debate.

The analysis of finance did not occupy a key place in Keynes' writings, but it played a key role in his professional activities. Recent research in economic history has tried to investigate Keynes' investment activities.[13] As well as investing his own money and that of his family and friends, Keynes "also advised his college, two insurance companies, Eton School, and a London-listed closed-end fund, among others" (Chambers and Kabiri 2016: 304). This widespread investment activity has led many scholars to overestimate Keynes' impact among professional investors. What is important is that Keynes was an informed and experienced investor in the context of his academic writings about financial markets. My analysis in this section relies on Keynes' approach to financial valuation as developed in the brief Chapter 12 of the *General Theory*. The reading I suggest might well be in variance with that of many of Keynes' readers who attempt to connect Keynes' argument with behavioural finance. The latter is not an unreasonable claim, but I believe that there is also an aspect of Keynes' argument that goes beyond behavioural assumptions.

The title of Chapter 12 is about "the state of long-term expectation" and the discussion is essentially devoted to the discount model of future cash flows. Keynes argues that the market is a kind of collective entity, and its valuation is typically perceived as a sign of truth.[14] This is based on the belief that arbitrage in liquid markets will allow "expert professionals" to "correct the vagaries of the ignorant individual left to himself".[15] In other words, from a purely phenomenological point of view, the EMH is the most obvious way to apprehend the workings of financial markets – it is how the activity of the market lends itself to everyday experience. However, Keynes remains sceptical of this assumption. For him, markets put forward a valuation based on *conventional beliefs* about the future. He did not use the term "belief" but insisted on the term "convention" implying that valuations are beliefs about the future.[16] Professional (experienced) investors might disagree with the conventional valuation held by the "market". However, going against the market would be very

"laborious" and without any practical use.[17] Irrespective of whether they are right or wrong in their long-term predictions, professional investors can profit only when they are able to predict shifts in conventional beliefs.[18]

The interesting part of the above argument is that it moves one step beyond behavioural finance. Keynes' argument is not necessarily based on the psychology of investors. Market valuation relies on conventional beliefs, even if markets are efficient and there are no limits to arbitrage: *fundamentals are beliefs*. In a complex reality, it is hard to tell whether the market is right or wrong, or whether sophisticated investors are right or wrong. What matters is the ability to predict market movement, with successful professional investors excelling in market timing (if this is practically possible – another issue for debate).[19] This line of approach makes a link between finance and semiotics – a critical idea that Keynes never exploited in his writings. The point is no longer about investors getting the right information, but about how this information is organized as a discourse and as a collective interpretation of reality. Belief becomes value; accurate prediction of a shift in the market belief becomes profit.

11.5 Financial valuation and performativity

Keynes' argument stretched neoclassical finance to its limit. There are only two options left. Either one retreats to the mainstream framework and assume that beliefs are fundamentals (and not vice versa), or one extends Keynes' argument to adopt a pragmatist approach. This would come in direct conflict with the empiricism that drives the discussion in mainstream thinking. What if there is mutual immanence and presupposition between the knowledge and beliefs used in financial valuation and the reality they describe? This would mean that valuation is not reflective of a pre-existing socioeconomic reality but *performative*: it provokes the reality it describes. There has been a large volume of studies discussing performativity in social sciences, a literature that has also extended to economics and to a lesser extent to finance.[20]

The origins of this performative approach to finance can be found as early as the 1920s, developing in parallel to Keynes' insights but on the other side of the Atlantic. This point has been made by Muniesa (2012) in his analysis of Dewing's pragmatist approach to financial valuation. Dewing was contemporaneous with Keynes. He was teaching at the Harvard Business School in the 1920s and 1930s, incorporating ideas related to the North American pragmatist tradition. In his writings there can be found a constructivist approach, according to which the valuation of a company stock is an act in which *both* the appraisal of the characteristics of the capitalist enterprise in terms of its value *and* the setting of the enterprise for the purpose of being valuable intermingle (Muniesa 2012: 31). The process of capitalization is thus not an invention of a formula that took place at some point in the history of capitalist development, but a practice that has always accompanied (one way or another) the existence of financial securities and the institutions which are valued.[21] It seems that the capitalist enterprise has, at its origins, the characteristics of

embodying and reflecting value, and thus this valuation process is immanent in the existence of the capitalist enterprise as a profit-making institution.

This line of reasoning implies that "information gathering" is far less important for the workings of financial markets than the criteria used for financial assessment. These criteria shape the behaviour of both the appraiser (investor) and the appraisee (firm). Put simply, market forecasting about the future profitability prospects of a listed company may be wrong or misleading, but what matters from a systemic point of view is the assessment of a company as a profit-making institution. This is an ontological condition. An interesting example in this respect comes from Chinese authorities' attempt at the end of 2022 to convince investors or the "market" to adopt a "valuation system with Chinese characteristics" and price the large state-owned enterprises according to their "socialist credentials".[22] The profound failure of this approach does not indicate so much a weakness of the Chinese authorities in relation to the depths of global financial markets, but is rather a manifestation of the impossibility of changing valuation criteria without radical shifts in the workings of social and economic institutions.

This performative approach should also embrace historical change. US financial markets in Dewing's time were different from UK financial markets on Keynes' side of the Atlantic, and both differed profoundly from the modern financial and corporate environment. US markets in the 1920s were dominated by wealthy individuals, high entry costs, a large number of defaults, and very little participation from institutional investors.[23] The nature of liquidity was different: markets were "liquid", but there could be days before any trade happened in some of the listed securities. This picture is very different from contemporary financial markets, which are dominated by institutional investors and can experience multiple of transactions before the lapse of a second. The specific historical forms in which market valuation is performed can vary substantially across countries and over time. As a matter of fact, business history research is full of examples of different national trajectories of financial innovation.

11.6 Financial valuation in a class society: Back to Marx's analysis

What has passed unnoticed in the discussions about semiotics and finance is that Marx had also brought semiotics into the analysis of valuation in the manuscripts to the third volume *Das Kapital* in the 1860s.[24] Marx was interested in explaining how the joint-stock enterprise – the site of capitalist exploitation – is performed as something natural and spontaneous by the agents involved. Equity valuation is based on systems of signs – ideological representations of reality – binding together conflicting class interests, positions, roles in which these positions are embedded. Marx's point puts forward a specific type of performativity.

All agents involved in the circuit of interest-bearing capital in Equation (11.1) are free individuals. In a simplified and abstract level of analysis, the shareholders, the manager and the workers are typically commodity owners. They appear

to engage in a series of voluntary transactions – investing, organizing the production process, selling their labour power. The most important question in Marx's analysis is how this free-will exchange comes to reproduce a system of class exploitation. To address this issue, Marx put forward a theory of fetishism. It seems that the agents who are involved in the valuation system "recognize" themselves in their corresponding roles without "realizing" that their actions reproduce the domain of capitalist exploitation. They do not realize that they unconsciously become "voluntary" bearers of different class roles and subjected positions. To use a key formulation of Marx related to fetishism from volume I of *Das Kapital*: "They do this without being aware of it" (Marx 1990: 166).[25] This idea of fetishism is also a key component in Marx's argument about the fictitious nature of capital – and thus in the understanding of financial valuation.[26]

Valuation has a semiotic basis, but as a dual process of performing actions (people recognize themselves in different roles) while misapprehending/mystifying the nature of social power relations.[27] The asset manager (typically an investment institution itself) may adopt a passive (index-tracking) or active (stock picking) approach to investment, and then rely on specific assessment norms and valuation processes to make sense of a series of social events. This creates a certain mindset, an approach to the economy and society, and to professional behaviour. The manager of the firm knows that markets oversee performance and thus will take certain actions to enhance 'efficiency' in production, organising exploitation of labour. Workers are embedded in a system of orders, directions and collaborations within the production process, accepting that if "markets" are not satisfied, the fate of their employment will be in danger. Financial valuation as a system underlying the working of financial markets shapes the identities of agents in relation to their individual circumstances. However, there is also the element of ideology that adds an illusionary element to this identification: the essence of social power will never become apparent. The performative nature of the financial valuation is possible only under the condition of withdrawing from spontaneous consciousness any reference to capitalist power.

In my work I tried to capture this aspect of finance by suggesting that it is a technology of power.[28] Despite the fact that a significant part of the critique of finance focuses on its dysfunctional aspects (exclusion, asymmetric information, manipulation and lack of understanding, etc.), in Marx's argument, the purest and least discriminatory possible form of finance will still play a fundamental role in the organization of social relations. Finance makes capital a fictitious asset, not as a detachment from the underlying reality but as semiotic representation and actualization of social power relations.

11.7 Conclusion

This chapter runs a detour through different approaches to financial valuation, arguing that pricing as a process may not be what it seems to be at first glance. If prices are signs, what do they signify?

Mainstream debates about finance do not embrace any notion of semiotics. The intrinsic value of an asset is something that exists "out there", awaiting a clever or resourceful investor to figure it out. This is why the notion of "information" becomes so central in this line of reasoning. Information is synonymous with discovery, and prices directly reflect the best available forward-looking estimate of "truth" about the economy and society. Resourceful profit-seeking arbitrageurs can reveal what the ordinary amateur investor cannot "see". Their ability to discover intrinsic values can only be blurred by institutional limitations that constrain arbitrage activity and enhance the effects of behavioural attitudes.

However, if we distance ourselves from the mainstream way of thinking about reality, the conceptual status of notions such as "fundamentals", "intrinsic value" and "information" is not neutral and transparent but always embedded in semiotic interpretations about socioeconomic events. Valuation is not so much about unearthing hidden truths but about signifying reality. These interpretations rely on socially determined and historically specific narratives and norms of thinking and meaning that evoke relevant actions and roles. Modelling of fundamentals can only be performative. If there is a discovery process, this takes place in the context of a specific understanding of the capitalist reality and actualizes behaviours related to this understanding. In this train of thought, finance as a system is less about an informed prediction of the future and more about reproducing a social setting. My analysis above made a special reference to Marx as a way to approach the performative role of valuation in a class society.

After examining a range of different analytical traditions, what clearly emerges is the impossibility of viewing finance as a system that produces price signals which coordinate economic decisions to an optimum outcome. Finance is rather a semiotic organization, playing a key role "coordinating" social positions of power and subordination to them.

How does this approach enhance our understanding of finance? I will finish this chapter with an example. After the end of World War II, when institutional investors started gaining ground in Western financial markets, many pioneers of the investment industry heralded the end of capitalism. For instance, writing in the mid-1970s, Petter Drucker (1976) argued that the US has become a "socialist country" because, through their pension funds at the time, employees owned more than a third of the equity capital of American business. This statement was long before the relative recent rise of funds that passively track a prespecified index, e.g., replicating the Dow Jones Industrial Average. "The biggest shareholders in almost every major US company are now index funds, and internationally the trend is heading the same way" (Wigglesworth 2021: 253). Intermediated ownership may have implications for corporate governance but has not posed a major threat to capitalism. Much more important than who owns the capital is how capital is signified, perceived of, and valued.

Notes

1 See Marx (1991: ch. 22).
2 The point that knowledge and action are organized through signs is well established in social theory (see Gal and Irvine 2019). A useful reference is also Deleuze's (2006) point of Foucault about performativity (see also Foucault 2003).
3 I am referring here to the work of Althusser (2014, 2017). A similar approach to ideology as a socially and historically based perspective/vision has also been used by Gal and Irvine (2019).
4 The argument can be generalized to any type of financial security. The focus on corporate equity advances the distinction between the different analytical traditions discussed in this chapter. However, from a historical point of view, bonds (debt) rather than shares (equity) were the driving force in the development of financial markets until the end of the 19th century (e.g. see Ripley 1934; Morgan and Thomas 1962; Marx 1990).
5 On this point see Sotiropoulos et al. (2013), Steinherr (2000), and Sotiropoulos and Rutterford (2014).
6 The choices of symbols here tallies with the notation used by Marx describing the circuit of interest-bearing capital as discussed below in this chapter.
7 For this point see Pitts (2001); see also Soldofsky (1966). For a comprehensive account of the history of equity valuation in the UK and the US see Rutterford (2004).
8 For a discussion see Sotiropoulos et al. (2013).
9 See FT, AT Alphaville, 18 July 2023, "Tesla robotaxis are worth $700bn, or $870bn, or zero".
10 My analysis below surveys standard arguments in the mainstream literature: see Ross (2002), Malkiel (2011), and Garber (2000).
11 I am adopting here Althusser's definition of empiricism, according to which knowledge is conceived as "part" of the real object (Althusser and Balibar 1997: 34–40) and not a discursive outcome.
12 The literature on behavioural finance is enormous. There may be institutional limits to arbitrage, or it may be that behaviour of rational people can trick or make it too risky for arbitrageurs to do their work. See, for instance, Thaler (2016) and Barberis and Thaler (2002) for a survey on behavioural finance studies.
13 See, for instance, Chambers and Kabiri (2016), Accominotti and Chambers (2016), Cristiano and Marcuzzo (2018).
14

> We are assuming, in effect, that the existing market valuation, however arrived at, is uniquely correct in relation to our existing knowledge of the facts which will influence the yield of the investment, and that it will only change in proportion to changes in this knowledge; though, philosophically speaking, it cannot be uniquely correct, since our existing knowledge does not provide a sufficient basis for a calculated mathematical expectation.
>
> (Keynes 2018: 133–134)

15 "It might have been supposed that competition between expert professionals, possessing judgment and knowledge beyond that of the average private investor, would correct the vagaries of the ignorant individual left to himself" (Keynes 2018: 135).
16

> In practice we have tacitly agreed, as a rule, to fall back on what is, in truth, a convention. The essence of this convention – though it does not, of course, work out quite so simply – lies in assuming that the existing state of affairs will continue indefinitely, except in so far as we have specific reasons to expect a change.
>
> (Keynes 2018: 133).

17

> Investment based on genuine long-term expectation is so difficult to-day as to be scarcely practicable. He who attempts it must surely lead much more laborious days and run greater risks than he who tries to guess better than the crowd how the crowd will behave; and, given equal intelligence, he may make more disastrous mistakes.
>
> (Keynes 2018: 137)

18

> For most of these persons are, in fact, largely concerned, not with making superior long-term forecasts of the probable yield of an investment over its whole life, but with foreseeing changes in the conventional basis of valuation a short time ahead of the general public. […] This battle of wits to anticipate the basis of conventional valuation a few months hence, rather than the prospective yield of an investment over a long term of years, does not even require gulls amongst the public to feed the maws of the professional; – it can be played by professionals amongst themselves.
>
> (Keynes 2018: 135–136)

19 An operation in which Keynes was not particularly successful (see Accominotti and Chambers 2016).

20 For a discussion about the application of performative approach to finance see Sotiropoulos and Rutterford (2014). Although the origin of the idea of performativity goes back to the American tradition of pragmatics, the application to social theory was revitalized by the French critical philosophy of the 1960s and 1970s with the particular influence of Foucault's work. The performativity thesis has gained some credit in economic discussions, especially in the wake of Callon's attempt to emphasize the performative aspect of economics in the late 1990s (Callon 1998). Some authors even adopt the term "Callonistics" to refer to this approach (Fine 2003; Vosselman 2014). The latter is part of a wider project, the origin of which goes back to the 1980s when Callon (1986), along with Latour (1987) and Law (1986), put forward the so-called actor network theory (Callon 2007; Latour 2005). Several authors have come up with applications of the above analytical agenda (see Callon 2007; MacKenzie et al. 2007). In the context of modern financial markets, the most influential one is definitely MacKenzie's attempt to reconsider the importance of the standard option pricing formula on the construction of derivative markets (MacKenzie and Milo 2003; Muniesa 2012).

21 See our discussion above.

22 "Investors sour on Beijing's bid to boost state-owned enterprises", *Financial Times*, 18 June 2023.

23 See Michie (1987) and O'Sullivan (2016).

24 For more discussion on this approach see Sotiropoulos et al. (2013).

25 And Marx continues:

> Commodities cannot themselves go to market and perform exchanges in their own right. […] [T]heir guardians must place themselves in relation to one another *as persons whose will resides in those objects*, and must behave in such a way that each does not appropriate the commodity of the other, and alienate his own, except through an act to which both parties consent.
>
> (Marx 1990: 178; emphasis added)

26 For a discussion of Marx's theory of fetishism see Balibar (1995). In the third volume of *Das Kapital*, Marx makes a clear connection between the concept of

fictitious capital and fetishism, an analytical link that has not been picked up in Marxian debates (see Sotiropoulos et al. 2013). According to Marx:

> Capital appears as a mysterious and self-creating source of interest, of its own increase. The thing is now already capital simply as a thing; the result of the overall reproduction process appears as a property devolving on a thing in itself […]. In interest bearing capital, therefore, this automatic fetish is elaborated into its pure form, self-valorizing value, money breeding money, and in this form it no longer bears any marks of its origin. The social relation is consummated in the relationship of a thing, money, to itself […] which is how the production of surplus-value by capital appears here. […] In this capacity of potential capital, as a means of producing profit, it becomes a commodity, but a commodity sui generis. Or, what amounts to the same, capital as capital becomes a commodity.
>
> (Marx 1991: 516, 459–60)

27 I am following here Althusser's point about ideology (see Althusser 2014, 2017).
28 See Sotiropoulos et al. (2013). For a survey of difference approaches to financialization see Sotiropoulos and Hillig (2020).

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