

Animal Spirits and Organisation*

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Abstract

The purpose of this paper is to explore the scope for analysing animal spirits as a social and cultural phenomenon which is heavily influenced by the organisational structure of firms and industries as well as by national structures. Animal spirits are considered in terms of unsubstantiated optimism, low uncertainty perception and low uncertainty aversion. We distinguish between animal spirits with respect to expanding capacity on the one hand and animal spirits with respect to innovation on the other. The first case is analysed primarily in terms of fluctuations in spontaneous optimism and uncertainty perception, while the emphasis for the second is more on the enduring dispositions of organisations and individuals. Animal spirits in both contexts are shown to be influenced by structural factors which are open to policy management.

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Introduction

Are animal spirits our best hope of getting economies out of the doldrums? And is this a core feature of the revival of Keynesian economics?

The crisis has drawn attention to a range of Keynesian concerns and Keynesian solutions which had lain in abeyance during the Great Moderation and beyond. Notably, the ability of the market system to equilibrate has again been open to question and the need for fiscal intervention recognised. But retrenchment is now well underway on both fronts. The arguments now that market forces have simply been temporarily impeded and that fiscal activism is misguided are replaying previous episodes of mainstream critique of Keynes. Arguably the success of this retrenchment is due to the fact that the Keynesian case has been weakened because of the widespread inattention to Keynes for all these years. This has meant, not only ignorance of much of the content of Keynes's ideas (e.g. with respect to the very long run), but more fundamentally that there is little understanding of the system of thought within which Keynesian concerns and policy solutions emerged and therefore of what they mean.

The purpose of this paper is to argue that the concept of animal spirits is a prime example of this phenomenon of apparently Keynesian concepts meaning something very different within a mainstream framework and therefore losing their power. By drawing instead on Keynes's framework and on other compatible frameworks it will be argued that animal spirits can be embedded in both theory and policy in a fruitful way. Engaging with animal spirits should be part of a policy mix designed to promote a *level and composition* of investment to support a full-employment level of effective demand as a

long-run strategy, not just temporary crisis management. The paper builds on and extends the analysis in Dow and Dow (2012) on animal spirits.

Animal spirits now feature in some rational expectations models as well as in public discourse (Davidson 2009: 111-2). Because, understood as a spontaneous urge to action, animal spirits are incompatible with the rationality axioms, they are exogenous to the mainstream theoretical system and treated as a random shock (see e.g. Farmer 2013). The implication is that animal spirits are a macro phenomenon – a discrete shift in expectations across the board. Their generalisation across the macroeconomy is explained by their self-fulfilling nature as the system lurches temporarily away from equilibrium. The initial shift in expectations is unexplained, but as a disturbing force it is regarded as damaging.¹ Nevertheless much hope in public discourse has been placed in such a shift occurring to lift the economy out of its slump (implicitly restoring the economy to long run equilibrium). But since they are treated as exogenous in the mainstream literature, no attempt is made to discuss how animal spirits could be influenced by policy.

But animal spirits are not widely discussed in non-mainstream circles either. Because they cannot be explained in terms of rationality (in the mainstream sense), animal spirits are generally classified as psychological and understood in individualistic terms (even if aggregated up to a macro phenomenon). Animal spirits may seem therefore to be a subjective surface phenomenon detached from real experience and real causal mechanisms. This understanding is reinforced by the impression that government efforts to rouse animal spirits in a climate of austerity amount simply to ‘spin’.

But part of the power of mainstream economics is to define concepts in its own terms. The case of ‘rationality’ is the most obvious, and is highly pertinent to our

understanding of animal spirits, which Davidson (1994: 26) classifies as being based on ‘reasonable expectations’ rather than rational expectations. Equally pervasive is the tendency to understand concepts in dualistic terms. By analysing animal spirits instead in terms of Keynes’s own framework, it will be argued in this paper that they are embedded in a Keynesian theory of knowledge and action; the rationality/psychology dichotomy of mainstream economics is inappropriate (see further Dow 2011). Further it will be argued that animal spirits are neither exclusively macro nor exclusively individual. Rather, while leaving room for human agency, we will focus on the social and organisational (structural) aspects of animal spirits which will provide a basis for policy to nurture and harness them in a constructive way. A key element of this discussion is to recognise the integral inter-relations between animal spirits and knowledge as the basis for action.

Having distinguished our approach from the mainstream association of animal spirits with irrationality, we focus on the fact that, while animal spirits can make up for lack of knowledge, and confidence in knowledge, they also condition knowledge and the confidence held in it. Knowledge and animal spirits are thus interdependent. Insofar as policy can enhance knowledge and confidence in knowledge, it will strengthen animal spirits. Strong animal spirits may in fact disguise the role they play in all non-routine action. Thus for example the asset price boom was presumed at the time to be rational. But while the norm is not for animal spirits to fly in the face of reason and evidence; they may do so if the decision-making is delusional. Such unreasonable animal spirits will eventually tend to lead to business failure; an example of generalised failure arising from such delusion is the financial crisis which emerged from 2007.

The next section sets out a Keynesian account of animal spirits. The emphasis here is on developing the concept for modern application rather than as an exercise in the history of economic thought. The aim is therefore to extend the analysis of Marchionatti (1999), Dequech (2005), and Dow and Dow (2011) (see also Dow 2013a). In principle the Keynesian concept of animal spirits has general application. While Keynes used it to refer to the motivation for business investment, here we extend the analysis not only to innovation but also (as in Dow and Dow 2011) to behaviour in the financial sector. The analysis could be extended further to the household sector, and in particular to behaviour with respect to the housing market. Such an analysis would enrich our drawing on the animal spirits concept for understanding the financial and economic crisis.

But here we simplify the analysis by restricting attention to the business and financial sectors and focusing only on two polar contexts. On the one hand we consider animal spirits with respect to expanding capacity; these fluctuate with unsubstantiated, or spontaneous, optimism, perceived uncertainty and changing dispositions. On the other hand we consider animal spirits with respect to the commitment to innovate (in new forms of organisation, technologies, techniques, practices, products and markets). These arise from the more longstanding dispositions of organisations and individuals. Animal spirits in both the senses are shown to be influenced by structural factors which are open to policy management. A critical factor to be explored for both is the capacity to ignore uncertainty (building on Dow 2013b). The discussion of the long run will include discussion of Keynes's ideas on the socialisation of investment, building on Chick and Dow (2013).

Animal Spirits in a Keynesian Framework

In *The General Theory*, animal spirits are a critical determinant of business investment and their weakness can account for an economy being unable to get out of a slump (Davidson 2009: 60-4). Keynes (1936: 161) defined animal spirits as ‘a spontaneous urge to action rather than inaction, and not as the outcome of a weighted average of quantitative benefits multiplied by quantitative probabilities’. Because he understood the market economy to be an open organic system, Keynes viewed the past as only a limited guide to the future. To help society cope in the face of the resulting uncertainty, institutions and social practices evolve to provide a more stable environment for decision-making, within which reason and evidence need to be combined with other sources of (uncertain) knowledge: conventional knowledge and the knowledge of experts (Keynes 1937). But even then, ‘individual initiative will only be adequate when reasonable calculation is supplemented and supported by animal spirits’ (Keynes 1936: 162). Indeed in Keynes’s framework behaviour which ignores the limitations on calculative rationality would itself be irrational (Kregel 1987).

Starting from Dequech’s (1999: 420, n.12) overarching definition of animal spirits as ‘the optimistic disposition to face uncertainty’, we focus on the three interrelated variables which contribute to this mental state: the expectations themselves (optimism or pessimism), the confidence held in them (the perceived degree of uncertainty) and the underlying disposition (with respect to action under uncertainty).

Optimism:

As far as expectations are concerned strong animal spirits take the form of spontaneous optimism, i.e. optimism which is not fully warranted by reason and evidence, to a degree which reflects the degree of uncertainty. While conventional knowledge can be understood as human logic applied to reason and evidence (as a social rather than individualistic phenomenon), Keynes (1936: 162) went further in identifying the importance for animal spirits of the more amorphous notion of the ‘political and social atmosphere’, a factor which Marshall and Schumpeter also identified as important for the investment decision. In discussing the relevance of atmosphere for animal spirits, Marchionatti (1999: 431) identifies it with the ‘rules of the social game’, based on a shared ideology or ‘mental model’. This aspect of animal spirits is thus embedded in expectations formation.

Perceived uncertainty:

Uncertainty in the Knightian sense arises from the absence or inaccessibility of quantifiable probabilities. But for Keynes some judgements could normally be made, at least about ordinal probabilities. Further uncertainty was a matter of degree, which depends inversely on the weight of argument, a function of the amount of relevant knowledge relative to relevant ignorance.² The identification of relevance in turn requires some kind of mental model. Keynes’s theory of probability was objective in the sense that any judgement is based on the evidence available to the decision-maker – anyone else in exactly the same position would judge the same. But it was subjective in that that position conditions judgement, so that the perception of uncertainty will vary with context. Thus the ‘rules of the social game’ and the ‘mental model’ will also influence the

weight of argument (and the perception of relevance on which it is based) and the degree of uncertainty admitted. Evidence within one ‘mental model’ may point to a high degree of uncertainty which may be ignored as irrelevant by another. Yet there is scope for perceived uncertainty to change, not just because new evidence affects the actual degree of uncertainty but because it also changes the perception of uncertainty if it challenges the prevailing mental model. Thus for example the current crisis dramatically increased awareness of the extent of reasonable uncertainty.

Disposition to face uncertainty:

This characteristic of being willing to act in spite of uncertainty is commonly associated with entrepreneurs, as an enduring disposition. Keynes considered the entrepreneurs who characterised ‘old-fashioned capitalism’ to have a particular capacity or disposition towards action. These are ‘individuals of sanguine temperament and constructive impulses who embarked on business as a way of life’ and who take ‘satisfaction (profit apart) in constructing a factory, a railway, a mine or a farm’ (Keynes 1936: 150).³ This disposition may be institutionalised within organisations which give it a strategic priority, such that it becomes an institutional disposition. The disposition to face uncertainty cannot be separated from the rules of the social game or the mental model which we saw conditioning the perception of uncertainty, so that changes within organisations can impact on the disposition to act in the face of uncertainty. The disposition to face uncertainty can apply also in areas other than physical production, notably the financial sector.⁴ But the financial sector is commonly described as being particularly averse to uncertainty, i.e. lack the disposition to face uncertainty. Fluctuating animal spirits in the

financial sector may therefore be accounted for more by changing degrees of optimism or pessimism and changing perceptions of uncertainty (low when expectations are optimistic and high when they are pessimistic) than by changing dispositions to face uncertainty.

Implications

There are some important implications of this characterisation of the constituent variables of animal spirits which we will carry forward in the discussion to follow. First, since Keynes's theory of knowledge is general (in building on the generality of uncertainty), the role of animal spirits is potentially also general.⁵ The implication is that non-routine action requires the exercise of animal spirits, in whatever context.

Second, animal spirits are not additive with respect to knowledge, but rather condition how that knowledge is understood in relation to an urge to act. In other words, animal spirits are not added in to the decision-making process after a view is formed about the nature and degree of the uncertainty to be admitted. Rather the content of expectations, the perceived uncertainty surrounding them and the willingness to act in spite of uncertainty are all interdependent. For Keynes knowledge as the basis for action therefore requires input which could be classified variously as emotional or psychological; indeed motivation itself is grounded in emotion (see further Dow 2011). Emotion and cognition are not independent. Further the relationship works both ways, since real experience influences emotion (e.g. if it reveals new realms of ignorance)

Third, animal spirits are therefore not purely psychological, nor are they necessarily individualistic, but rather involve an interplay between agency and structure. There is scope for disaggregating the nature and role of animal spirits according to

different functional groupings in the economy, as well as to different times and places, and different time-frames (Shackle 1974; Kregel 1987). Not only does structure set the parameters for decision-making processes and thus the exercise of agency, but it also determines which social game, which conventional understanding and which mental model are being applied to a particular context. In what follows we will consider in particular the implications for animal spirits of the evolution of industrial structure and of the structure of finance.

Animal spirits are endogenous to structure but also to conjuncture. We will therefore consider animal spirits within different contexts. First we consider the decision to invest in capital with a view to expanding capacity, where animal spirits vary primarily with expectations with respect to effective demand and perceived uncertainty. Then we consider innovation, where new products, techniques, markets and organisational structures are being contemplated and uncertainty is therefore more apparent (although perception of it may also be variable) and the enduring disposition to face it is more important. In each case we consider animal spirits and how they might be managed for policy purposes.

Animal Spirits and Business Investment

Keynes focused his discussion of animal spirits on entrepreneurial action in the form of new capital investment, which was critical for getting economies out of a slump Davidson (2009: 60-4). He had noted that the relative decline of owner-managership of companies meant a reduced incidence of the business way of life (Gerrard 1994: 16). This implies a change in the structural environment for the exercise of animal spirits from

the mental model and social norms of the lone entrepreneur to those of the business organisation. While individuals may still exercise agency within organisations, the character of animal spirits changes.

Indeed in business organisations the role of animal spirits may not be fully acknowledged. In chapter 11 of *The General Theory*, Keynes set out a ‘rational’ basis for capital investment by comparing the marginal efficiency of capital (*mec*) with the rate of interest. But then in chapter 12 he developed the role of animal spirits as the crucial element of the investment decision in the face of uncertainty which lies outside rational calculation. Chapter 12 portrayed the real basis for the decision while chapter 11 portrayed the rationalisation. As Keynes (1937: 114) put it in his later distillation of *The General Theory*: ‘How do we manage ... to behave in a manner which saves our faces as rational, economic men? ... [W]e largely ignore the prospect of future changes about the character of which we know nothing.’⁶

Rationalisation within the organisation is compounded by rationalisation directed at the source of funding. In chapter 12 of *The General Theory* Keynes contrasted the investment plans of business, based on long-term expectations, with the short-term expectations of the financial sector as the source of funding. Publicly-quoted companies were dependent on short-termist market valuations of investment opportunities which constrained their capacity to follow their own long-term valuations (and their animal spirits). Since then this effect of the growing incidence of publicly-quoted companies has been compounded by two further notable developments: the rising incidence of remuneration by stock options (Lazonick 2009) and the rising incidence of in-house treasury departments which have shifted the focus of these companies from capital

investment to financial investment. Over time therefore short-termism has spread into business organisations themselves. Animal spirits urging action on capital investment are competing within large firms with the animal spirits urging financial speculation. Even if the former dominate, it is necessary for these animal spirits to be shared by the stock market, in the case of publicly-quoted companies, and banks in the case of smaller companies if funding is to be attracted.

If animal spirits increasingly go unacknowledged within non-financial business, this is even more the case within the financial sector. But, while financial markets are commonly understood to be capable of pricing risk (eliminating uncertainty), in fact investment analysis and bank risk assessment both involve the critical element of judgement, with a strong input from conventional judgment.⁷ But the conviction that was widespread before the current crisis, reinforced by mainstream finance theory, was that unquantifiable risk was not relevant. If there is no perception of uncertainty then animal spirits are thought not to be relevant to action which can be based on apparently purely rational argument. But experience suggests otherwise, as in the case of the dotcom bubble. Building on analysis of that episode as one example, Tuckett (2011) explores the emotional fixation by players in financial markets on expectations of gains which increasingly departed from reason and experience. Financial markets have shown their capacity to act in spite of uncertainty which has not been recognised, on the basis of widespread conventional judgement which contradicts reason and experience (an irrational pursuit of what is misunderstood as rationality). Positive animal spirits operate through the low perception of uncertainty.

In the meantime, retail banks had traditionally handled uncertainty by building up over a long period substantial expertise in making judgements about default risk with respect to well-known clients.⁸ Taking on that default risk even then required the banks to share the urge to action of the borrower, on the basis of judgment. But structural change in finance as a result of deregulation dating from the 1970s eroded the ‘originate-and-hold’ model, centralised the lending decision such that the importance of the local knowledge base was downplayed, and shifted the focus of banks’ attention to markets in securities and derivatives. The banks’ actions increasingly took on the short-termist character of the markets in which they were increasingly involved. The exercise of banks’ animal spirits thus increasingly took the form of acquiring investments based on overblown expectations of returns on assets for which the knowledge base was weak, followed by sudden reversals.⁹ The reversal of animal spirits following the onset of crisis (due to a high degree of pessimism and a high perception of uncertainty) took the form of a marked unwillingness to extend loans to small and medium sized business, putting a major brake on the latter’s animal spirits. The attempt to increase liquidity through quantitative easing has come up against the failure of the banks to empathise with the animal spirits of the non-financial sector. Targeted government lending schemes have a better chance of success.

While in boom times real and financial investment decisions are portrayed as rational, without input from animal spirits, the central importance of animal spirits becomes apparent when they falter and fade in a recession, discouraging investment. The Keynesian policy for addressing a failure of animal spirits with respect to expanding capacity requires increasing the confidence of non-financial firms in their expectations

through a commitment to sustain effective demand, a commitment supported by public works. But it also increasingly requires attention to the structure of the financial sector and the scope for its animal spirits to follow a different path from the animal spirits of business investors or indeed to infect business investors with short-termism. Recent research on economic and financial mental states suggests that positive animal spirits can be captured in the indicator ‘excitement’ and negative animal spirits in the indicator ‘anxiety’; these in turn can be measured by quantitative discourse analysis of media texts (Tuckett et al 2013).

The animal spirits applied to investing in increased capacity are evidently the product of the onset of unsubstantiated optimism conditioning expectations and to low perceived uncertainty attached to those expectations. But the structural changes we have discussed here have indicated a secular shift in terms of the disposition to face uncertainty. This was already evident in Keynes’s day with the reduced role of the traditional entrepreneur who was characterised by a relatively strong disposition to face uncertainty. But it has been exacerbated, not only by changes within industrial organisation, but also by structural changes in the financial sector, all of which have increased the significance for animal spirits of the financial sector’s unwillingness to act in the face of uncertainty that is perceived. When a crisis dramatically increases the perception of uncertainty, the effect on animal spirits and thus on capital investment is accordingly more dramatic.

Animal Spirits and Innovation

Animal spirits are important for urging action on increasing the level of investment, because of uncertainty about the level of effective demand; Keynes's proposal for the socialisation of investment was addressed partly to sustaining aggregate demand, thus providing a more secure basis for conjunctural animal spirits. But when considering the composition of investment a major concern for ensuring continued capacity for growth is investment in innovation; innovation may be directed at new technologies, new production techniques, markets, products and organisational structures. The relevant time frame for expectations can vary from relatively short, as when the financial sector introduces a new derivative product to very long, which is the context of innovation in alternative sources of energy, for example. Keynes was concerned about the danger that the return on capital investment would fall such that a policy which succeeded in promoting a general increase in investment would be wasteful (meeting demand for luxuries rather than basic needs) without addressing the need for full employment and a more equitable distribution of income. As argued in Chick and Dow (2013) the critical issue then is the role of the state in steering, not only the level, but also the composition of investment.

Even within the organisational structure of his own time Keynes was pessimistic about the outcome of firms' investment decisions, not only with respect to scale of production but also with respect to innovation. He had concluded that private sector investment had proved itself incapable of ensuring full employment, so that capital satiety might be reached in the very long run without full employment being achieved. A failure of animal spirits in the face of uncertainty was a major element in bringing this about. But his policy of state involvement in investment was thus addressed to the

‘economic problem’ of making adequate provision for general enjoyment of the Good Life (Keynes 1930a), not just the stabilisation policy currently commonly defined as Keynesian (Seccarreccia 1995).¹⁰ He was not advocating nationalisation, but rather that:

in many cases the ideal size for the unit of control and organisation lies somewhere between the individual and the modern State. I suggest, therefore, that progress lies in the growth and the recognition of semi-autonomous bodies within the State – bodies whose criterion of action within their own field is solely the public good as they understand it, and from whose deliberations motives of private advantage are excluded (Keynes 1926: 288)

By definition innovation involves more uncertainty than does investment to change the level of output. If the latter, in Shackle’s terms, is a ‘crucial experiment’ how much more so is innovation? Further, while capital investment addressed to expanding capacity requires a push from animal spirits for it to be ‘taken off the shelf’, innovation requires a push from animal spirits to initiate a process of developing new technology, processes and products, where expectations as to outcomes evolve as the innovation process proceeds. The uncertainty surrounding the level of demand in the first case is of a lesser order than the uncertainty surrounding innovation. Further, the critical time for animal spirits to be exercised is at the beginning of the lengthy innovation process, not at the point of deciding whether or not to implement an investment project in order to increase the scale of production. Finally, since there is less pretence than in other contexts that there is no uncertainty and thus no need for animal spirits, the ‘disposition to face uncertainty’ is more directly acknowledged as an important factor. Even so this

disposition is now largely a character of organisations and a product of the social, political and economic atmosphere, rather than the sole preserve of the maverick individual.

Since the literature on innovation¹¹ places such importance on epistemological issues arising from the inherent uncertainty surrounding the innovation process, it seems that there is significant scope for considering innovation as a particular action to which animal spirits are relevant. Indeed Terzi (1999: 16-7) draws a parallel between animal spirits and Schumpeter's urge to innovate. Schumpeter (1934), like Keynes, depicted entrepreneurs as pro-active in innovation, going beyond rationality in taking steps for which the outcome was uncertain (Hagedoorn 1996). Further he carried the character of entrepreneurship over into behaviour even within large joint-stock companies (see further Langlois 1996). But he envisaged the entrepreneurial function gradually being overtaken by increasingly routine innovation practices, diminishing the role of animal spirits. There is a long tradition of discriminating between routine and non-routine decision-making according to whether or not the range of possible outcomes and the connection between choice and outcome are treated as known. Even innovation may fall into the first category when it is regarded as routine rather than creative (see e.g. Simon 1958).

Schumpeter saw large joint-stock companies as having a greater evidence base and greater cognitive skills in projecting returns on investment than smaller, owner-managed companies, as well as having greater market power. Partly this difference must be a matter of scale and organisation; the institution of the firm is itself a mechanism for addressing uncertainty. As Coase (1937: 22) put it 'It seems improbable that a firm would emerge without the existence of uncertainty' (see further Loasby 1976), and the larger the

firm the greater the scope for internalising the potential for uncertainty. The better the knowledge base and the less the exposure to disturbing external forces the more secure the basis for action and thus, apparently, the less important the role of animal spirits. As Lazonick (2013) argues further, a successful innovating enterprise will adopt an appropriate strategy and be organised in such a way as to transform its cost structure and shape market demand, thus reducing uncertainty. But large firms' strategies may not produce the desired outcome.

While the literature on entrepreneurship encourages an individualistic understanding of animal spirits, even in small firms individuals draw on the social atmosphere to which Keynes refers. The general emotional state, and therefore animal spirits, even within a large firm may be encouraged by effective leadership (see Wallis, Dollery and Crase 2009). But animal spirits in a large company are generally¹² not of the individualistic sort associated with the traditional entrepreneur, but rather embedded in the firm's mission statement and expressed in the form of business strategy and in conventional or routine behaviour. Conversely, individual creativity within a firm may be suppressed by internal struggles over resources. Or it may be discouraged by a climate of fear over career prospects because of the potential for failure which is part and parcel of innovation. Indeed business innovation strategy requires some framework or another by which to plan under uncertainty, or as Dosi (1982) argues, a firm needs to build its Kuhnian paradigm, which of course may reflect a wider industry paradigm or mental model. This plan may or may not make good provision for R&D. More generally Dequech (1999) notes the role of social conditioning in forging animal spirits.¹³

Marshall had focused on the importance of industrial organisation for entrepreneurship (Marchionatti 1999). The success of the industrial district form of organisation which Marshall advocated was due in large part to the social, political and economic atmosphere which Schumpeter, like Keynes, had also highlighted. Marshall's industrial districts allow a productive atmosphere for innovation as a positive externality. A positive atmosphere can promote innovation by encouraging spontaneous optimism, i.e. optimism not justified by rationalist logic. It can also discourage a focus on the uncertainties of knowledge. A negative atmosphere on the other hand can discourage innovation by breeding spontaneous pessimism, increased awareness of uncertainty and increased uncertainty aversion. Nelson and Winter's (1982) evolutionary approach similarly places the role of individuals and their animal spirits within organisations, whose structure is important for outcomes. They emphasise the importance of routines in large organisations as part of an evolutionary process which influences the path of technological change. The structure of industrial organisation (firm size, firm age, corporate governance etc.) is therefore important for the scope and character of animal spirits.

In accordance with this approach, Earl and Potts (2011) have developed an insightful line of argument focusing on the internal structure of organisations. They demonstrate that the conflict which Keynes had identified between the short-term calculations of financial markets and the long-term plans of entrepreneurs is now increasingly playing out within organisations in the internal relations between the accounting function and the R&D function. Where the accounting function is given precedence, the animal spirits of the R&D function are suppressed. The accounting

concern is predominantly with productivity and profitability in the short term. The concern of the creative R&D function is with exploring imagined possibilities which may prove to be fruitless. While management may be motivated to facilitate and encourage R&D with a view to long-term profitability, the psychological motivation of the innovator may accord more closely with Kelly's (1955) vision of the hypothesis tester whose concern is with making imagined possibilities into a reality. This vision has much in common with Smith's (1795) argument that the philosopher is motivated to alleviate the psychological disturbance caused by unexplained events, by means of the imagination (see further Skinner 1979).

It was Shackle's (1979: 26) view that uncertainty was endemic in innovation which creates new imagined possibilities (even if they prove in the end to be impossible). Successful innovations may well be the unintended consequence of an investigation based on uncertain expectations of a quite different outcome, where the process of innovation and the learning it entails itself change the underlying conditions. That outcomes cannot be controlled is evident, e.g. in the information technology sector which, as Janeway (2013: 79) argues, illustrates that it is often not the large, broad-based firms with innovation strategies which end up taking the lead in innovation. The disposition to act in spite of uncertainty which we associate with the traditional entrepreneur may be more evident in smaller companies where personal leadership and R&D are less constrained.

While we have considered reasons why firm size might be seen as a mechanism for reducing uncertainty, and reducing dependence of providers of finance with short time-horizons, Keynesian epistemology indicates that animal spirits are an essential

ingredient in all non-routine action. Uncertainty therefore still prevails for large companies, though its source may differ from one context to another. Schumpeter had seen the role of animal spirits in innovation being reduced with changes in industrial structure and the organisation of firms. Loasby (1999: 146) argues that Schumpeter's uncertainty differs fundamentally from Keynesian uncertainty in that it refers to the discovery of pre-existing, but hitherto unrecognised, possibilities, along the lines developed by Kirzner (1985). This contrasts with Loasby's (2011) own analysis of the entrepreneur, and of the entrepreneurial function within large organisations, which draws on Smith's division of labour in knowledge as well as in practice, as well as his emphasis on the imagination. The innovator in theory, and by implication in practice, pursues new ideas primarily (according to Smith) through making new connections

We identify this disposition to innovate as an enduring contribution to animal spirits, although fluctuations in expectations and the perception of uncertainty will cause animal spirits to vary. This disposition makes for a more enduring core of animal spirits in contrast to the animal spirits which fluctuate with the state of optimism and of confidence (for which indicators of excitement and anxiety provide evidence). Considering this disposition in terms of the individual, Smith (1776: I.2.4) argued that apparently innate characteristics in fact arise primarily from environment and experience: 'The difference between the most dissimilar characters, between a philosopher and a common street porter, for example, seems to arise not so much from nature as from habit, custom, and education'. As Loasby (1991: ch. 6) argues, innovation requires this learned disposition to be applied to defying the logic of the system within which it occurs. He therefore argued for innovators within the firm to be given greater latitude than other

employees (Loasby 1999: 28). Nevertheless some organisational structure and shared understandings are required for firms to function effectively; institutional stability and continuities in knowledge are preconditions for new connections to be made, i.e. for innovation. In order to foster innovation therefore Loasby (1991: 101) argues that what is required is 'rational structures and rational procedures, rather than rational choice'. Successful structures and procedures will encourage an institutional disposition to face up to uncertainty.

Addressing the disposition to innovate and the internal organisation of firms is only part of the picture; individual entrepreneurs and firms of all sizes function within a national institutional framework with its own systems of 'habit, custom and education'. Accordingly animal spirits in the sense of the disposition to innovate have for long been actively encouraged by national systems of innovation (Nelson ed., 1992, McKelvey 1994). While these systems may involve direct government activism in the form of promoting particular sectors, they consist more generally of the kind of 'semi-autonomous bodies' which Keynes had advocated, including universities.

A major additional factor has been the need to provide finance in the absence of sufficient private sector financial support. The structure and regulation of the financial sector and its relations with the real sector are thus important. While financial institutions may (or may not) share the animal spirits of firms deciding to increase capital investment in order to increase the scale of production, animal spirits in the form of a disposition to innovate are a different matter altogether. Financial institutions themselves are notable innovators in their own techniques, products and practices, and in this sense they exercise animal spirits on their own behalf. But they are less sanguine about financing the highly

uncertain exploratory R&D activity of their debtors.¹⁴ Animal spirits in the sense of disposition to finance the innovation of others are only relevant to specialist financial institutions which aim to pick winners and finance their start-ups with venture capital, but even venture capitalists focus on a relatively short time horizon within which to earn their return, relying on animal spirits in the stock market to push the value of their investments above what may reasonably be expected in the long term (see e.g. Janeway 2013: 130-1).¹⁵ As Keynes had argued, the financial sector is more strongly governed by the conventional understandings of markets than non-financial business.

The process of innovation itself is wasteful in that, being by its nature uncertain, most attempts will not succeed; the process is one of conjecture and refutation. Given the long time-frame for major innovation projects and the huge amounts of capital involved, the evidence suggests that the disposition to act in spite of the resulting uncertainty is generally lacking. The state has therefore had to underpin developments in key sectors such as biotech. Janeway (2013) demonstrates how the state has therefore for a long time played a central role in supporting the innovation process because of, rather than in spite of, that waste.¹⁶ (This waste is different from the waste of unemployed factors by which Keynes characterised a recession.) National innovation systems generally involve a large element of state subsidy, often indirectly, e.g. through the education system, but also directly addressed to particular R&D activities (Mazzucato 2013). But, as Lazonick and Mazzucato (2012) point out, it is the private sector providers of finance to innovating organisations which reap the rewards. As discussed above, Keynes was concerned that capital satiety would be reached before full employment and an equitable distribution of income were assured and that the animal spirits of business would be inadequate to

ameliorate this outcome; this was the case both for animal spirits over the cycle but also for enduring animal spirits in the form of the disposition to innovate in spite of uncertainty. His advocacy of further state involvement would logically imply, not only favouring innovation to support improved standards of living with an eye to the ultimate goal of the Good Life, but a more equal distribution of those benefits so that the Good Life would be open to all. While the rate of profit is falling, a maldistribution of employment and income means that the necessary conditions for the Good Life are absent for many.

Conclusion

We have been considering animal spirits as an urge to action whose strength varies with how much uncertainty is perceived and the disposition to act in spite of that perception. The distinction has been drawn between animal spirits which vary as the perception of uncertainty changes and animal spirits as an enduring disposition to act in spite of uncertainty.

Animal spirits are necessary to encourage investment in a slump, and yet that is when they are weakest. The policy implications are that action may be taken either to strengthen animal spirits or to circumvent them with public sector investment. In fact the latter is the best route to the former. If the perception of uncertainty about the economic future is high, governments can act to reduce that perception by a public commitment to stabilising effective demand backed up by public works – an improvement in the political and economic atmosphere.¹⁷ The public mood is based on conventional judgements which draw in varying degrees on reason and experience, and the perception of

uncertainty is an important element in those judgments. In contrast, if animal spirits are simply understood as irrational emotion the implication is that they can be manipulated accordingly. But from the perspective of animal spirits developed here, government ‘spin’ which has little support in reason or experience is a flimsy basis on which to aim to strengthen animal spirits.

Not only have animal spirits largely been ignored in economic theory, they are also generally unacknowledged in economic life until they falter. Yet strong animal spirits can create problems when they reflect unacknowledged uncertainty to the extent of delusion. Thus for example as the size of business organisation increases, institutional rigidities and rigidities in understanding may become more evident. Then not only uncertainty but evidence may be ignored, deluding decision makers (as discussed by Earl 1984). Where uncertainty is unacknowledged (and thus animal spirits are strong), a decision to increase the scale of production while ignoring the fact that competitors have developed superior technologies is delusional. It is similarly delusional, while ignoring uncertainty, to invest in opaque structured products whose prices are rising. While this behaviour is the product of strong animal spirits, it is generally presented as a rational choice, but with potentially catastrophic consequences when it is conventional behaviour across the financial sector. It is therefore important to understand animal spirits when they are strong as well as when they are weak, and to develop policies to curb them when they fly in the face of reason and evidence, including reason and evidence with respect to uncertainty. Our analysis implies that policy directed at changing social norms and social understandings within the financial sector, as well as a better understanding of

uncertainty, could dampen unreasonable animal spirits, fending off the next speculative boom.

Strong animal spirits in the sense of the longstanding disposition to innovate are less likely to be problematic, but are unlikely to be strong enough without state support. Weak animal spirits in this context are problematic and require a different policy approach. Given the endemic multiple uncertainties associated with innovation, we have focused here on innovative activity as an area where animal spirits are critical and where the consequences for economic growth are most important. The state has long known that it needs to support innovation because private sector finance in general is reluctant to support it alone. Indeed given the complex nature of national institutional structures it is impossible to think of extricating the role of the state. We have seen that animal spirits are not a pure psychological phenomenon but, in this context, are the product of innovation systems which extend from Adam Smith's 'habit, custom, and education' to the structure of large organisations, all of which are amenable to influence from government. That involvement in turn gives the state the opportunity to steer innovation in socially-useful directions and to distribute the fruits of successful innovation more widely.

Notes

1. General equilibrium theory requires some exogenous variable to explain movement away from long-run equilibrium. While the money supply was for a long-time identified

for this role, it was replaced by real shocks in real business cycle theory. Now some are identifying some form of irrationality (uncertainty or animal spirits) as the source of shocks.

2. See further Dequech (2005) and Dow (1995) on uncertainty perception and weight of argument.

3. The idea was current in the 1930s when Keynes was writing that entrepreneurs displayed particular characteristics (see Matthews 1984.)

4. Bearing in mind a definition of uncertainty as unquantifiable risk, it is interesting to note that the current discourse on remuneration classifies individuals within companies as ‘material risk takers’ who are compensated accordingly (see for example Financial Stability Board 2012).

5. Coddington (1982) correctly identified the general rationale for the role of animal spirits as applying potentially to all decision making. But his conclusion was that, if all decision-making were indeterminate as a result of exogenous influences on expectations, then macroeconomics would collapse into nihilism.

6. See further Dow (1991).

7. Tuckett, Chong, and Ruatti (2012) demonstrate the importance of convincing narratives for market valuation and investment decisions by fund managers.

8. Tellingly, bank lending was traditionally based on character as a more sound indicator of default risk than on project assessment.

9. This behaviour characterised the 1980s debt crisis and the 1990s S E Asia crisis, as well as the current crisis.

10. Keynes was advocating the socialisation of investment as early as 1926, in ‘The End of Laissez-faire’, and returned to the argument in the *Treatise on Money*: ‘Perhaps the ultimate solution [to the best balance between consumption and investment] lies in the rate of capital development becoming more largely an affair of state, determined by collective wisdom and long views’ (Keynes 1930b: 145).

11. See for example Loasby (1999), Lazonick and Mazzucato (2012), Janeway (2013).

12. Individual agency can sometimes be critical, as in the case of notable corporate leaders.

13. See also Gillies (2003) on the intersubjectivity of long-term expectations.

14. Innovation in the financial sector itself is arguably of a different sort from the more exploratory process of innovation in the production sector, involving less uncertainty.

15. See further Janeway (2012) for an account of the evolution of venture capital philosophies and practices.

16. John Rae (1834) was an early advocate for state support of innovation as the precondition for the division of labour.

17. The debate about the effect of Keynesian policy in the UK in the postwar period is due to the difficulty of assessing how far private sector investment was strengthened by

the government commitment to maintain full employment, a commitment which was credible even without significant public works.

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