

Governance of new product development and perceptions of responsible innovation in the financial sector: insights from an ethnographic case study

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We describe an ethnographic study within a global asset management company aimed at understanding the process and governance of new product development and perceptions of responsible innovation. We observed innovation to be incremental, with a clearly - structured stage gating model of governance involving numerous internal and external actors that was framed by regulation and co-ordinated by a small product development team. Responsible innovation was framed largely in terms of considering client needs when innovating and the understanding of operational, legal, regulatory and reputational risks. Staff perceived the company as having an inherently cautious culture, where the probability of bringing something destructive to market was perceived as being low. We conclude that the observed stage gating architecture offers considerable scope as a mechanism for systematic embedding of more broadly framed, emerging concepts of responsible innovation.

Keywords: financial innovation; new product development; responsible innovation; governance; responsibility; stage gating

1. Introduction

In this paper we investigate the process and governance of financial innovation and perceptions of responsible innovation in a global asset management company. This research sits within a broader goal to understand how theoretical concepts of responsible innovation emerging in science and technology studies and beyond (e.g., Owen et al, 2013; von Schomberg, 2013) might be framed and implemented in financial settings. To date there has been only little consideration of responsible innovation in finance (Armstrong et al, 2012; Muniesa and Lenglet, 2013) and almost no primary research.

While the academic literature suggests some possible features of contemporary financial innovation, there have in fact been few documented accounts of either the process or governance of financial innovation in commercial organisations (Frame and White, 2004). We therefore elected to take a case study approach to our research. The paper is laid out as follows: We first briefly review the literature on financial innovation and its governance. We go on to describe in detail the process and governance of financial innovation in a global asset management company undertaking significant new product development. We then describe perceptions of responsible innovation in the company before finally discussing how established innovation governance approaches in this and other commercial organisations might be enlarged to embed a more broadly - framed responsible innovation approach.

1.1. Financial Innovation and New Product Development

Innovation in finance has a long history, at least as far back as 3000 BCE with the introduction in Mesopotamia of commodity money, early forms of banking, personal loans, interest and contingency claims (Allen and Gale, 1994; Goetzmann and

Rouwenhorst, 2005; Allen and Yago, 2010). MacKenzie (2006) argues that financial innovation is a socio-technical phenomenon that has been shaped by modern economic theories of finance. Many authors (Llewellyn 1992; White 1997; Tufano 2003; Mishra 2008; Sánchez 2010; Delimatsis 2011; Gubler 2011; and Lerner and Tufano 2011) suggest it involves both the creation and popularization of new financial products, processes, markets and institutions. Innovation of financial products and services continues to play an important function in society to support (amongst other things) the provision of a medium for exchange, the funding of economic enterprise, the transfer of resources, the management of risk, the coordination of distributed decisions and the resolution of problems of asymmetric information (Merton, 1995; Muniesa and Lenglet, 2013). Financial innovation has long been a catalyst for economic, social and political change. For example, innovation of complex, structured, credit risk-shifting instruments such as asset-backed securities – collateralised debt obligations (ABS-CDOs) since the early 1990's proved important in catalysing a transition from old to new banking models (Llewellyn, 2009).

The financial crisis of 2007 - 2008 brought into sharp relief not only the functions of financial innovations for society and their benefits in terms of the efficiency of financial systems, but also their potential to co-produce complex, systemic risks and shocks that de-stabilise those systems. In analysing the liquidity crisis of 2007 - 2008 and its origins in the US subprime mortgage market, Llewellyn (2009) points to the key role played by opaque and complex financial innovations such as ABS-CDO's in destabilising the global economy when combined with globalisation, incentivisation and other factors. Others have highlighted the social and political consequences of innovations such as cross currency swaps, which played a role in the hiding of sovereign debt (Dunbar and Martinuzzi, 2012), and the inability of stakeholders to

manage the complexities that financial products like derivatives present, partly due to the idea of collective acceptance in which such financial products are valuable not because of their individual properties but because a group of people accept their status as a representation of value (Nightingale and Spears, 2010).

The potential for financial innovation to impact economies and society at transnational and intergenerational scales reflects what Hans Jonas described as the technologically-mediated ‘altered nature of human action’ in late modernity (Jonas, 1984). It has re-invigorated interest in how innovation occurs in the financial sector, how it is governed at varying scales and by whom, how potential impacts associated with innovation might be better anticipated and, where necessary, managed in a timely way – i.e., how financial innovation can be responsibly governed (Armstrong et al., 2012).

There has been surprisingly little empirical research on the process and governance of financial innovation. Frame and White (2004) identify some empirical studies published prior to 2002, but most of these focused on aspects of the ‘back-end’ of the innovation process like diffusion, the characteristics of adopters, and the impact of innovation on firm profitability, with little published empirical research aimed at understanding how innovations arise and why. As with other forms of innovation, financial innovation is a process that can be managed (Tidd et al., 2005; Tidd and Bessant, 2009), using approaches that are well established in the new product development literature and beyond (e.g., stage gating; see Cooper, 1990). However, there have been few documented accounts of such strategic innovation management approaches in the financial sector. In total, the contemporary financial innovation process and its governance remain poorly characterised.

The academic literature and other secondary sources of information (e.g., Llewellyn, 1992; Allen and Gale, 1994; Tufano, 2003; Vermeulen, 2004)) suggest several features of contemporary financial innovation: a) It is often an incremental and recombinant process (Llewellyn, 1992; Allen and Gale, 1994; Lerner and Tufano, 2011), but one associated with rapid diffusivity in the market place upon launch of new products or processes (Llewellyn, 1992); b) The lead time for innovation is often short: Drew (1995) and Beard and Dougan (2004) suggest an average lead time of just 12 months, potentially presenting an extreme case of the dilemma of control (Collingridge, 1980; see below); c) Innovation is generally an informal process, with little evidence of common, or systematically used governance frameworks (Sundbo, 1997; Armstrong et al., 2012; Muniesa and Lenglet, 2013); d) It can involve multiple stakeholders, including financial and non-financial firms, governments, markets and exchanges and technology-related companies (Allen and Gale, 1994; Duffie and Rahi, 1995; Merton, 1995; Ferguson, 2008): there is little documented understanding of how they operate and interact. The extent to which these features are generalisable – noting that innovation occurs across quite different financial sectors that range from asset management to insurance – also remains little explored from an empirical perspective.

1.2. Governance of financial innovation

There is no formal definition of governance in the context of financial innovation. More broadly, governance is a multi-level concept that varies in use and application (Rhodes, 1996; Rhodes, 1997; Stoker, 1998; and Rhodes, 2007). There is common understanding that authority, invested in an individual(s) or an institution, is necessary (Kooiman, 1993; Stoker, 1998; Kaufmann et al., 1999; Lynn et al., 2000). We can consider governance of financial innovation as relating to the processes and mechanisms used by stakeholders to manage and oversee the creation, development and commercialisation of

financial products and services, and the activities of appointed individuals and/or institutions charged with steering innovation activity in that sector (Stoker, 1998). Governance of financial innovation should not be confused with financial sector governance, which refers to the ‘framework of rules aimed at overseeing how financial institutions undertake and organise financial transactions within and across borders’ (Germain, 2010: 27). The concepts are linked, however, unlike governance of financial innovation, financial sector governance focuses on ensuring law and order in *financial activity*. It does not specifically consider how innovations in the financial sector are governed from ideation to commercialisation.

Although financial innovation has existed for many centuries, specific mechanisms for its governance outwardly appear to be lacking. However, as we will describe, *contextual legislation* that frames and has a bearing upon the innovation process may be both present and comprehensive, at least in the specific context we investigated. Such governance of the financial sector, in the form of legal frameworks and policies, dates back many years (Redfield, 1986; Levi, 1987; Gilligan, 1993; Benmelech and Moskowitz, 2010). These internal and external governing systems, focused as they are on financial activity, emphasize the regulation of the products of financial innovation after development and distribution, sometimes decades or even centuries after this has occurred. Governance of the financial sector rests on two approaches (Table 1) – statutory regulation and self-regulation (Stefanadis, 2003; Awrey, 2011). While statutory regulation is established, imposed and enforced by a higher authority – often an independent government agency, central bank or similar institution – self-regulation allows the sector itself to specify, administer and enforce policies (Bartle and Vass, 2005). Cox (2008) suggests self-regulation is preferred by financial institutions and regulators alike as an initial governance approach, and that the

introduction or amendment of statutory regulation occurs when the former is perceived as having failed. Although both approaches involve the establishment of rules, requirements, standards and guidelines to govern the behaviour of financial institutions, they differ in terms of use and enforcement.

Enforcement of statutory regulation is usually the responsibility of government, but this role is normally administered on its behalf by a central bank, or agency such as the Securities and Exchange Commission in the United States, the European Securities and Markets Authority in the European Union, the Financial Conduct Authority (FCA) in the United Kingdom, or the Financial Services Agency in Japan (Crowe and Meade, 2007; Donato et al., 2007; Stefano, 2010; Raptis, 2012). In contrast, policies established through self-regulation are administered and enforced by independent, self-regulatory organisations such as the New York Stock Exchange and the National Association of Securities Dealers (Stefanadis, 2003), and / or through corporate governance frameworks comprising management, boards of directors, internal and external auditors and shareholders (Erturk et al., 2004; Li et al., 2008).

In contrast with the financial sector, others sectors like chemicals and pharmaceuticals have clearly specified institutions accountable for external governance and oversight of innovation. These institutions enforce 'data before market' regulations, often underpinned by risk assessments. While such regulation has been suggested for new products across the financial sector (Crotty and Epstein, 2009; Mullineux, 2010; Allen, 2013), there are no plans to systematically introduce this (Pesendorfer, 2012), and any developments are likely to be slow (O'Riordan and Cameron, 1994).

In 2006, China introduced policy guidelines on financial innovation for commercial banks (Loechel et al., 2010), emphasising the need for strong capitalization, sound corporate governance structures, good understanding of risks and prudent internal

controls (Loechel et al., 2010). The EU has also recently established a Standing Committee on Financial Innovation (SCFI) under the European Banking Authority's regulation (EBA, 2012), aimed at improving transparency, simplicity and fairness in financial markets. It monitors new and existing financial innovations and develops a coordinated approach to the regulatory and supervisory treatment of new or innovative financial activities, creating common methodologies to assess the effect of product characteristics and distribution processes on the financial positions of institutions (EBA, 2012). The SCFI is expected to prepare a yearly report highlighting areas of concern with regard to consumer protection and financial innovation for use by the EBA and national supervisory authorities (EBA, 2012). It has identified key areas of concern in the industry – namely indebtedness and responsible lending, security and fraud issues - with regard to new banking and payment technologies and complex financial products (EBA, 2013a). This has led some National Competent Authorities within the EU to take actions including new risk labelling of complex products and a voluntary industry undertaking not to distribute certain complex products to retail investors in their jurisdictions (EBA, 2013a). Furthermore, the EBA and other supervisory agencies have actively begun to facilitate open discussions that include issues of consumer protection and financial innovation (e.g., an annual Consumer Protection Day; see EBA, 2013b). Discussions have included whether national regulatory agencies should have greater powers to intervene and impose restrictions on product features where necessary as part of the broader innovation process of product design, governance and distribution (EBA, 2013b).

There are few documented accounts of non - regulatory governance of financial innovation in commercial organisations. Armstrong et al. (2012) and Muniesa and Lenglet (2013) recently suggested a role for New Product Development Committees

within companies, but the extent to which such committees exist or are used is unclear. Within the literature, established mechanisms of corporate governance, oversight and monitoring (such as periodic audits and assessments, codes of conduct, internal controls, certification and rating schemes) do not appear to relate specifically to financial innovation, and systematic forms of monitoring do not appear to exist.

In total, it appears that financial innovation falls into a governance void. However, this perception may reflect the paucity of published literature in the field, and in particular the lack of empirical studies undertaken in companies themselves. As such, the extent to which the situation is a governance void or information void remains unclear.

1.3. The ‘dilemma of control’, anticipatory governance and responsible innovation

In liberal market economies, expression of market choice directs goods and services resulting from innovation to their most desired end use (Lee and Petts, 2013). This approach has, however, failed – sometimes spectacularly – to prevent undesirable consequences associated with innovation. The financial sector, among others, has therefore been subject to the progressive introduction of *post – hoc* interventions in the form of regulation (see above). Market choice supported by retrospectively - applied regulation presents a well-known ‘dilemma of control’ (Collingridge, 1980). While understanding of the nature of risks and benefits of financial innovations may emerge from their use ‘in real world practice and on a large scale for a considerable period of time’ (Merton, 1995b), by the time sufficient knowledge has become available concerning the nature and risk(s) of the impacts of an innovation, such impacts may have already occurred. The innovation may also have become ‘locked in’, with limited ability for control (e.g. through regulation) without significant financial, social or other

costs and/ or resistance from vested interests. Lock in and path dependency, sometimes fuelled by incentives and organisational culture, may serve to close down options to modulate, shape or control innovation (Stirling, 2008). Conversely, during the earlier stages of innovation there may be greater opportunity for modulation and control. However, at these stages there is far greater uncertainty concerning the nature and magnitude of potential impacts, and the evidence to make the case for control (or not) may be lacking. This dilemma forces a discussion concerning how to proceed under conditions in which adventure, precaution, risk, benefit, values, ambiguity, uncertainty, ignorance, contingency and the status of knowledge must all be carefully balanced.

There is a rich literature, particularly in science and technology studies, aimed at understanding how science, technologies and innovation can be governed under such conditions. This includes concepts of *de facto* governance (Kearnes and Rip, 2009) – e.g., ‘boundary work’ through reports from learned institutions – and multi-level governance, including various forms of technology assessment (Schot and Rip, 1996; Guston and Sarewitz, 2002), anticipatory governance (Barben et al., 2008), ‘midstream modulation’ (Fisher et al., 2006) and responsible innovation (Armstrong et al., 2012; Owen et al., 2012; Muniesa and Lenglet, 2013; Owen et al., 2013; Stilgoe et al., 2013; von Schomberg, 2013). These concepts variously attempt to address the dilemma of control, while also seeking to enlarge the role responsibilities and accountabilities (Jasanoff, 2003) of scientists and innovators to include a broader moral and ethical dimension (Douglas, 2003; Mitcham, 2003), empowering a measure of social agency in technological choice (Stirling, 2008). Such approaches acknowledge ignorance and uncertainty as being inherent features of innovation that governance must take into account. They emphasize as much the framing(s) and purposes of innovation, and the underlying motivations and values on which innovation is based, as the identification

and where necessary management of risks associated with unanticipated or unintended impacts.

We have built on such concepts to articulate a generic framework for responsible innovation (Owen et al., 2013; Stilgoe et al., 2013) based on integrated dimensions of anticipation, reflexivity and broadly configured, inclusive deliberation coupled to mechanisms of institutional responsiveness (see Box 1). This approach offers one way of framing our empirical research concerning perceptions of responsible financial innovation.

2. Methodological Approach

2.1. Case study description

We undertook the research at Fidelity Worldwide Investment, a large, privately- owned global asset management company founded in the 1960s. Its business is primarily involved in developing and managing assets (e.g., funds) and associated resources on behalf of clients. Its roughly 5600 employees operate in 24 countries and manage more than \$217 billion in assets. Targeting retail as well as institutional investors, the company offers platform services that facilitate savings, pension planning and investments for clients while upholding the company's values of trust, entrepreneurial thinking, integrity and action. These values are embedded in the organisation's culture and influence recruitment, training and remuneration.

Fidelity's substantive area of innovation occurs in fund development and trading. Briefly, the company develops or modifies funds, which are then traded as shares by its Investment Management (IM) team. In an iterative manner, trading information is then fed into an accounting system to record trades. Trades are subsequently priced by a Fund Accounting (FA) team, who aggregate prices for all

trades associated with that fund daily to determine its overall value. This information is then passed on to an Operations (OPS) team, who calculate and confirm the number of shares that can subsequently be traded by the IM team the next day. They then carry out further trades based on the new price and information provided.

The company adheres to policies that support compliance with anti-corruption and bribery laws and, through a Code of Ethics, policies on Giving and Receiving, Due Diligence, and Anti-Money Laundering. These policies provide the foundation for a corporate governance framework for monitoring, reporting and escalation of compliance with relevant laws. The company is a signatory to the United Nations Principles for Responsible Investment; therefore, it considers Environmental, Social and Governance (ESG) issues during the idea generation stage (see section 3.1 and 3.2.1 below) of the innovation process. However, the company does not actively screen out companies from its investment portfolio purely on the grounds of poor ESG performance, choosing instead to adopt a positive engagement approach whereby these issues are discussed with the management of the companies in which it invests or considers investing in. Information gathered during these meetings is used both to inform investment decisions and also to encourage company management to improve policies and procedures.

2.2. *Ethnography*

Given the paucity of previous research, we chose a qualitative ethnographic approach that places emphasis on the identification of findings verifiable by observation (Thomas, 2003; Neyland, 2007; Eberle and Maeder, 2010; Brannan et al., 2012; Watson, 2012). Given the relatively rapid NPD process within the company, we adopted a ‘compressed time mode’ approach proposed by Jeffrey and Troman (2004) rather than the more traditional long-term approach to ethnographic research (Neyland, 2007). This

approach ‘involves a short period of intense ethnographic research in which researchers inhabit a research site almost permanently for anything from a few days to a month’ (Jeffrey and Troman, 2004: 538). Our study took place over three months, with six weeks spent in-house and six weeks spent using teleconferencing and electronic media, during which period the company developed and launched a major new financial product (fund). The research took the form of non- participant observation within the organisation, with close access to actors and institutional processes as innovation occurred in real time.

Specifically, observations, supported by detailed field notes, were undertaken within those company departments identified as being engaged in financial innovation and its governance. Understanding of organisational values and observation of behaviour and activities of employees was undertaken, including idea generation/brainstorming sessions, product development and decision making processes, and product/service launches. Field notes were organised *in situ* (Jeffrey and Troman, 2004) to contextualise observations in relation to previous observations and gaps in observational material (Neyland, 2007). Observational data were complemented by semi-structured interviews and a review of relevant documents supplied by the company (Neyland, 2007), with complete access being provided. These included meeting agendas, minutes and organisational structure charts relating to the process and governance of financial innovation in the organisation. In-depth interviews, 30 to 45 minutes in length and based on open-ended questions, were conducted with 18 senior and middle management employees in which interviewees were allowed to freely share their feelings, opinions and experiences (Milena et al., 2008) about the innovation process, its governance and perceptions of responsibilities / responsible innovation. A seminar workshop was conducted at the company after analysis of the results in which

staff from the Product Development team and other departments were asked to comment on the factual accuracy of the results in terms of the processes of innovation and its governance and to provide feedback on our interpretation and conclusions.

3. Results

3.1. *The innovation environment: overview*

The company has four regionally-based Product Development (PD) teams – in the UK (where the researcher was based), continental Europe (Luxembourg), Asia (Hong Kong) and Japan. Each PD team comprises a small group – normally between three and seven people – who are responsible for overseeing products domiciled within their regions and who act as ‘gate keepers’ for products that are ‘passported’ in to their region for distribution purposes. PD team members include a Head (e.g., Head of Product Development, UK) and other employees with the job title (senior) Project Manager whose roles are similar, but are applied to different funds. Their roles are primarily one of *coordination of activities*, co-ordinating all stakeholders involved in various aspects of the innovation process to ensure a successful new product launch. Their daily activities include chairing and/or attending meetings, monitoring stakeholder activity related to the innovation process, and preparing all documentation pertaining to product development and launch. These innovation activities generally last between three and eighteen months after first level of approval to launch (Figure 1) depending on whether, for example, product testing is required. Decision making and authority is distributed equally among the heads of regionally-based PD groups. Teams hold weekly telephone conferences to facilitate information sharing and to co-ordinate new launches. New product development is thereby co-ordinated on a global scale.

Innovation was generally of an *incremental nature* and confined to the product-process innovation space (Tidd and Bessant, 2009), involving small changes to investment products (e.g., changes to investment objectives, risk levels, investment duration, target markets, etc.) and service offerings (e.g., changes to features of web-based platforms). Although incremental, these changes accumulate to result in significant changes within the organisation and its offerings. Product innovations include the development and launch of new funds, while process innovations relate to improvements in how things are done and how customers interact with the company. These two types of innovation are carried out independently of each other, but they are linked as the development of new products must support existing service offering media and vice versa.

We identified a loosely designed but structured approach to innovation (Figure 1) with distinct phases of idea generation, product testing, business acceptance case development, product building, launch and post launch review. We now describe this process and its governance in detail.

3.2. Innovation process and governance: detailed description (Figure 1)

Since funds are legal entities in themselves, there is a need to properly manage them for success. A *stage gating model of innovation governance* was observed in which activities and progressive investment were phased from idea to launch, and punctuated by periodic approval points, or decision gates. These innovation activities and decision gates involved stakeholders from multiple departments within and beyond the UK, supported by members of the PD team who performed a cross departmental coordinating role, and who interfaced with external actors (e.g., Financial Conduct Authority, FCA).

3.2.1 *Idea Generation*

In principle, generation of new product ideas in the organisation is open to all employees through the use of a central email address for idea collection and monitoring, although we noted that staff preferred a more informal approach based on personal interaction. For retail products, ideas were observed to be mainly *client - driven*, primarily via customer feedback. As the UK Head of PD stated, 'customers need something different; hence the motivation for innovation is to satisfy customers'. Institutional investors were also noted to be involved directly or indirectly (through consultants/professional advisors) in the co-designing of products and defining of the product brief. Research conducted on the market environment and global trends and competition within the industry were additional drivers of innovation.

Using informal setups, emerging ideas were observed to be analysed and refined by way of brainstorming, discussions and negotiations within and between departments in order to determine viability. Although members of the PD team are key stakeholders in the idea generation process, very few ideas actually originate there; instead, their participation extends to *assessing ideas* suggested by other departments and *amending these* during the overall process with the goals of feasibility and viability. In summary ideation was observed to be an organic, bottom - up process in which the PD team were observed to provide a co-ordination, assessment and stewardship role.

3.2.2 *Idea approval and testing*

Once ideas have been discussed and finalized, a pre-designed 'term sheet' is completed by the PD project manager for sign off by the Head of Product Development and submission to a Product Strategic Group (PSG) for approval. This approval constitutes the first formal 'decision gate'. PSG is made up of senior managers from various

departments who meet monthly. Submissions are required to have a business and investment sponsor (i.e., a senior manager) who provides backing for the new product or project. The PSG reviews and approves the term sheet, assessing the fit to the strategic objectives of the company. It decides whether there is a requirement for further analysis and/or testing, or whether progression can occur directly to development of a Business Acceptance Case (BAC; see below). Decisions to test were observed to be based on four considerations – *organisational capability, complexity of operationalization, financial return and customer demand*. Testing normally occurs only for what are considered to be either a ‘new’ product, i.e., a product that the organisation has not launched before (subsequently referred to as *product pilots*), or a product that will be run by a new portfolio manager (subsequently referred to as *capability pilots*).

The creation of a product pilot fund involves the use of company (rather than client) money. The timeframe from PSG approval to launch of the new product is 3-6 months where there is no testing, and a further 6-12 months where testing is required. A product pilot that is found to be unsuccessful and /or not relevant to the market may be extended for purposes of training and systems testing, for up to ten years. The purpose of the testing phase is to check whether the product is viable, or to check the portfolio manager’s capability to run the fund. The pilot testing phase was therefore described by one staff member as: ‘an incubator for testing new product ideas, testing systems and developing people’. Other staff made an analogy to ‘early phase trials of pharmaceuticals’ prior to authorisation. Recently, the company has begun to engage with clients as part of the testing phase, involving them in assessing new product ideas and marketing messages aimed at determining the target audience and demand for

products, whether the product proposition is understood, and whether clients understand the risks and benefits of the product.

Success for the testing phase is based on the product meeting success criteria set for that particular pilot fund, which are articulated using a pilot success criteria template defined very early on in the testing phase. The criteria are reviewed periodically throughout the test phase at ‘pilot success criteria’ meetings, which review the overall experience of running and/or supporting a pilot fund and determine whether pilot funds should either be progressed to BAC approval with a view to being launched, be redefined, be recommended for continued testing, or be closed. Other formal meetings are also held to agree on dates and resources and consider operational issues such as content of the investment proposition and marketing considerations. The testing period is therefore an active period of institutional reflection and deliberation, the outcome of which is significant in terms of pursuing the original idea or not.

3.2.3. Business Acceptance Case preparation and approval

An important part of the innovation governance process is the preparation of a Business Acceptance Case (BAC), which must be submitted to a formal Product Review Group (PRG) for approval. This submission constitutes the second decision gate in the innovation process.

Assembling this submission involves multiple departments, but the BAC itself is owned by the PD team who, using the term sheet described above, facilitate the information gathering process. The term sheet provides initial information later used by the assigned project manager within the PD team to initiate the BAC. Gaps in the template are filled through an informal but effective process of iterative email discussions involving various internal stakeholders (e.g., legal, investment compliance, investment management, portfolio manager, marketing and sales) immediately after

approval to proceed, directly or indirectly via pilot testing, to the BAC level. All the stakeholders then sign off and the regional head of product development gives approval for submission to the PRG for consideration. It is important to note that information contained in the BAC is comprehensive, including: the drivers and motivations for a new product; how the product will be positioned in the market; the investment aim of the product (e.g., to provide long term capital growth) and how it intends to achieve that; the product's proposed launch date; any risk considerations (including methodology used for measuring risk); regulatory considerations; and any operational aspects (such as the capacity of the company to manage the product) or financial considerations (e.g., asset growth and cost revenue analysis). A new product idea rejected at the PRG level may return to the BAC development stage for amendment and re-submission at a later date.

The PRG meeting is a critical governance point in the innovation process. Its role extends beyond new product approval to encompass aspects of existing products, including review of fund pricing, seed capital usage, asset delivery and investment capacity. It is guided by a set of principles that includes the need to have an investment and distribution sponsor, a tangible cost/benefit analysis, three year sales estimates, relevant competitor analysis and due consideration of 'Treating Customers Fairly' (see below). Participants are normally senior managers from various aspects of the business, e.g., PD, legal and compliance, investment management, fund accounting, operations and marketing/distribution. Presentations to the PRG are made by the business and investment sponsors and focus on describing the new product proposal as well as explaining the rationale/motivation and the strategy put in place to ensure its successful build and launch. Each presentation is followed by intense discussion, challenging, clarification and questioning.

In one of such meeting, questions asked included: ‘How was the pilot done?’, ‘What target is achievable in the projections stated in the business case?’ and ‘How did you determine the potential impacts of fee increases?’ The PRG, which was described by the head of PD, UK as ‘the gateway and control body when it comes to governance’, was acknowledged as a key location for thorough discussion and oversight. One of the members of this committee noted that ‘this forum occurs early in the innovation process and key decisions are made at a time when you do not know much about the new product; hence, how well the PRG works is partly dependent on who is on it and who is involved’.

3.2.4. *Building of Product*

The product building phase of the innovation process is initiated after BAC approval and is a technical one involving several departments (e.g. FA, IM, OPS). It generally involves setting up the new fund as a legal entity, obtaining codes (both internal and external) and identifiers for the fund, and using this information to set it up on the necessary systems within and beyond the organisation. The process is initiated by a project manager in the PD team, who gains approval for seed capital for the fund and takes on a sense of ownership to facilitate continuity throughout the whole process, forming a *project committee team* after the new product has been approved by the PRG that consists of at least one representative from the departments involved in the build phase. This team will meet throughout the remainder of the innovation process until several weeks after product launch. Meetings are short and there is relatively little discussion. The agenda consists of brief task update reports and includes feedback on FCA filing and approval (see below), sign up with new providers, fund and account set ups, and challenges and their potential impact on timelines. One such meeting lasted for just 18 minutes, with participants providing short reports such as ‘everything is on

target’, ‘account numbers are ready’, ‘all funds have been set up and dummy transactions loaded today’, and ‘FCA authorization has gone through today’. For larger products, a *project steering committee* may also be convened as an additional form of oversight to which the project committee team will report. Involving senior managers, this committee is a location for more detailed questioning and discussion of operational issues, risks, and their implications for the business and its customers.

During the build stage, approval is sought from the fund’s custodian/trustee (i.e., the financial institution tasked with the responsibility of safeguarding a firm’s assets) and a detailed prospectus is prepared and submitted to the FCA for approval. Tax authorities (e.g., Her Majesty’s Revenue and Customs, HMRC) and external auditors also play a role in external governance, although their involvement is limited to specific product types (for HMRC) and occurs post product launch (for auditors). Via representation on the project committee team, the legal and compliance team is continuously involved in the building phase of the innovation process, explaining to the FCA which new products the company is planning to introduce, preparing all necessary legal documents for submission, and arranging contracts with external parties. Their participation at the end of the building phase includes ensuring compliance to marketing and/or distribution rules. Their role in monitoring compliance extends beyond the product building phase to the innovation process as a whole by way of identifying and considering possible risks and questioning whether new products treat customers fairly and deliver what customers want. This process includes PRG meetings in which the approval of a new product is contingent upon compliance with necessary regulatory requirements.

3.2.5. Final Board Approval

The Board of Directors’ meeting serves as the third and final formal decision gate prior

to launch of a new product. As with the PRG, decisions made by Directors are based on review and careful consideration of any issues mentioned in the BAC, which in turn builds on the initial term sheet. It serves as a double check and is often a quick and straightforward process with limited discussion and challenge since it is expected that by this stage any issues have been addressed. The Board meeting sometimes occurs very close to the product launch date, in some cases within several days.

3.2.6. Product Launch

The launch phase makes new funds, new platforms/user interfaces and other product and process innovations available for use; it is not a specific launch event. The marketing team play a key role, contributing to the messaging and marketing proposition (with consideration of the intended outcome, investment approach and make-up of the product) and preparing question-and-answer hand-outs for the new product or process. These and other nested activities, including conversations with rating agencies, analyses of competitors, internal training and sales events, and advertising campaigns, begin weeks before the launch. Guided by a four-step process of ‘awareness, conviction, purchase and review’, these activities aim to get new products and services to clients effectively.

3.2.7. Post Launch Review/ Benefits Realization

Between six and twelve months after launch, a post launch review phase (for new products) or benefits realisation review (for process innovations) begins, involving an assessment of performance and fit with respect to the BAC. This assessment aims to ensure that funds are behaving in the way originally communicated to customers and that financial projections have been achieved. If a major issue is identified that could constitute a breach of what was promised to customers, it must be taken back to the

various governing bodies (e.g., the PRG) for possible remedial action.

3.3. *Supporting tools*

We observed innovation to be supported by a document-based, checklist-orientated approach, reflecting the complex, multi-stakeholder nature of the innovation process and the multiple interdependencies that exist among various actors. Examples in addition to the term sheet and BAC document described above include initiation of a ‘*RIAD*’ register after PRG approval to (1) summarize risks (R) and issues (I) identified with regard to a new product/project and (2) monitor the progress made on these in terms of actions (A) and decisions (D), supported by a *key decisions log* summarizing key decisions taken on risk/issues identified. A *fund launch checklist* is used and updated during the build phase to guide the gathering of information concerning a new product and monitor progress of activities. A *Treating Customers Fairly* (TCF) log guides decision making very early on in the innovation process and is prepared and submitted as part of the BAC approval process (see below). The TCF is also updated during the build phase as new issues arise and is useful in influencing decision making at the Board level. Unlike other documents, the TCF log is relatively simple in that it attempts to answer just four questions: Is the product/service designed to meet the needs of the target audience? Are the proposed fees fair, transparent and reasonable? Will the product deliver on what it says it will deliver? What are key risks of the product/service from an investor perspective? The PD product manager provides initial answers to these questions based on his/her subjective opinion and experience, after which answers are subjected to further review and sign off at PRG. More generally, the use of *automated control systems with inbuilt rules* is also a widespread feature in those departments carrying out the numerous technical activities that occur during the build phase of the innovation process, particularly those activities related to the control of

pricing, which is set to automatically flag up or discard discrepancies outside predefined limits which must then be signed off.

3.4 Risk Assessment and Management

The characterisation and communication of *investment risks* to clients is a fiduciary responsibility of the organisation. Investment risk management falls under the IM department, which calculates all risk measures related to products across all asset classes and makes sure that communication processes with clients reflect these assessments. The likelihood of, and associated level of confidence in, certain investment outcomes occurring are estimated, using methods that include historical and normal distribution analysis, stress testing and educated guesses. The risk identification and assessment process normally commences with assessment of known risks for the type of products the organisation trades in (e.g., default risk, credit risk, market risk, etc.). Other risks that may be less obvious are also considered. The organisation believes that in most cases participants at PRG and other meetings have sufficient experience and a sufficient knowledge base to identify these broader risks without the need for a prescribed catalogue of questions; risk identification and assessment is thus experience- and expert-led.

Identified risks are monitored over time by the investment risk management department using a process of ‘back testing’, in which emerging information is used to validate previous assessments and revise earlier models and processes. In situations where complexity, for example, renders the assessment of risk for a particular product difficult, the product launch will be delayed until the situation can be sufficiently resolved – implying a degree of precaution in the innovation process. Nevertheless, staff appeared to appreciate the limits to risk assessment, accepting that all investment risks cannot be understood and acknowledging that the financial industry as a whole is

exposed to some risks, including systemic ones, that many still do not fully understand. In such cases the head of investment risk management explained that the organisation ‘focuses on managing stakeholder expectations by creating awareness of the uncertainty that exists’, i.e., a strategy of openness and communication.

In terms of *operational risk*, we observed a ‘three lines of defence’ approach, with the head of product development constituting the first line of defence and being directly responsible for assessing and managing all risks associated with new product initiatives. The legal and compliance team forms the second line of defence, challenging the assessments made from an independent position and ensuring that the head of product development is equipped with the necessary tools to effectively assess and manage risks on a periodic (usually quarterly) basis. The third line of defence is an internal auditing function aimed at ensuring compliance. While most members of the organisation believe that they can assess most risks from a position of experience and collective input, the value of potential loss or gain is used to prioritise time spent on managing identified risks.

3.5. Regulation

3.5.1. Contextual legislation

Regulatory compliance was observed to be the responsibility of the compliance and oversight department, which also keeps abreast of changes in regulatory policies. Interviews with individuals from this department highlighted increasing regulatory coverage of the funds sector, evolving from a previous situation where ‘as long as you explained clearly what your fund was, everything was ok’ to one where ‘there is no such thing as an unregulated fund product in Europe’. Interviews suggested that the landscape had evolved from one of no regulation to the use of self-regulated fund

associations such as the Investment Management Regulatory Organisation (IMRO), which, under the 1986 UK Financial Services Act, provided a stamp of approval in exchange for adherence to certain codes of conduct. Under the Financial Services and Markets Act of 2000, IMRO business was taken over by the Financial Services Authority (FSA) and more recently the Financial Conduct Authority (FCA), whose regulations financial companies have a legal obligation to comply with.

The FCA implements broader EU Directives that serve as important legislative context for product development by setting the rules within which these products can operate once launched. These directives include: the Undertaking Collective Investment in Transfer of Securities (UCITS) Directive (introduced in 1985; revised 2001 and 2009), under which the company operates; the Markets in Financial Instruments Directive (introduced in 2007) focused on competition and consumer protection; and the Alternative Investment Fund Management Directive (introduced in 2011), aimed mainly at private equity and hedge funds. The FCA's directive on product governance and intervention also calls for financial institutions to act in accordance with set rules, with clear guidelines on when and how authorities should intervene. The FCA additionally provides its own Treating Customers Fairly charter relating to the usefulness of a product, its price, and understanding and communicating investor risk (see previous text and below).

3.5.2. Regulatory approval

In enacting these various directives, the FCA generally approves products via a prospectus submitted during the build phase (normally 4 to 6 weeks before launch). The FCA checks that the fund works and approves of its associated investment objectives. However, the FCA also reserves the right to arrange visits in order to review all documents and the innovation process as a whole. In one such visit, the FCA

presented the organisation with 56 questions about a product launch, grouped under seven main headings: product governance; product strategy; target market; distribution strategy; risk and stress testing; price and value; and execution and review. In its assessment, the FCA also considered those committees involved in product governance, their roles throughout the innovation process, and how issues and risks were assessed and escalated.

3.6. *Perceptions of and motivations for responsible innovation*

The interviews highlighted that although responsible financial innovation was an ambiguous concept, providing *client satisfaction* and *meeting their needs* was a generally-accepted definition, with all but four of the eighteen respondents making reference to this idea. Words such as ‘fairness’, ‘communication’, ‘deliver’, ‘transparency’ and ‘solution’ were used to describe how a responsible financial organisation should behave towards its customers. Words such as ‘value’, ‘happy’, ‘beneficial’ and ‘safety’ were used to portray how customer satisfaction could be measured. One third of those interviewed highlighted a need to make sure that innovations not only met customer needs but were also commercially beneficial, to ensure the long-term survival of the organisation. Satisfying both organisational and customer needs through the creation of shared value – long-term, greater financial security for clients *and* long-term return/survival for company (Porter and Kramer, 2011) – appears to have influenced perceptions of responsible innovation among a few interviewees. Other concepts of prudence, simplicity, flexibility and adaptability were mentioned by less than one-third of the respondents. Although only one interviewee considered broader issues related to the unpredictability and complexity of the impacts of financial innovation, that respondent echoed others who suggested the need for a responsible organisation to ‘spell out risks and investigate its implications for market’,

‘question how much of the complexities can be reasonably understood’, ‘identify how much of the innovation process they can control’ and ‘stress test products to ensure they are fully understood’.

The depth and length of discussions, challenging, and questioning that preceded decision making at key meetings throughout the innovation process all suggest a degree of deliberation, anticipation and reflection, coupled to institutional responsiveness - key dimensions of responsible innovation proposed by Owen et al. (2013) and Stilgoe et al. (2013). The organisation’s practice of carrying out testing and using the results to support decisions on whether to proceed with an innovation or not also demonstrates iteration, adaptive learning and responsiveness. A recent move to involve retail clients (e.g. in idea testing) and established involvement of institutional clients (e.g. in co-designing products) demonstrate a degree of inclusion and deliberation, with the potential for improving the capacity of the organisation to expand its field of view.

In general, however, the framing of responsible innovation was largely limited to satisfying customers, regulatory compliance and the anticipating, understanding and management of corporate risks – investment, operational, legal, regulatory and reputational (e.g. account/web setup delays, portfolio manager capabilities, trademark issues, etc.). In this frame, respondents equated financial innovation to continuous improvements in products and processes, with perceptions of a cautious culture of incremental innovation.

All respondents agreed that responsible innovation requires both a high level of personal commitment and collective responsibility. However, staff largely perceived responsible innovation in the context of their roles within the company. For example, those in product development considered responsibilities in the context of their role to make sure that all new products are approved at all levels for timely delivery; whereas,

those in investment were concerned about investment risk assessment, and those in oversight and marketing were interested in ensuring compliance and information disclosure. Senior managers stated that they had additional responsibility to challenge, question and contribute to decision making, as they sit on most of the governance-related meetings. Such comments made by interviewees suggested that agency is an important dimension of responsible financial innovation, with respondents demonstrating agency by taking ownership for the things they do.

Interviews suggested four main motivations to undertake responsible innovation: self-fulfilment, personal values, image, and financial rewards. Interviewees made such comments as: ‘I want to look at myself in the mirror and know that I have not let anyone down’; ‘I feel I can make a difference’; ‘The feeling that I work in an industry that is worthwhile makes me genuinely want to help’; ‘Knowing that what I did has contributed towards the wellbeing of someone else makes me want to do more’. These and many other expressions used by respondents revealed how the feeling of self-fulfilment encourages them to act responsibly in what they do. Respondents demonstrated a desire to uphold personal and organisational values of integrity, trust and hard work. About one third of respondents believed that this desire to maintain values and be responsible is in their personal nature and ‘sits deeply down inside of them’. Additionally, the desire for some respondents to maintain a positive outlook on themselves and the organisation (especially in the eyes of external stakeholders such as clients and the FCA) seems to be a powerful motivation. Only a few people mentioned financial rewards, set within an institutional culture of long-term, performance-related remuneration, as a motivating factor for responsible behaviour.

4. Discussion and Conclusions

4.1. Financial innovation and governance

Our review of the academic literature suggested financial innovation to be largely an incremental process, with significant automation and short lead times, and with little evidence of specific forms of governance, regulatory or otherwise. It is important not to generalise from the results of one case study. The extent to which our findings are generalisable both within and beyond the asset management sector requires further research. Nevertheless, our observations confirmed within one large global asset management organisation a) the incremental and recombinant nature of financial innovation (in this case varying the characteristics of funds), b) a degree of automation and c) the relatively short lead time of the innovation process from ideation to launch.

In contrast to the literature, we observed a well-structured and coordinated stage gating model of innovation governance involving multiple actors, with phased innovation activities punctuated by clearly-defined decision gates, and which included risk assessment and regulatory compliance. It was clearly defined on paper as a process that members of the company from various departments were required to follow and that involved obtaining approval at various levels. There were clear lines of accountability. It involved the completion of documents, prospectuses and checklists, and it included processes for monitoring, assessment, and evaluation. These processes and actors were mainly internal to the organisation, framed by its policies and code of ethics, and involved a measure of external client involvement. Innovation also was subject to external oversight and approval, in which external regulation and codes of conduct such as the Treating Customers Fairly (TCF) Charter were important drivers that framed product development. FCA approval is in fact required for any financial product involving some form of trading on a regulated market and the TCF Charter

relates to all forms of new product and process (FCA, 2013) within the financial sector. This finding contradicts assumptions that there are no specific forms of governance directed specifically at financial innovation, at least in the context of fund development studied here.

Regulation was perceived by at least some members of staff, particularly those within the oversight and compliance team, as focusing on the stimulation of financial innovation, protecting investors, ensuring information disclosure, guiding how financial activities should take place and what actions national regulators should take against those who do not comply. Staff exhibited limited awareness of the existence of the Standing Committee on Financial Innovation (see Introduction).

These results suggest the presence of an information void that could be addressed by more open and transparent articulation of internal and external innovation governance mechanisms to stakeholders and the public by the company and FCA.

4.2. *Perceptions of responsible innovation*

Armstrong et al. (2012) and Muniesa and Lenglet (2013) have argued that responsible innovation in finance can be considered from seven different perspectives, some of which were evident in the case study. The first of these perspectives on the *function* and broader, ethical perspective on the purpose of finance in society (e.g. considerations of ‘making money with money, for whom and for what’ (Armstrong et al., 2012: 5)) – was not observed to be discussed. The perspective of *accountability* was clearly evident, for example, in situations where heads of departments had to sign off documents and make themselves available for questioning during governance proceedings. Furthermore, contextual legislation provided an innovation envelope within which the organisation had to work, aligned with a *precautionary* perspective on responsible innovation. Professional role responsibilities, underpinned by strong institutional and internal values

were also an important framing. This aligns with the perspective on *internal values* described by Armstrong et al. (2012), Muniesa and Lenglet (2013) and Millo and Lacoste (2012). Values within the organisation included profitability, sustainability, meeting clients' needs, and treating customers fairly in line with external guidelines. In terms of values of ethical investment (Mackenzie, 1998; Schwartz, 2003; McLachlan and Gardner, 2004; Hudson, 2005; Hofmann et al., 2009), the company was observed not to use screening criteria (negative/positive) based on ethical positions, choosing instead to place emphasis on openness, transparency and choice for investors (e.g., through its fund supermarket platform, where investors can access ethical funds, enabling customisation of their investment portfolios).

Significantly, the framing of responsible innovation was strongly influenced by perceptions of an inherently cautious corporate culture, where the likelihood of bringing something harmful (for clients, society) to market was perceived as being unlikely. The perceived level of uncertainty of adverse impacts has recently been suggested as being an important influence on how responsible innovation is institutionally framed (Pandza and Ellwood, 2013). Low uncertainty of impact, they suggest, promotes 're-iterative agency' in which there is routine, habitual and selective reactivation of past behaviour patterns that become institutionally stabilized and where issues of responsibility are perceived as being largely uncomplicated. In contrast, they suggest that high perceived uncertainty of impact may promote other forms of agency, notably projective agency, where there is 'imaginative projection of possible future trajectories of actions', and evaluative agency, where 'judgements are made among alternative possibilities in response to emerging demands, dilemmas and ambiguities', in the context of values, rights and duties. Such forms of agency may be of greater relevance in circumstances involving radical and disruptive innovation, but these conditions were not observed in

our case study, where innovation was incremental and where the probability of adverse impact associated with innovation was perceived as being low.

Pandza and Ellwood (2013) have suggested that under conditions of projective and evaluative agency, two behaviours are mobilised: discursive competency and the development of new practices that are more accountable to wider society. Both of these we have witnessed in previous cases of ethically contested and highly uncertain techno-visionary science such as geoengineering (Macnaghten and Owen, 2011; Stilgoe et al., 2013). Dimensions of responsible innovation we have previously developed (Owen et al., 2012; Owen et al., 2013; Stilgoe et al., 2013) speak directly to such considerations, advocating in an integrated and iterative way anticipation, reflexivity and reflection e.g. on the purposes and motivations of innovation, and inclusive and broad deliberation with stakeholders and publics. The framework we have developed integrates these dimensions and couples these to a fourth element, institutional responsiveness, such that the direction and trajectories of innovation are responsive.

Some of these dimensions are not unfamiliar in corporate environments (Muniesa and Lacoste, 2012; Ferguson and Muniesa, 2012); it is how they are framed and their normative basis that is key (von Schomberg, 2013). In this regard, Muniesa and Lacoste (2012) suggest understandings of the issues at stake can be limited. The pilot testing phase for example was observed to be an active period of institutional reflection and deliberation, and its outcome had a significant impact on decision making i.e. responsiveness. The inclusion of multiple internal stakeholders and, to a degree, external clients, suggests a highly developed process of internal deliberation. However, such reflection and deliberation was rather narrowly framed and narrowly constituted, largely internal to the organisation and extending mostly to involvement of clients. This we believe reflects the low perceived uncertainty of adverse impact, the cautious and

incremental innovation culture, and the strong institutional and internal values within the company which, as Pandza and Ellwood (2013) suggest, can stabilize and re-inforce professional role responsibilities and organisational capabilities through processes of re-iterative agency.

Armstrong et al. (2012) and Muniesa and Lenglet (2013) have suggested the use of New Product Committees (NPCs) could foster responsible financial innovation. We did not observe NPCs *per se* within the company. However, the use of committees such as PSG and PRG within a well-defined stage gating model of governance was prominent. This model, we suggest, could provide a more holistic governance approach within which emerging responsible innovation dimensions might be embedded (Macnaghten and Owen, 2011; Callon and Lacoste, 2012; Stilgoe et al., 2013; Pidgeon et al., 2013), broadening conventional inputs such as technical feasibility and market potential into the decision gates. Arguably, the case for broadening existing stage gating governance approaches in this way might be stronger in instances of radical financial innovation, where the regulatory context for product development is less well-established, ambiguous or absent. That said, the cumulative impacts of even incremental financial innovation in a complex, globalised and dynamic environment may be significant, suggesting that even in the context of incremental innovation framed by clear contextual legislation, such approaches might have considerable value. As such, we suggest that the embedding of emerging frameworks for responsible innovation within the types of established stage gating models observed in this case study offers an opportunity to promote responsible innovation of financial products and services that should be explored further.

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Table 1. Governance of the financial sector (financial activity) and financial innovation compared.

	Financial Sector	Financial Innovation
Processes / Instruments	<p>a) <i>Statutory regulation</i> (externally imposed rules, requirements, standards and guidelines for implementation).</p> <p>b) <i>Self-Regulation</i> (collectively set rules, codes of conduct, standards and guidelines, which are voluntarily enforced and externally monitored by self-regulatory organization).</p>	None, although specific forms of regulation have recently been / considered in the EU and China
Actors / Institutions	<p>a) Governments, via central banks and / or independent agencies and financial authorities.</p> <p>b) Corporate institutions via established governance frameworks (e.g. Board of Directors, internal auditors, shareholders etc.) in association with independent, self-regulatory organisations (e.g. national associations; stock exchanges)</p>	Isolated accounts of New Product Committees (Armstrong et al, 2012)
Mechanisms	<p>Monitoring (e.g. periodic audits and assessments, certification, ratings schemes)</p> <p>Enforcement (e.g. legal sanctions, fines bans, internal controls)</p>	None documented

Box 1. Dimensions of responsible innovation (adapted from Owen, Stilgoe et al. (2013) and Stilgoe, Owen et al. (2013)).

Responsible financial innovation entails an open, collective and continuous commitment to be:

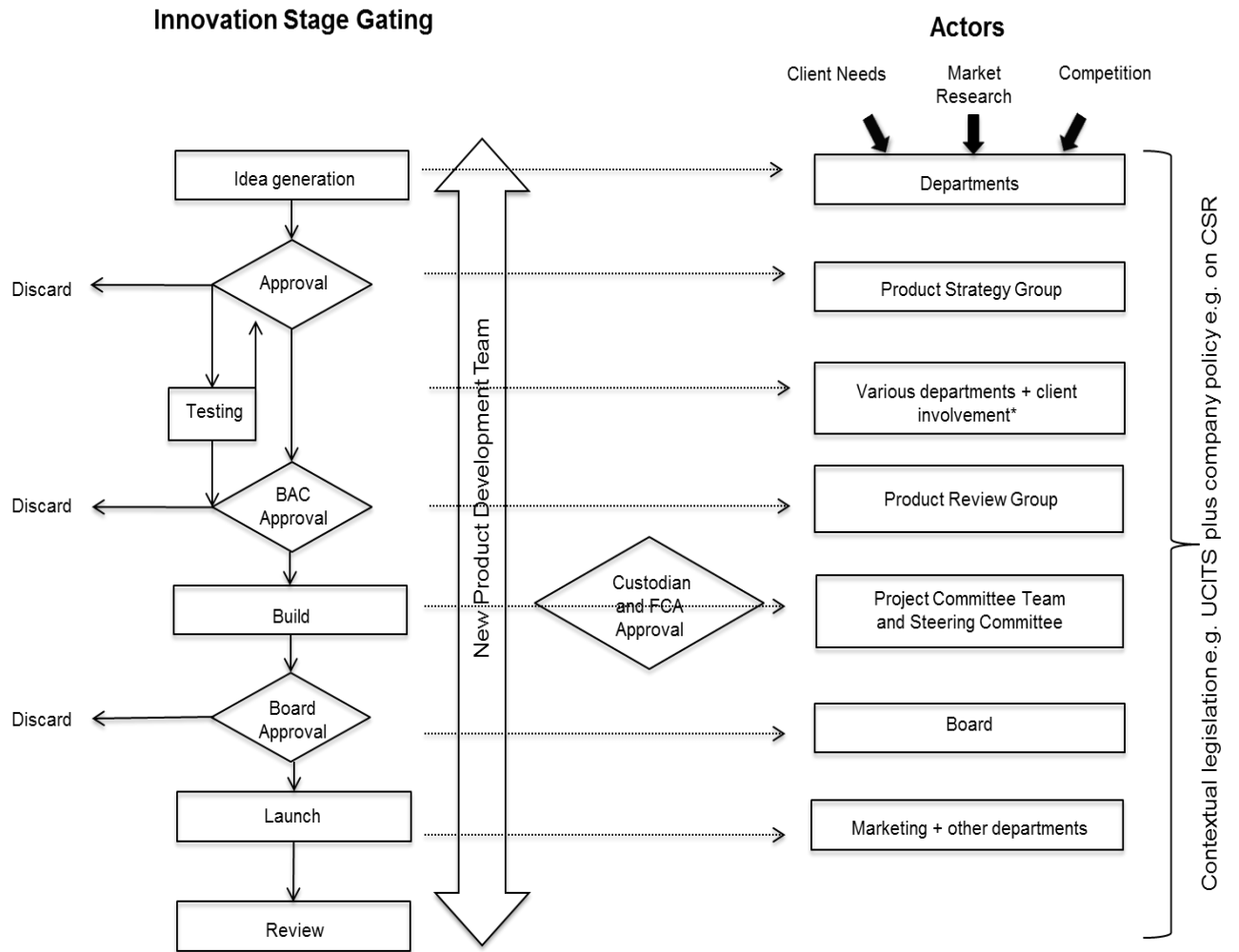
a) ***Anticipatory*** – describing and analysing possible intended and unintended impacts that might arise, be these economic, social or otherwise. Supported by methodologies that include those of foresight, technology assessment and scenario development, these not only serve to articulate promissory narratives of expectation but to explore other pathways to other impacts, prompting innovators to ask ‘what if...’ and ‘what else might it do?’ questions. Tempered by the need for plausibility, such methods do not aim to predict, but are useful as a space to surface issues and explore possible impacts and implications that may otherwise remain uncovered and little discussed. They serve as a useful entry point for reflection on the purposes, promises and possible impacts of innovation. (Guston, 2013).

b) ***Reflexive*** – reflecting on underlying purposes, motivations and potential impacts, how benefits might be distributed , what is known (including those areas of regulation, ethical review or other forms of governance that may exist) and what is not known; associated uncertainties, risks, areas of ignorance, assumptions, questions and dilemmas.

c) ***Deliberative*** – inclusively *opening up* visions, purposes, questions and dilemmas to broad, collective deliberation through processes of dialogue, engagement and debate, inviting and listening to wider perspectives from publics and diverse stakeholders. This allows the introduction of a broad range of perspectives to reframe issues and the identification of areas of potential contestation. Sykes and Macnaghten (2013) describe a number of specific methods that can be employed.

d) ***Responsive*** – using this collective process of reflexivity to both set the direction and influence the subsequent trajectory and pace of innovation, through effective mechanisms of governance. This should be an iterative, inclusive and open process of adaptive learning, with dynamic capability.

Figure 1. Financial innovation and its governance within Fidelity Worldwide Investments



* Note where the client is an institutional investor, involvement may be from the outset of the process