


Beyond the illusion of numbers: A challenge for financial regulators and analysts

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Abstract

Global financial crises and potential sovereign defaults provide an opportunity for financial regulators and analysts to revise assumptions in their risk models. These conditions are also an opportunity for regulators and analysts to distinguish the 'hyper-real' economy, represented by derivatives, from the real economy, which requires assessment through an analysis of human as well as financial capital. Regulators are required to demonstrate that they are skilled in conducting the most thorough analysis of all elements of the finance system in order to help the investing public to manage risk as much as possible. The contribution of this article is to overview the limitations inherent in regulators' traditional focus on financial analysis, as well as in financial analysts' failure to consider the relevance of people management data when evaluating the potential performance of knowledge-intensive, service-based organisations. The article argues for a stronger focus on analysis of non-financial capital, including human capital, to provide a more effective 'early warning' of potential financial distress.

JEL codes: G01, G1, G3015, O16

Keywords

Financial analysis, financial regulation, global financial crisis, human capital, management systems, risk

The power of accurate observation ... is commonly called cynicism by those who have not got it.

George Bernard Shaw (1894)

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Introduction

Global financial crises and potential sovereign defaults challenge financial regulators to reassess fundamental risk assumptions. Financial analysts too need to reflect on the basis of systemic errors in their investment advice. One dimension of this challenge is to differentiate the illusion of the 'hyper-real' economy, as represented by derivatives and other symbols, from the real economy. This involves extending the basis of risk analysis beyond financial criteria, to include human capital risk as one indicator of the capacity of firms to manage change. It also involves self-reflection by the regulatory system and financial analysis, to evaluate the human capital basis of system risk – to what extent do financial analysts and the regulatory system itself have the analytical tools and skills to detect emerging signs of instability?

To restate Webb (2009), it is a flawed argument to suggest that a good regulatory regime assumes smooth sailing. Regulation needs to assume ongoing uncertainty and unpredictability. This requires regulators, as well as analysts, to be skilled in monitoring the complex and interdependent generative mechanisms (Ackroyd, 2004), which can both create and destroy value, and which can provide an effective early warning system of potential financial distress.

Hyper-reality can be defined as occurring when representations of principal assets such as earnings, quantitative investment models, analysts' estimates and debt proposals begin to reflect each other and the outcome does not necessarily represent what is actually occurring in the underlying assets. There is a danger that the symbol of an asset becomes dissociated from its underlying base and is treated as a real phenomenon. The term 'hyper-reality' originated in art criticism, when objects in art looked almost real but clearly were not real at all (Cantor, 1994). The financial crisis revealed that derivatives were symbols of assets, not actual assets. The profound social lesson for regulators is that debt, even when incurred through derivatives and derivatives trading, is more than a symbol of debt – it has to be repaid.

Prior to the recent financial crisis, regulatory frameworks did not overtly distinguish between real and 'hyper-real' assets. Timothy Geithner, former Governor of the New York Reserve and Secretary of the US Treasury, stated that 'We did not have those tools coming into the crisis and I think that was a tragic mistake for the United States and for the rest of the world' (Geithner, 2009).

Traditional regulatory tools have been predicated on a narrow interpretation of financial risk. Under Basle I regulatory rules,

... Banks only needed a modest sliver of capital to support triple-A securities. High ratings thus meant less required capital, higher leverage, higher profit and higher bonuses. Moreover, important financial institutions are not permitted to hold assets with less than an AAA rating from one of the major rating companies. There was thus a strong demand for high ratings. Ratings agencies are paid by the investment banks whose products they rate. Their profits therefore depend on whether they keep these banks happy ... The recent global financial boom and crisis might not have occurred if perverse incentives had not induced credit rating agencies to give absurdly high ratings to illiquid, non-transparent, structured financial products such as MBSs, CDOs and collateralized loan obligations. (Crotty, 2009: 566)

A singular point of focus on credit ratings and narrowly defined financial risk assessment has not been sufficient to protect firms and economies from the threat of systemic risk. As the Governor of the Bank of England noted, in commenting on the causes of the current financial crisis,

There is no new paradigm here at all. This is something we have seen on many occasions over several hundred years. But the fact that we have seen it in the past, and not been able to improve things is a worry. This is one of a long series of financial crises. It is the biggest one, perhaps ever, but it's come out of almost the same problems we have seen in the past. People who think the world has changed, I'm afraid, have not read history. (King, 2009)

Failure to recognise 'the same problems we have seen in the past' suggests a limited view of risk. This has created perverse incentives which have destroyed value in companies, industry sectors and markets. Unless regulatory systems recognise the destructive role of perverse incentives, regulators are prone to falling into the trap of 'rewarding A while hoping for B' (Kerr, 1975).

This article argues that regulators may be able to use more systemic forms of human capital risk analysis to mitigate the destruction of value through managerial responses to perverse incentives and widespread failure to foresee and act on early warning signs of financial distress. This requires the systematic adoption, by financial analysts and regulators, of broader definitions of risk and ways to manage it. Such a definition would cover financial, reputational and political risks, based on the capabilities of organisational managers, including their approach to managing people and change. Thus a systematic approach to human capital analysis needs to be among the criteria used to regulate and rate corporate performance. In this context, human capital refers to management systems which are internally consistent with a firm's strategy and with the broader context in which the firm is operating.

The argument is developed, first by demonstrating the consequences of relying on incomplete criteria of financial viability. The article then argues the need to incorporate a systems approach involving assessment of the role of firms, analysts and regulators in contributing to stability. Elements of a broader approach to risk management, including human capital analysis, are identified, with an outline of how they might be applied. The conclusion suggests that further research is needed into ways of implementing this wider approach to risk analysis.

The need: Some consequences of current corporate risk assessment practices

Debates over trajectory of the global financial crisis illustrate a complex interdependent network of causation. The consequences of this crisis require analysts, investors and regulators to take a nonlinear approach to assessing and reducing risk. Mortgage debt securitisation (the bundling, on-selling and leveraging of debt) was accelerated in 1997, with the United States, the United Kingdom and Australia leading the world in these practices. The resulting cheapening of finance dramatically increased its scale, drawing

in offshore lenders and generating complex networks of foreign debt (Jones, 2006; Nadauld and Sherlund, 2013; Nadauld and Weisbach, 2012; Pol, 2012). The US government bailouts following the subprime collapse exacerbated international sovereign debt, generated when European banks, in anticipation of crisis, rushed into trading government bonds, and then as the crisis grew, acted to off-load at fire-sale prices (Alderman and Craig, 2011).

Since mid-2010, the European sovereign debt crisis has led to policies of fiscal consolidation, drawing investors into financially distressed conditions as governments ended or reversed fiscal stimulus packages which addressed the initial crisis of 2008–2009. In 2011, the US debt-to-gross domestic product (GDP) ratio was 103.5% and the UK ratio was 85% (Leão, 2013). In September 2012, France's debt to GDP was 91% with unemployment at 10.8% and a Standard and Poors rating of AA+; Germany, with a debt ratio of 82% and unemployment of 5.4% had a AAA rating. Greece, with debt to GDP of 126% and unemployment of 25%, had a B– rating. Italy's debt was 126% of GDP, unemployment 10.8% and credit rating BBB+; and the figures for Portugal were debt 117.5% of GDP, unemployment 15.7% and credit rating BB; and Spain reported a debt of 76% of GDP but unemployment of 25.8% and a BBB– credit rating (New York Times, 2012).

Thus conjuring with hyper-reality has had very real flow-on consequences. Orthodoxy continues to defend corporate self-regulation (Barger et al., 2010) and tight fiscal control (Reinhart and Rogoff, 2008, 2010). Conversely, others have argued that light-touch self-regulatory regimes in the corporate sector have resulted in little more than an appearance of change (Wardrop, 2012), and that in situations below full employment, fiscal stringency rules have inappropriately curtailed the capacity of government spending actually to reduce the debt-to-GDP ratio (Leão, 2013), and to restore growth (Chowdhury and Islam, 2012).

While some have argued that '[t]he refinancing ratchet effect is a new type of systemic risk in the financial system and does not rely on any dysfunctional behaviours' (Khandani et al., 2013: 29), others have argued the importance of human agency, and the need to manage it. Cabral (2012: 452), for example, attributes the crisis to 'misguided changes in the regulatory framework, specifically, the Basel I capital accord and reductions in reserve requirements', policy response in the aftermath of the crisis. Engelen et al. (2012), in an article provocatively titled 'Misrule of Experts?', argue that the financial crisis was an 'elite political debacle', with both political and 'technocratic' leaders 'hubristically' detached from a process of financial innovation that removed both private finance and its public regulators from democratic scrutiny. Graafland and van der Ven (2011) argue that a contributing factor to the credit crisis was the intense pressure placed by a neo-liberal free market system on bank professionals, to identify the advancement of shareholder interests with risky innovation strategies.

In a meta-analysis of literature on the UK financial crisis and resulting recession, Herzig and Moon (2012) identify a range of accounts of the divergence between corporate social responsibility (CSR) and types of corporate social irresponsibility (CSI), each account suggesting a particular proposal for remedy. One narrative locates the problem in the structural marginalisation of CSR practice from the core business activities of financial institutions. Another sees the crisis as an opportunity for firms and responsible investors to reinstate business ethics on the agenda (Graafland and van der Ven, 2011

exemplify this view). A third argues for a reprofessionalisation of financial practices, interpreting subprime lending as having been driven by a misplaced desire to extend housing equity to the poor, and interpreting excessive executive bonuses as arising from incentive systems that encourage greed (see also Tett, 2009). Finally, there is a range of narratives debating the institutionalisation of social irresponsibility: credit agencies are seen as approving worthless debt and governments as providing ineffective regulation. Social investors are seen as having been side-tracked from scrutinising corporate governance practices. Reformist themes of accountability to stakeholders, including the need to regain employee loyalty through fair treatment, have been countered by arguments that globalisation has undermined the regulatory power of governments: Herzog and Moon conclude by arguing for a reframing and reconceptualising of the corporation – society interface.

It is clear from the financial crisis that all market participants, investors, regulators and analysts, were subject to a period of discontinuous change. Fast et al. (2009) found evidence of an ‘illusion of control’ and a disconnect between the way financial markets rated the financial health of companies and their own internal ability to cope with appropriate management strategies. CEOs of Fortune 500 companies routinely overestimated their capacity to turn mergers and acquisitions into huge profits, leading to financial losses for themselves, their companies and their stockholders.

This article takes a reformist position and argues that the reprofessionalisation of financial regulators, analysts and managers needs to involve the development of capability in analysing and regulating human capital risk, so that when the inevitable market ebbs and flows occur, an effective ‘early warning system’ based on identifying human capital deficits in organisations, for example in finance sector governance, may help detect sources of extreme destabilisation.

Limits of financial risk analysis: The need for a systems approach

For well over a decade, there has been acceptance that quantitative financial analysis on its own is not adequate in providing the investing public with the fullest possible indicators of the financial state of a publicly listed company (Graaf, 2013; Nielsen et al., 2006; Watson Wyatt Worldwide Research, 2002). Arguably, regulators and market participants, by default, have measured what *can* be measured, rather than what *should* be measured (Sveiby, 1997; Ulrich, 1999). Around 84% of the top 100 Australian listed companies used an indicator beyond statutory profit to measure their performance (Bray, 2010). One inference which can be drawn is that directors believe that statutory profit alone does not provide adequate insight for investors to understand the potential future operating performance of a company.

Under current regulatory regimes, investment research is approaching commoditisation, with investment managers and buy and sell-side analysts accessing similar data, using similar tools, provided by corporates at similar times (Royal and O’Donnell, 2008), and with increasing chance of error as economic conditions deteriorate (Goedhart et al., 2010). Investment proposals are accepted on the basis of generally acceptable ratios, such as debt to equity and loan to valuation. But, the global financial crisis has shown

that quantitative analysis, by itself, can underestimate the complexities involved in industry sectors and within nations, yet obvious but causally unimportant similarities may be seized on as significant. We may thus be seeing trends towards isomorphism, whereby the approach and findings of different analysts converge with each other, whether through imitation or based on similar socialisation, assumptions, organisational locations and constraints (Di Maggio and Powell, 1983).

Ironically, the illusion of control can lead to a decline in analytical capacity, exacerbated when insufficient information is available to decision makers. The tendency for market participants and regulators to focus on financial risk alone has negative consequences. Goedhart et al. (2010) have suggested that equity analysts tend habitually to be overly optimistic in terms of analysing company forecasts, in spite of regulation to avoid conflicts of interest and to make the investment advice process more transparent. They found that analysts typically lag behind events in revising their earnings forecasts in light of changing economic conditions. They also found that, consistent with studies one decade earlier, the size of the error in the forecasts declines in times of economic growth, but increases in times of economic decline. While more research into this specific finding is necessary, it is worth noting that the illusion of power of market players may be exacerbated in a context of 'hyper-reality'. Pricing models used by investment market professionals, and regulated by regulators, have traditionally not incorporated the complex interaction of human capital and financial factors (Derman, 2011; Triana, 2009) and their associated risks.

This can be illustrated by hindsight dissections of causes of the 2007–2008 financial crisis. Financial models failed to reflect the complex human reality of financial market players, and indeed, some would claim that their very purpose was to provide short cuts to risk assessment, that bypassed the need to consider historical behavioural evidence. This seems to have occurred in the pricing of derivatives such as the now-infamous collateralised debt obligations (CDOs) and CDO-squareds. These were asset-backed securities bundled and re-bundled into tranches with varying degrees of risk and return. Nearly one-third of the tranches downgraded in the 2007–2008 crisis carried AAA credit ratings, 64% of downgrades had housing loans or mortgages as collateral, and a high proportion of downgraded asset-backed CDOs were linked to housing finance, much of it risky (Benmelech and Dlugosz, 2009). These authors show that downgrades were more common when there had been a single rater and provide anecdotal evidence of overreliance on statistical models that failed to account adequately for the correlation of defaults, at a macroeconomic level – an error that was multiplied by the similarity of CDOs. The question asked after the crash was 'What human factors were involved?' (Shin, 2009; Sorkin, 2009).

A common explanation was the widespread use after 2000 of a particular application for risk assessment: quantitative modelling based on copulas, that is, formulas for creating joint probability distributions out of several marginal distributions. In particular, a Gaussian copula developed by Li (2000) came to be widely used to model the joint probability distribution of losses on pools of loans or bonds (Mackenzie and Spears, 2012). Distributions were translated into single number risk assessments, assigning a 'default correlation' to any pool of assets. The likelihood of simultaneous default was used to price tranches according to risk. Taleb (2007) commented that this

approach was highly vulnerable to the ‘black swan effect’ – the artificial suppression of volatility in fragile complex systems, which are then open to unpredicted large-scale crises. He was one of many to observe that Li’s Gaussian copula model was based on an oversimplification of the complexities of real-world default statistics, assuming that a single correlation number could explain default patterns (cited in Salmon, 2009). As Salmon (2009) argues, the model-building ‘quants’ were detached from any understanding of the underlying assets they were pricing, and the analysts and bankers used computer programs based on the quant models to provide correlation numbers that were not questioned, despite discrepancies with evidence.

This example highlights the danger for regulators when they, and their regulated entities, rely on simplified formulas where complex systems thinking is required in order to factor in human agency. Given the lessons of the global financial crisis, regulators are required to interpret really complex and interdependent variables, including human capital and its consequences for change management and power, in order to more systematically assess risk.

Systems theorists may categorise this kind of interdependence as ‘order on the edge of chaos’ (Arthur, 1994, 2009; Harvey, 2001). Faced with complexities of the scale and scope seen in the recent financial crisis, regulators need to be certain that they are accessing all available data, including both financial and non-financial forms of risk. What should be measured is system level risk, which requires qualitative as well as quantitative analytical models. Ackoff (1999) defines a systems perspective as one that moves beyond mechanistic thinking, towards solving sets of interacting problems, relinquishing the search for simple solutions. Such thinking characterises adaptive, learning organisations. Senge (1990) described systems thinking as the ability to recognise the forces of acceleration and equilibrium, how they work together and how it may be possible to leverage them while understanding interdependencies among parts of the system. At the supra-organisational level of the role of financial analysts and the operation of regulators, this calls for a macro-systems perspective that is both long term and wide ranging.

Financial information alone is not sufficient to provide an early warning system to protect economies from cascading failures that in the end result at the macro-level in sovereign debt default. Understanding the potential future financial performance of firms requires a more robust understanding of human behaviour than economists have previously admitted (Akerlof and Shiller, 2009). Quantitative methods need to be supplemented by fundamental and rigorous qualitative research incorporating human capital themes. These methods are more likely to factor in the reality of the ebb and flow experienced by firms in changing economic conditions (Bassi and McMurrer, 2007).

At the most basic level, this implies that, as a component of due diligence, regulatory systems should consider means of incorporating human capital analysis into reporting and assessment processes. This, when used in complementary ways alongside more traditional financial analysis, allows for some degree of anticipation and more transparent decision making (Bassi and McMurrer, 2007; Royal and O’Donnell, 2008). Investors and regulators can use the insights available when human capital is examined in the context of a broad systems view of performance (Gabor, 2010; Johnson and Broms, 2000). In essence, human capital analysis may assist regulators and analysts in distinguishing reality from ‘hyper-reality’.

A broader approach to assessing risk: Responsible investment and human capital analysis

One approach to broader and deeper risk assessment has been a United Nations initiative to encourage institutional investors to sign up to a set of Principles for Responsible Investment (United Nations Principles for Responsible Investing (UNPRI), 2010), based on the adoption of voluntary guidelines for assessing firms' environmental, social and corporate governance (ESG) policies and practices. Skills in analysing these variables are fundamental to the effective implementation of such guidelines (CK Capital, 2012; UNPRI, 2010). Responsible investment advocates have perhaps made most progress in developing criteria for evaluating environmental and corporate governance reporting practices. While there has been a trend to ESG themes, the 'S' or social element of company analysis, and of regulation, has not been as well developed as the other two elements (O'Donnell and Royal, 2012).

Regulators in particular have focused on assessing approaches to good governance, more than on broader human capital themes (Australian Stock Exchange (ASX), 2010). However, researchers such as Bassi and McMurrer (2007) and Bassi et al. (2001) have found that human capital can be a lead indicator of future financial performance, and as such, needs to be incorporated into the regulatory process of investment risk assessment. Risk management is defined by Standards Australia (2013) as follows:

To be most effective, risk management should become part of the organisation's culture. It should be integrated into the organisation's philosophy, practices and business plans rather than be viewed or practiced as a separate program. When this is achieved, risk management becomes the business of everyone in the organisation.

This is a systems approach to assessing, not only the social impact of investment, but also the human resource practices within regulated entities such as listed companies as well as investment banks and other finance industry organisations. Elements which need to be made explicit include managers' accountability for their treatment of employees, shareholders and the public. When qualitative human capital data are used side by side with financial analysis, markets have access to more valid and more powerful information on current and potential future financial performance (Bassi and McMurrer, 2007).

Unlike hyper-real derivatives, human capital investment allows a firm to manage change and provides an underlying generative mechanism of value creation in firms, industries and economies. Human capital analytical tools have so far focused on applying principles from accounting and finance to human resources, whether to assess a firm's capacity to deliver on its stated strategy or to create an index linking 'good' management practices to business results. In part, this involves assessing whether human capital systems are internally consistent and consistent with business strategy. Such analysis is more than the collection and reporting of statistics, for example, about the composition of the workforce and measures of the productivity and output of people (Mayo, 2001). But more is needed.

In knowledge-intensive environments, appropriately managed human capital systems are the force behind the innovation underpinning intellectual capital which eventually

generates financial capital. This understanding of generative value creation means that regulators need to ensure that their risk assessment approaches incorporate all forms of capital creation and destruction. Within this context, analysts' and regulators' risk models need to systematically incorporate key human capital variables: leadership, governance, management quality and remuneration and systems for managing change. Human capital analysis is one way to more precisely analyse and mitigate aspects of non-financial risk. However, most market participants, including regulators and analysts, are not routinely trained to systematically analyse whether configurations of human capital systems generate or destroy value in firms. What is involved in undertaking this more complete form of human capital analysis?

Organisational-level human capital analysis

Investors can assess generative mechanisms of value creation (Ackroyd, 2004), in part, through the analysis of qualitative aspects of human capital within listed firms (Daneshgar et al., 2005). Two strands in the human capital literature have emerged since the 1980s. One has focused on the value created by people, whether as individuals ('skill', 'talent') or in organisations, communities industries, even nations ('intellectual capital', 'organisational capital' and 'social capital'). The other has focused on approaches to strategic human resource management (SHRM) – 'getting the best out of people' (Baron and Armstrong, 2007), on the assumption that value creation through people management involves more than efficient streamlining of the labour process. Boxall and Purcell (2003) identify a further divergence in the SHRM literature, between a 'managerialist' US approach and a more pluralist European tradition. The European tradition involves a multi-layered analysis, identifying points of congruence and tension among systems for employment, work organisation, performance development and stakeholder voice, at industry, corporate and business levels. The Anglophone literature, by contrast, has focused at firm level, with the role of SHRM being seen as that of measuring and mobilising human capital in pursuit of competitiveness.

In the 1990s, one particularly influential conceptualisation of the latter approach to human capital measurement and management was Barney's (1991) resource-based view (RBV) of the firm. This focused on identifying the human and other assets thought to generate competitive advantage through value creation based on rarity and inimitability. This can be contrasted with a potentially fruitful recent alternative: 'human capital bridge' approach of Boudreau and Ramstad (2007), which couples strategic decisions as to which interventions will yield large impacts for small increments in quality or quantity, with assessments of the effectiveness of these interventions in changing behaviour. This approach belongs in the school of thought that rejects the mechanical application of human capital metrics, and instead embeds measurement in an analytical framework that starts with organisational logic and considers processes.

Thus while the importance of human capital is rarely questioned, the search continues for the most appropriate ways to identify it. Molloy et al. (2011), in a meta-analysis of 637 refereed journal articles written about intangible assets, have identified two key weaknesses. The first lies in 'theoretical disconnects' between conceptualisations of intangibles and the measures used. For example, the term 'human capital' is variously

used to refer to 'education, entrepreneurial alertness, industry experience, tenure and personality' (Molloy et al., 2011: 1504), and mechanisms for value appropriation are mostly ignored. Second, measurement too often ignores context, such as the logic of value creation; approaches to value appropriation; life-cycle stage; approaches to intangible resource use and boundary conditions or 'expectations'. Particularly at the firm level, there is no one-size-fits-all approach to measuring human capital.

A rigorous human capital measurement system requires specific attributes. Bassi and McMurrer (2007) argue that a measurement system should be credible, descriptive, predictive, detailed, actionable and cost effective. Mayo (2001) notes that human capital measures should be 'roughly right' rather than 'precisely wrong', simple to understand, clearly defined and able to be interpreted consistently. Furthermore, the process of measurement should have integrity, be reliable, have no inherent biases, not be based on one person's judgement, make sense in the context of other measures, focus on what is important and comprise key outputs or be linked to them, have the right level of detail for action to be taken, be used for tracking change and incorporate data that are useful, provide the right level of detail, allow clear ownership by an individual or team, have the right frequency and provide useful trends and comparisons.

Pike and Roos (2004) offer five conditions for accurate measurement: completeness (the attributes must completely describe the company); distinctness (which eliminates double counting); independence (this concerns the relationship between entities so that aggregation to overarching measures can be undertaken safely); agreeability (mapping from an empirical to numeric system); and commensurability (measurements must be observed using a ration scale and be normalised onto a common scale). While providing a challenge for regulators, a rigorous human capital risk analysis process is possible.

In a time of turbulence, an important human capital criterion to assess is the capacity of a firm to manage change effectively. Classic change management techniques that are measurable include clear targets, clear structures, high involvement and strong and visible leadership with a style appropriate to the leadership context (Isern et al., 2009). Consistent with these findings, Aiken and Keller's (2009) study of 3199 senior executives indicated that while only one corporate transformation in three succeeds, success can be improved by the following human capital features: a compelling narrative, employee understanding and role modelling by CEO and key executives making the new way of operating believable.

Gaps and challenges for regulators

Human capital analysis provides a challenge to regulators in reviewing risk management within regulated entities. Professional development in this context is a process which attempts to close the gap between social performance and public expectations. It requires the representation of experience in a set of emergent themes (Creswell, 1994) as human capital failure can be seen as a component of operational risk and can impact financial risk.

Currently, regulators such as the Australian Prudential Regulation Authority (APRA) require limited human capital data analysis as part of the licencing requirement for market participants (Fraser and Simkins, 2010). Challenges, however, exist in providing

human capital data to market participants, outside of reporting on senior executive remuneration and corporate governance issues. APRA considers the consequences of human capital risk, through specific strategies on Boards and senior management being ‘fit and proper’ to take on the roles. However, regulators do not typically articulate how organisations ensure that human capital risk is minimised through effective human capital systems.

In response to these kinds of knowledge gaps, Royal and O’Donnell (2008) have derived a suite of tools for human capital analysis, drawing on field research in the finance industry. These tools are based on an analysis of management systems, allowing for comparisons across industry sectors and across firms, and unlike the quantitative models, they incorporate aspects of change management. See Table 1 for a summary of the themes analysed, presented as a human capital risk checklist for regulators.

This checklist consolidates current themes in the analysis of human capital risk management, including governance, leadership capability, supervision, disclosure and human capital decision making processes and the regulators’ own capacity to adapt to changing market conditions and to enhance prudential global regulatory frameworks. The analysis can be carried out at different levels: first, at the level of the regulatory process for global equity markets, and second, at the level of the entities which are being regulated. As with individual companies, regulatory bodies can also pass through a progression of change management. However, in this article, we have focused on the role of regulators in overcoming the human capital knowledge gap in their own internal processes. This kind of qualitative, system-based human capital analysis can complement traditional financial analysis in order to create a clearer picture of risk within firms, regulated entities and nations.

Conclusion: The appropriateness of human capital analysis in the regulatory system

It is the value created by human capital, rather than the costs of managing it, that provides the most compelling rationale for systematic human capital analysis by regulators and by financial markets. Regulation of financial risk alone cannot solve all the problems inherent in the creation and destruction of value within regulated entities and within sovereign nations. A robust financial regulatory regime requires a systems perspective, incorporating a deeper analysis of human as well as financial capital. A systems perspective involves regulators moving beyond analysis of financial data towards complex systems thinking in order to develop more robust risk assessment and risk mitigation.

As ESG investing increases, additional analytical skills are required in financial markets to assess the value of non-financial capital. Additional non-quantitative research techniques are required to assess the potential value of human capital systems in knowledge-intensive firms, such as investment banks and other financial institutions, where intangible value is a large proportion of firm value.

In a global financial crisis environment, which challenges confidence in investment professionals, it is highly appropriate for regulators and market participants to be, and to be seen to be, exercising due diligence through thorough analysis of all available data which may predict future risk. Just as securities analysts and fund managers require the

Table 1. Human capital risk management checklist for regulators.

Entity being regulated: LC or FMP?	Leadership style	Change management practices	Management systems
LC or FMP?	1. Entrepreneurial style leadership	Systematic trial and error – learning by doing	Is there evidence of ongoing and systematic innovation of products, services and processes of all management systems? Are the human capital systems (e.g. recruitment, training and development, career planning, remuneration and knowledge management) internally consistent and consistent with strategy?
LC or FMP?	2. Transactional/operational leadership	Steady growth	Do all human capital management systems show an appropriate level of stability for the context in which the organization operates? Specifically, is there evidence of appropriate investment in human capital through expenditure on training and development at all levels?
LC or FMP?	3. Systems-based leadership – systems operate irrespective of leader	Divisionalisation – accelerated complex growth, organically or mergers and acquisitions	Is there evidence to suggest that human capital systems can be carefully reproduced? Can systems be rapidly executed? Is there clarity within and between core and non-core human capital systems?
LC or FMP?	4. Change agent basis for leadership	Realignment of overall business to new conditions	Do the human capital systems allow for openness to ongoing change, flexibility and appropriate levels of transformational change?
LC or FMP?	5. Visionary leadership for new strategies	Sustained success or decline	Are the human capital systems embedded in policy and procedure to sustain change? Or is there evidence of fragmentation, stagnation and failure?

LC: listed corporation; FMP: financial market participant.

appropriate competencies, skills, knowledge and abilities in order to form earnings estimates and investment recommendations (Graham et al., 1962), so different competencies, skills and knowledge and abilities are required to meet the demands of the analysis of non-financial sources of value, including human capital. These include skills in qualitative research techniques. This deeper level, non-financial data will be required to

clinically assess the role of human capital risk as one early warning sign of potential financial distress and allow market participants to better prepare for all kinds of economic conditions.

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References

- Ackoff RL (1999) *Re-Creating the Corporation: A Design of Organizations for the 21st Century*. Oxford: Oxford University Press.
- Ackroyd S (2004) Methodology for management and organisation studies. In: Fleetwood S and Ackroyd S (eds) *Critical Realist Applications in Organisation and Management Studies*. London: Routledge, pp. 137–162.
- Aiken C and Keller S (2009) The irrational side of change management. *The McKinsey Quarterly* 2, April: 101–109.
- Akerlof GA and Shiller RJ (2009) *Animal Spirits: How Human Psychology Drives the Economy, and Why it Matters for Global Capitalism*. Princeton, NJ: Princeton University Press.
- Alderman and Craig (2011) Europe's Banks Lost a Refuge In Debt Crisis. *The New York Times* 11 November, A1. Available at: <http://search.proquest.com/docview/903151952/141431B876B45A9BF90/729?accountid=12763> (accessed 22 October 2013).
- Arthur WB (1994) *Increasing Returns and Path Dependence in the Economy, Economics, Cognition and Society Series*. Ann Arbor, MI: University of Michigan Press.
- Arthur WB (2009) *The Nature of Technology: What it is and How it Evolves*. New York: Free Press.
- Australian Stock Exchange (ASX) Corporate Governance Council (2010) *The Corporate Governance Principles and Recommendations with 2010 amendments*. 2nd ed. Sydney, NSW: ASX Corporate Governance Council.
- Bargeron LL, Lehn K and Zutter CJ (2010) Sarbanes-Oxley and corporate risk-taking. *Journal of Accounting and Economics* 49(1–2): 34–52.
- Barney JB (1991) Firm resources and sustained competitive advantage. *Journal of Management* 17(1): 99–120.
- Baron A and Armstrong M (2007) *Human Capital Management: Achieving Added Value Through People*. London: Kogan Page.
- Bassi L and McMurrer D (2007) Maximising your returns on people. *Harvard Business Review*, March. Available at: <http://www.smhc-cpre.org/wp-content/uploads/2008/07/hbr-article3.pdf> (accessed 20 July 2013).
- Bassi LJ, Lev B, Low J, et al. (2001) Measuring corporate investments in human capital. In: Blair MM and Kochan TA (eds) *The New Relationship: Human Capital in the American Corporation*. New York: Brookings Institute, pp. 334–382.
- Benmelech E and Dlugosz J (2009) The credit rating crisis. *NBER Macroeconomics Annual* 24(1): 161–208.
- Boudreau JW and Ramstad PM (2007) *Beyond HR: The New Science of Human Capital*. Boston, MA: Harvard Business School Publishing.
- Boxall P and Purcell J (2003) *Strategy and Human Resource Management*. New York: Palgrave Macmillan.
- Bray M (2010) *The Journey to Better Business Reporting: Moving Beyond Financial Reporting to Improve Investment Decision Making*. Australia: KPMG.

- Cabral R (2012) A perspective on symptoms and causes of the financial crisis. *Journal of Financial Economics* 104(3): 452–468.
- Cantor PA (1994) Hyperinflation and hyper-reality: Thomas Mann in light of Austrian economics. *The Review of Austrian Economics* 1(7): 3–29.
- Chowdhury A and Islam I (2012) The debate on expansionary fiscal consolidation: how robust is the evidence. *Economic and Labour Relations Review* 23(3): 13–38.
- CK Capital (2012) *Trends in sustainability disclosure: benchmarking the world's composite stock exchanges*. A paper prepared for the sustainable stock exchanges 2012 global dialogue, UNCTAD, CK Capital, Commissioned by Aviva Investors. 29 June 2012. CK Capital.
- Creswell JW (1994) *Research Design: Qualitative and Quantitative Approaches*. Thousand Oaks, CA: SAGE.
- Crotty J (2009) Structural causes of the global financial crisis: a critical assessment of the 'New Financial Architecture'. *Cambridge Journal of Economics* 33(4): 563–580.
- Daneshgar F, Royal C and O'Donnell L (2005) Representation of human capital knowledge in investment processes. *Investment Management and Financial Innovations* 2: 158–163.
- Derman E (2011) *Models. Behaving. Badly: Why Confusing Illusion with Reality Can Lead to Disaster, on Wall Street and in Life*. New York: Free Press.
- Di Maggio PJ and Powell WW (1983) The iron cage revisited: institutional isomorphism and collective rationality in organizational fields. *American Sociological Review* 48(2): 147–160.
- Engelen E, Ertürk I, Froud J, et al. (2012) Misrule of experts? The financial crisis as elite debacle. *Economy and Society* 41(3): 360–382.
- Fast NJ, Gruenfeld DH, Sivanathan N, et al. (2009) Illusory control: a generative force behind power's far-reaching effects. *Psychological Science* 20: 502–508.
- Fraser J and Simkins B (eds) (2010) *Enterprise Risk Management: Today's Leading Research and Best Practices for Tomorrow's Executives*. Hoboken, NJ: John Wiley & Sons.
- Gabor A (2010) Knowledge review: seeing your company as a system. *Strategy+Business* 59 Summer. Reprint Number 10210. Available at: http://www.strategy-business.com/media/file/sb59_10210.pdf (accessed 22 October 2013).
- Geithner T (2009) Interview with Timothy Geithner, 'For the love of money', BBC September 18. Available at: <http://www.tradeitdontdateit.com/bbc-the-love-of-money-episode-1-the-bank-that-bust-the-world/> (accessed 2 July 2013).
- Goedhart MH, Raj R and Saxena A (2010) Equity analysts: still too bullish. *McKinsey on Finance*, Spring, issue 35, pp. 14–18.
- Graaf J (2013) Colouring the numbers – on the role of intellectual capital in financial reporting. *Journal of Intellectual Capital* 14(3): 376–394.
- Graafland J and van de Ven BW (2011) The credit crisis and the moral responsibility of professionals in finance. *Journal of Business Ethics* 103(4): 605–619.
- Graham B, Dodd DL and Tatham SC (1962) *Security Analysis: Principles and Techniques*. New York: McGraw-Hill.
- Harvey C (2001) International cost of capital and risk calculator. Duke University, Durham, North Carolina, working paper. Available at: http://faculty.fuqua.duke.edu/~charvey/Research/Working_Papers/W35_The_international_cost.pdf (accessed 17 May 2010).
- Herzig C and Moon J (2013) Discourses on corporate social ir/responsibility in the financial sector. *Journal of Business Research* 66(10): 1870–1880.
- Isern J, Meany MC and Wilson S (2009) Voices on transformation 3: corporate transformation under pressure. *McKinsey Quarterly*, April, pp. 7–14.
- Johnson HT and Broms A (2000) *Profit Beyond Measure: Extraordinary Results through Attention to Work and People*. New York: Free Press.
- Jones E (2006) Faith and credit: the deregulation of the finance sector has us all drowning in debt. *Arena Magazine* 82, May–June, pp. 21–23.

- Kerr S (1975) On the folly of rewarding A, while hoping for B. *The Academy of Management Journal* 18(4): 769–783.
- Khandani AE, Lo AW and Merton RC (2013) Systemic risk and the refinancing ratchet effect. *Journal of Finance Economics* 108(1): 29–45.
- King M (2009) Interview with Mervyn King, Governor, Bank of England, ‘For the love of money’, BBC September 18. Available at: <http://www.tradeitdontdateit.com/bbc-the-love-of-money-episode-1-the-bank-that-bust-the-world/> (accessed 2 July 2013).
- Leão P (2013) The effect of government spending on the debt-to-GDP ratio: some Keynesian arithmetic. *Metroeconomica* 64(3): 448–465.
- Li DX (2000) On default correlation: a copula function approach. *Journal of Fixed Income* 9(4): 43–54.
- Mackenzie D and Spears T (2012) The formula that killed Wall Street? The Gaussian copula and the material cultures of modelling. School of Social and Political Science, University of Edinburgh. Available at: http://www.sps.ed.ac.uk/data/assets/pdf_file/0003/84243/Gaussian14.pdf (accessed 1 August 2013).
- Mayo A (2001) *The Human Value of the Enterprise: Valuing People as Assets – Monitoring, Measuring, Managing*. Naperville, IL: Nicholas Brealey.
- Molloy JC, Chadwick C, Ployhart R, et al. (2011) Making intangibles ‘tangible’ in tests of resource-based theory: a multidisciplinary construct validation approach. *Journal of Management* 37(5): 1496–1518.
- Nadauld TD and Sherlund SM (2013) The impact of securitization on subprime credit. *Journal of Financial Economics* 107(2): 454–476.
- Nadauld TD and Weisbach MS (2012) Did securitization affect the cost of corporate debt? *Journal of Financial Economics* 105(2): 332–352.
- New York Times* (2012) Tracking Europe’s debt crisis. *New York Times*, 19 December. Available at: <http://www.nytimes.com/interactive/business/global/european-debt-crisis-tracker.html> (accessed 31 December 2012).
- Nielsen C, Bukh PN, Mouritsen J, et al. (2006) Intellectual capital statements on their way to the stock exchange: analyzing new reporting systems. *Journal of Intellectual Capital* 7(2): 221–240.
- O’Donnell L and Royal C (2012) Investment and sustainability: The importance of the ‘S’ in ESG principles of responsible investment. In: Jones G (ed.) *Research Handbook in Sustainability*. Melbourne, VIC: Tilde/Palgrave, pp. 133–151.
- Pike S and Roos G (2004) Mathematics and modern business management. *Journal of Intellectual Capital* 5(2): 243–256.
- Pol E (2012) The predominant cause of the USA banking crisis, 2007–2008. *Journal of Socio-Economics* 41(5): 519–528.
- Reinhart CM and Rogoff KS (2008) *This time is different: A panoramic view of eight centuries of financial crises*. Working paper 13882, March. Cambridge, MA: National Bureau of Economic Research.
- Reinhart CM and Rogoff KS (2010) Growth in a time of debt. *American Economic Review* 100(2): 573–578.
- Royal C and O’Donnell L (2008) Emerging human capital analytics for investment processes. *Journal of Intellectual Capital* 9(3): 367–379.
- Salmon F (2009) Recipe for disaster: The formula that killed Wall Street. *Wired*, 23 February. Available at: http://www.wired.com/techbiz/it/magazine/17-03/wp_quant?currentPage=all (accessed 30 March 2009).
- Senge P (1990) *The Fifth Discipline: The Art and Practice of the Learning Organization*. New York: Doubleday/Currency.

- Shaw GB (1894) *The World (1894/1973) Music in London 1890-1894 being Criticisms Contributed Week by Week to The World*. 18 July. New York: Vienna House.
- Shin HS (2009) Reflections on Northern Rock: the bank run that heralded the global financial crisis. *Journal of Economic Perspectives* 23(1): 101–119.
- Sorkin AR (2009) *Too Big to Fail: The Inside Story of How Wall Street and Washington Fought to Save the Financial System and Themselves*. New York: Penguin.
- Standards Australia (2013). Available at: <http://www.cpaaustralia.com.au/cps/rde/xchg/cpa-site/hs.xsl/members-handbook-risk.html> (accessed 28 December 2012).
- Sveiby K-E (1997) *The New Organizational Wealth: Managing and Measuring Intangible Assets*. San Francisco, CA: Berrett-Koehler.
- Taleb M (2007) *The Black Swan: The Impact of the Highly Improbable*. New York: Random House.
- Tett G (2009) *Fool's Gold: How Unrestrained Greed Corrupted a Dream, Shattered Global Markets and Unleashed a Catastrophe*. London: Little, Brown Books Group.
- Triana P (2009) *Lecturing Birds on Flying: Can Mathematical Theories Destroy the Financial Markets?* Hoboken, NJ: John Wiley & Sons.
- Ulrich D (1999) Measuring human resources: an overview of practice and a prescription for results. In: Schuler RS and Jackson SE (eds) *Strategic Human Resource Management*. Oxford: Blackwell Business, pp. 462–482.
- United Nations Principles for Responsible Investing (UNPRI) (2010) United Nations principles for responsible investing. Available at: <http://www.unpri.org/about-pri/the-six-principles/> (accessed 3 March 2010).
- Wardrop J (2012) *When is institutional change not change? Australian corporate governance reporting practices as institutional maintenance work*. PhD Thesis, The University of New South Wales, Sydney, NSW.
- Watson Wyatt Worldwide Research (2002) *Human Capital Index: Linking Human Capital and Shareholder Value*. Washington, DC: Watson Wyatt Worldwide Research.
- Webb AP (2009) Management lessons from the financial crisis: a conversation with Lowell Bryan and Richard Rumeldt. *The McKinsey Quarterly*, June, pp. 1–5. Available at: <https://www.mckinseyquarterly.com/PDFDownload.aspx?ar=2363> (accessed 17 May 2010).

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