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KNOWLEDGE-BASED ECONOMIES AND SUBJECTIVE WELL-BEING*

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ABSTRACT

This chapter explores some of the major linkages between Knowledge-Based Economies and subjective well-being research, and argues that knowledge economy policies should take insights from the latter into account. The need for exploring this issue has become urgent, given the number of proposals put forward in recent years to develop extensive and consistent subjective well-being accounts. Also, subjective well-being research is complementary to research on wisdom-based knowledge policies. The chapter first discusses some features of Knowledge-Based Economies. In particular, despite their diversity, they share some fundamental features posing special challenges for subjective well-being, i.e. ‘abundance’ and the nature of work. Next, different subjective well-being measures are discussed, and the need for such measures at different levels of aggregation and for different population subgroups is highlighted. There is a place for context-free, as well as domain-, group-, and job facet-specific measures. The emerging issue of the role of social capital for subjective well-being is also emphasized. The following section focuses on the key nexus of work, innovation, and subjective well-being and ill-being in Knowledge-Based Economies. It considers causality and highlights the need for subjective well-being accounts if we want to better understand the issues involved. This is followed by some comments on the likely impact of the Great Recession. It is argued that key features and many existing trends are unlikely to change. The concluding section raises some further issues, for example the relationship between subjective well-being and wisdom, and optimal versus maximum subjective well-being. It also argues for the integration of diverse subjective well-being accounts with other economic and social accounts. Only then will it be possible for subjective well-being research to impact on knowledge economy policy practice in a way currently only hinted at by some of the authors cited in this chapter.

* This is a draft of a chapter written for the forthcoming *Handbook on the Knowledge Economy (Vol. II)* edited by David Rooney, Greg Hearn and Tim Kastelle, to be published by Edward Elgar. Please send comments to H.Engelbrecht@massey.ac.nz

1. INTRODUCTION

Over the last few decades there has been an explosion of research on subjective well-being (SWB) and its correlates, with implications for economic and other policy areas (Frey and Stutzer, 2002). However, recent surveys indicate that much remains to be done. There is still a lot of contradictory evidence and issues of causality and unobserved variables loom large (Diener and Seligman, 2004; Dolan et al., 2008a). Also, it is not immediately obvious how the focus on SWB is related to the knowledge-based economy (KBE) literature. Layard (2005), for example, reports the consensus view that 80 percent of the variation in happiness between countries can be attributed to six factors: The divorce rate, the unemployment rate, the level of trust, membership in non-religious organisations, the quality of government, the fraction of the population believing in God. The KBE is not explicitly mentioned by Layard. However, he regards Science & Technology (S&T) as the prime source of the changes that have been responsible for stagnant average SWB levels in developed economies.

The main argument put forward in this chapter is that any policy discourse for Knowledge-based Economies (KBEs), or ‘knowledge policies’, should take into account insights from SWB research. I shall try to convince the reader of this by covering references from diverse literatures, focussing on some key features of KBEs and their relationship with SWB, such as the nature of work and innovation. The need for exploring the KBE-SWB nexus is heightened by the increasing number of proposals to develop extensive and consistent SWB accounts, at many different levels of aggregation and for many different sub-groups of the population, in order to improve policy-making (Diener and Seligman, 2004; Dolan and White, 2007; Diener et al., 2009; Krueger, 2009; Stiglitz et al., 2009). Also, international agencies are beginning to advocate use of SWB measures as part of a larger overhaul of official statistics (Commission of the European Communities, 2009).

Elsewhere I have explored the interfaces of knowledge policies and policy implications of SWB research as of early 2007 (Engelbrecht, 2007). It was observed that in many cases, mainstream and non-mainstream knowledge policy discourses, as well as information society indicators research, came tantalisingly close to acknowledging the importance of SWB research, without explicitly referring to it. Since then, the ‘new science of subjective well-being’ has developed fast. However, linking KBEs and SWB is still relatively uncommon.¹

It should be noted that the emphasis on SWB does not contradict the quest for wisdom-based knowledge policies. The latter have been advocated by, for example, Rooney and McKenna (2005), Schuller (2006) and Rooney et al. (2010). Although SWB and wisdom are not related in any simple and straightforward manner, I argue that insights from SWB research, and the development of nation-wide integrated systems of SWB accounts, are likely to lead to wiser policies. In that sense, SWB research is complementary to, and should help enable, wisdom-based knowledge policies.

The financial and economic crisis that began in 2007, i.e. the ‘Great Recession’, is arguably closely related to intrinsic features of KBEs (Engelbrecht, 2009a). It has also highlighted the shortcomings of much of mainstream economic and financial analysis and the need to re-

focus and take human psychology, or Keynes ‘animal spirits’, seriously (Akerlof and Shiller, 2009). This should contribute to an increased acceptability of SWB research for knowledge policy making.

The next section discusses some of the common key aspects, as well as the diversity, of KBEs. Then, the need for SWB measures at different levels of aggregation and for different population sub-groups is highlighted. This is followed by a discussion of the complex relationship between work, innovation and SWB in KBEs. The penultimate section reflects on the likely impacts of the Great Recession. Concluding comments summarize and expand discussion of the policy relevance of SWB research and the need for consistent and integrated SWB accounts.

2. SOME COMMENTS ON THE NATURE OF KNOWLEDGE-BASED ECONOMIES

There are many definitions of KBEs. For our purposes, it is sufficient to note that the concept has to do with the engine of growth and structural change in modern economies, i.e. it is associated with the intensive use of information and knowledge, increased emphasis on learning, creativity, innovation, entrepreneurship, networks, and the use of information and communication technologies (ICTs). The mainstream knowledge policy discourse usually focuses on R&D and technical knowledge, and its contribution to economic growth.² However, the KBE is not limited to S&T. It also includes the Finance, Insurance and Real Estate (FIRE) industries, as well as ‘cultural’ and ‘creative’ industries. Although the KBE-SWB nexus transcends such sectoral-subdivisions, the observed diversity of economic structures and institutions among KBEs belies the view of one type of (homogeneous) KBE. In most cases, therefore, use of the plural is preferable, and I will adhere to this practice wherever possible.

However, at a deeper and highly abstract level, arguably *the* key feature of KBEs is the importance and nature of knowledge itself, which implies that such economies are characterised by abundance instead of scarcity, or what in economic growth theory is called the increasing versus decreasing returns issue (Warsh, 2006). The abundance versus scarcity distinction also indicates why SWB in developed KBEs raises special issues: Abundance is likely to raise different challenges for SWB than does scarcity, although both can lead to stress in people’s lives (Ng et al., 2009). While scarcity, e.g. not having enough money for food and the fulfilment of other basic needs, certainly is stressful and reduces SWB, in developed KBEs it is mostly abundance that creates stress:

The overabundance of goods, choices, and activities not only contributes to stress by creating a sense of being pressed for time, but also produces stress and anxiety because of people’s tendency to want to make the best choice...having too many choices due to a wealth and modern lifestyle may actually increase feelings of stress and reduce well-being (Ng et al., 2009, p. 259).

Another feature common to all KBEs is the shift in employment towards information and knowledge work, irrespective of whether economies are more industrial-based, service-based or even primary industry-based (like the New Zealand economy). Some prominent management theorists and economists have recognised the nature of work as a central feature of modern economies. Drucker (1999), for example, has argued that the most important contribution management needs to make in the 21st century is to increase the productivity of knowledge workers. Phelps (2009), the 2006 economics Nobel laureate, has stated that it is not the power of capitalism to create wealth that is its distinctive merit, but its ability to create engaging and rewarding work due to its emphasis on innovation, thereby enabling ‘self-actualization’ and ‘self-discovery’:

Thanks to its grassroots, bottom-up processes of innovation, capitalism at its best can deliver... chances for the mental stimulation, problem-solving, exploration and discovery required for a life of engagement and personal growth (Phelps, 2009, p. 6).

Also, some social science researchers have explicitly probed the link between SWB and the rise of KBEs. Most prominently, Ronald Inglehart and associates have developed a revised version of modernization theory in which high levels of SWB in developed KBEs are associated with a specific set of values which they call self-expression values (Inglehart and Welzel, 2005). These values favour individual liberty over collective discipline, human diversity over group conformity, civic autonomy over state authority, leading to growth in autonomous human choice and giving rise to democratic and humanistic societies (ibid., p. 299). A main indicator of the development of such societies is the level of tolerance towards minorities, an indicator also emphasized by other theorists of KBEs, such as Florida (2003). However, despite developed KBEs sharing self-expression values, they are still diverse as indicated by differences in beliefs and values about some core KBE elements, for example whether scientific advance is seen as being helpful in the long-run or whether putting more emphasis on technology is regarded as a good thing (Engelbrecht, 2007).

3. THE NEED FOR MULTIPLE SUBJECTIVE WELL-BEING MEASURES

Probably the two best known SWB measures obtained through responses to survey questions are hedonic SWB (‘happiness’) associated with often short-lived pleasant emotions or ‘feeling good’, and eudaimonic SWB (‘life satisfaction’) derived from leading a meaningful and fulfilled life. Another method of measuring SWB is National Time Accounting (NTA), i.e. accounting of how people spend their time and how they emotionally evaluate their time use (Krueger, 2009). SWB measures are usually proposed as complements, not substitutes, to conventional aggregate measures of economic performance (i.e. the National Income Accounts) and of ‘objective’ quality of life measures.

The kind of SWB measures advocated here are life satisfaction measures that focus on longer-term considerations of the good life and its ethical dimensions. When context-free, they capture an individual’s global evaluation of his or her life across all life domains, i.e. they provide an overall evaluation of a person’s life in all its respects.³ When aggregated

across a representative sample of the population, they provide a broad assessment of average SWB at the national level. Many researchers that have conducted cross-national SWB analyses prefer life satisfaction over ‘happiness’ measures (see, for example, Helliwell and Putnam, 2004; Vemuri and Costanza, 2006; Kroll, 2008).⁴ Arguably, the strength of such an aggregate SWB measure is that it gives “equal weight to the rich and the poor, the young and the old, with no one group in the position of saying what is best for the others” (Diener et al., 2009, p. 47), thereby according with the desirable feature of democratic governance.

What is a strength at the aggregate level is a disadvantage when more specific SWB data are required in order to assess issues affecting either particular sub-groups of the population and/or specific life domains. According to Dolan and White (2007), the distribution of SWB across society has largely been ignored in the literature until fairly recently, largely because of the ‘apple and oranges problem’ of weighing SWB measures from different life domains, but such SWB accounts could arguably be used to address many policy-relevant questions.

However, the issue of national-level versus group- and individual-level SWB relationships is more complicated than finding the correct weights, as indicated by Ng et al. (2009). They use Gallup World Pool data which constitute the first representative world survey, covering countries that account for 96% of the world population, to examine how stress is associated with SWB and wealth at both the national and individual level, and find important differences between the two. At the national level their SWB and wealth variables are positively correlated with perceived stress, whereas at the individual level SWB is negatively correlated with stress. There is some evidence on the correlation between overall, or context-free, SWB and domain-specific SWB, especially job satisfaction. For example, Warr (1999) reports this correlation to be only about 0.35. Moreover, the literature reports mutual causality, with some reporting a stronger impact of context-free SWB on SWB in the work domain than vice versa.

An emerging issue in SWB research that needs further exploration in terms of both overall and domain-specific SWB is the importance of social capital. Most previous studies of trust, a major proxy for social capital, have focussed on its economic benefits. However, there is increasing evidence of a tight positive link between various dimensions and types of trust and SWB, suggesting that SWB policies should include policies aimed at building or repairing social capital, such as making time and space for social connections to flower (Helliwell and Putnam, 2004; Helliwell and Wang, 2009; Sarracino, 2009). We still know too little about the links and direction of causation between life satisfaction, job satisfaction and trust in the workplace. Helliwell and Huang (2010) are possibly the first to provide estimates of the SWB value of workplace trust. Their findings suggest that the pay-offs of building workplace trust for both SWB and workplace efficiency could be large. Evidence is also emerging at the regional level that social capital affects economic growth not directly, but indirectly via its impact on innovation (Akçomak and ter Weel, 2009). This further highlights the importance of social capital for the development of KBEs.

In terms of SWB for population sub-groups, examples that easily come to mind are SWB measures by employment status, job, gender, age, region etc. It is well known that

unemployment has a very pernicious and long-lasting impact on people's SWB (Frey and Stutzer, 2002; Layard, 2005). A less well known and not yet fully explained finding concerns changes in SWB by gender. Stevenson and Wolfers (2009) report that, although by objective measures the position of women vis-à-vis men has improved in the US over the last three decades, self-reported well-being has shifted in the opposite direction, to an extent that the previous gender happiness gap in favour of women now has reversed in favour of men. They argue that this shift has also occurred in other developed countries for which appropriate SWB data are available. Given their inability to convincingly explain this finding, Stevenson and Wolfers call it a puzzling paradox. There exists a large literature on SWB at an even lower level of aggregation, especially in the work domain dealing with particular job facets, like pay, promotion prospects, colleagues, supervisors, etc. (Warr, 1999). The literature on these measures is far too large to even attempt to summarize here.

To sum up, context-free measures of SWB, as well as domain-, group-, and job facet-specific measures, convey different but complementary information about SWB of use to policy-makers in the private and public sectors. A step forward in the attempt to construct an integrated national system of SWB accounts would be to reach an initial consensus about which SWB measures to include in such accounts. It would seem appropriate to start with context-free and some domain-specific measures, adding other SWB measures in future once further consensus is reached and methodological issues have been resolved.

4. WORK, INNOVATION AND SUBJECTIVE WELL-BEING: HEAVEN OR HELL?

Work affects SWB not only indirectly by generating income for individuals which allows them to acquire goods and services for consumption, but also because it often contributes positively to SWB in a direct way (this is usually ignored in standard economics which focuses on work's disutility instead). Moreover, if one assumes that people's spending habits are often less than perfectly rational and 'utility maximising', the indirect link becomes weaker and the direct link becomes, at least relatively, stronger (Diener et al., 2009, chapter 2). However, despite a large literature on job facets and SWB, the specific link between innovation and SWB has been explored much less. The mainstream knowledge policy discourse focuses almost exclusively on the economic growth and employment creation/destruction effects of innovation. It is usually silent about the SWB impacts of innovation itself, i.e. as a process, on knowledge producers, and on workers and consumers in general. It is also usually silent about reverse causality, i.e. the potentially important link from SWB to creativity and innovation which has been extensively explored by psychologists.⁵ This reflects a major disjuncture between the 'economics of knowledge' and 'happiness economics' (Engelbrecht, 2007).

Interest in the links between SWB and various forms of innovation has increased in recent years in academic and policy circles, but the literature on this multi-faceted and complex issue is still relatively small. Dolan et al. (2008b), for example, try to find out whether higher SWB is conducive to creativity, whether working in an innovative environment (proxied by

work in the R&D sector) is conducive to higher SWB, and whether certain innovations, such as new consumer goods, promote higher SWB. They find that there is a positive correlation between SWB and creativity, work in the R&D sector, and the purchase of some, but not all, digital consumer products. However, the results are questionable on statistical grounds. Dolan et al. (ibid.) suggest that in future research, a number of existing official datasets should be linked up. They also advocate the use of randomised controlled trials and natural experiments in order to explore causality issues. Last but not least, they argue that explicit consideration should be given to SWB in any innovation index. Kavetsos and Koutroumpis (2010) also investigate the relationship between ownership (i.e. consumption) of ICTs which enable participation in digital networks, and SWB. They find a positive association and argue this might have implications for public policy, i.e. for recognising internet access as a fundamental human right. This provides another rationale for establishing SWB accounts for ICT ownership and use at a disaggregated level. Bryson et al. (2009) are one of the few studies so far to explore the effects of management or managerial innovation on SWB of private sector workers. Using British linked employer-employee data, they find that such innovations are associated with lower SWB, but that the negative impact on SWB is absent when workers are covered by collective bargaining agreements. Their review of the literature indicates, however, that there is a lot of mixed evidence.

A different angle on work, innovation and SWB in KBEs is provided by focussing on the prevalence and sources of mental illnesses (Doessel, 2007). This emphasis on the negative states, i.e. pathologies, of SWB is in the tradition of much of the earlier psychological research on the topic (Warr, 2007), i.e. before the rise of 'positive psychology' associated with Martin Seligman, Ed Diener, Daniel Kahneman and others (Kahneman et al., 1999; Seligman and Csikszentmihalyi, 2000; Eid and Larsen, 2008).⁶ The concern about mental illnesses is justified. Layard (2005) regards them as probably the largest cause of misery in Western societies. Diener and Seligman (2004) report that the incidence of depression has increased enormously over the past 50 years, at the same time as the material standard of living has increased, calling it a paradox. Among the many possible reasons for the paradox, they mention negative effects of materialism, i.e. low self-esteem, greater narcissism, less empathy, low intrinsic motivation, more conflictual relationships, increased prevalence of social comparison (the hedonic treadmill) etc. Wilkinson (2005) regards income inequality and its many negative impacts as the main culprit. Offer (2006) has argued that affluence breeds impatience and weakens self-control, thereby undermining SWB. Others have captured these effects collectively by the apt term 'affluenza' (Hamilton and Denniss, 2005).

There is some evidence that governments are realising the threat of mental illness for the effectiveness of human capital in (particularly aging) KBEs. An example is the British Foresight Project on Mental Capital and Wellbeing (Beddington et al., 2008). It explores the implications of current and likely future challenges to mental well-being at all stages in life, i.e. from before the cradle to the grave. It emphasises the need for numerous economic, social, employment, health and other policies in order to foster mental capital and mental well-being. They include policies addressing pre-natal health, learning difficulties, housing quality, teacher quality, alcohol and substance abuse, work-life balance, stress, depression, dementia etc. It should be noted that this arsenal of policies is not aimed at 'maximising'

SWB, but at minimising mental health issues and promoting mental wellbeing in general. In terms of the working age population, Beddington et al. (2008) arguably equate mental capital with human capital, adding a frailty aspect to the discussion of human capital issues. One specifically KBE related negative influence on people's mental well-being is 'techno stress' associated with the use of ICTs.⁷ The project's authors suggest a catalogue of possible interventions that public and private sector employers can use to promote the mental wellbeing of their workforces (Government Office for Science, 2008, p. 29/30).

The concerns about mental illnesses can, in principle, be addressed in SWB accounts in terms of (a) group-specific SWB measures, and (b) by following Doessel's (2007) suggestion to emphasize not just measures of central tendency, i.e. some measure of average SWB, but also measures of dispersion (i.e. coefficient of variation or SWB Gini coefficients). However, the impact of stress on SWB is not all negative. It is well-known that lower levels of stress often have positive effects on SWB in the work domain, whereas high levels of stress often lead to mental illness. When stress is positively related to arousal and increased energy, stress can help people succeed in challenging tasks, creating 'flow' experiences in people's working life (Csikszentmihalyi, 1990). As noted earlier, some even regard this as the distinctive merit of capitalism. Ng et al. (2009) suggest that future research should explore how to maximize the benefits of stress without increasing its negative effects. This requires SWB accounts for the work domain.

5. THE GREAT RECESSION – HAS EVERYTHING CHANGED?

It is as yet unclear how the Great Recession will affect knowledge policies and the importance accorded to SWB research. One might be tempted to think that the emphasis on SWB in rich KBEs, for example in terms of the work-life balance, was a luxury which could be indulged in during the period of seemingly great and easy to attain affluence, but which can no longer be afforded. On the other hand, it might turn out that the impacts of the crisis reduce the extent of affluenza without affecting the observed generational trend towards post-materialist values (Delhey, 2009). Moreover, an already observable outcome of the renewed emphasis on 'animal spirits' is the revival of 'libertarian paternalism', where 'choice architects' frame people's choices in such a way that recognised human weaknesses are easier to overcome.⁸ Should human nature be meaningfully incorporated in economic models in future, SWB research should also become acceptable to a wide policy audience.

While economic and social trends are difficult to forecast, key features of KBEs and many existing trends are unlikely to change. For example, the importance of the symbiotic relationship between constantly evolving tacit and codified knowledge (Lamberton, 1997), a core ingredient of creativity leading to innovation, remains. So does fast technological progress in ICTs and other technologies, which will continue to change aspects of work.⁹ Also, the crisis has not reduced the data deluge, i.e. the super-abundance of information, that is creating many new challenges for all KBEs (Cukier, 2010). However, the diversity of KBEs ensures that each will be affected by the crisis in a unique way, especially when one also considers differences in demographic trends and environmental challenges.

Certainly, it can be argued that the crisis is having major negative impacts on SWB, for example due to increased unemployment, and possibly increased work-stress for those that remain in employment. The rise of temporary, unstable employment and outsourcing of jobs overseas, already observed in many KBEs before the onset of the crisis, might accelerate. This is likely to affect many, if not all, knowledge-producing sectors (FIRE industries, universities, creative industries, etc.). What will be the impacts on SWB of the fact that no ones job is secure anymore? We do not yet know the overall net impact of the crisis on SWB in KBEs. In a sense, the crisis is similar to a natural experiment, and a great opportunity to obtain new insights into what determines SWB. This suggests that monitoring of SWB is more important than ever.

6. CONCLUDING COMMENTS

I hope to have convinced the reader of the importance of linking KBE and SWB research. It should improve our understanding of the true nature of KBEs, their impact on individuals, and of devising better policies. Increased knowledge about life satisfaction is arguably an important step towards developing wisdom-based policies. However, wisdom and SWB are different things and the relationship between them is not straightforward. Lowenstein (2009) observes that there often seems to exist tension between the two (especially when SWB is measured as ‘happiness’). He reminds us of the saying that “ignorance is bliss”, i.e. that a wiser society might well be a less happy one. Wisdom-based knowledge policies are not necessarily compatible with trying to, in some sense, maximise SWB. It should be noted that psychologists have addressed the question of whether there is an optimum level of SWB. The evidence suggests that it varies by life domain and a person’s particular circumstances (Oishi et al., 2007). In the work domain the optimal level seems to be below the maximum level. Instead of aiming to maximise SWB, Cummins et al. (2009) have proposed a theory of SWB homeostasis that supports the argument of using SWB measures as complements to existing statistics in policy formulation. They postulate that, similar to the homeostatic maintenance of body temperature, SWB is usually maintained within a certain range, but that it can become pathological, requiring government action.

Whichever way policy-makers want to use SWB data, a prerequisite for their widespread use is the design and implementation of consistent SWB accounts at different levels of aggregation, for different life domains, and for different sub-groups of the population. There has been much progress on national measures of SWB, but little consensus on domain-specific, let alone even more disaggregate SWB measures. The relationships between SWB at different levels of aggregation require more research, as do the relationships between SWB in different life domains (what are the spillovers?).

SWB impacts of innovation should be assessed more systematically and on a regular basis. This should include measurement of SWB impacts of ICTs in terms of both people’s private consumption of these technologies, as well as people’s use of them at work. SWB accounts need to be integrated with other economic and social accounts, for examples social capital

accounts, innovation measures, and income and wealth inequality measures. SWB accounts should also help counter the use of paternalistic government policies, because SWB has been found to be positively correlated with freedom of choice and other post-materialist values, suggesting that paternalistic policies would lead to a measurable reduction in SWB. Last but not least, an issue not directly addressed in this chapter is that of the ecological sustainability of KBEs (see, for example, Lin, 2006). I have shown elsewhere that there is a positive correlation between SWB and the amount of ‘natural capital’ available in a country (Engelbrecht, 2009b). Arguably, this strengthens the case for a ‘new welfare economics of sustainability’ in KBEs that takes SWB measures into account.

There are potentially many practical implications for policy-makers and managers from a better understanding of the KBE-SWB nexus, but currently major uncertainties exist. For example, Stevenson and Wolfers (2009) argue that their finding of gender differences in SWB might potentially have provocative policy implications, but we do not yet know whether men have benefited more from the women’s movement, or women have been more negatively affected by the societal changes associated with the development of KBEs. Helliwell and Huang (2010) suggest that firms providing better jobs in terms of non-financial job characteristics connected to higher levels of life satisfaction might reap a number of rewards, such as lower quit rates and monitoring costs, easier (less expensive) hiring, and more effective effort from employees at all wage levels. Arguably, given the complexity of the issues involved, SWB in the work domain could be used by managers as a summary indicator of whether innovation and the changes it entails are managed appropriately in terms of their impact on workers.

NOTES

1. For example, neither Diener et al. (2009) nor Krueger (2009) explicitly refer to KBEs.
2. See Engelbrecht (2007, 2009a) for further discussion and references.
3. This has also been termed psychological wealth by Diener and Biswas-Diener (2008), who go into some detail to describe the meaning of ‘the good life’.
4. Life satisfaction and happiness can sometimes produce different results. Inglehart et al. (2008) argue that the former is more associated with democratic freedom whereas the latter is more associated with economic development. This enables them to explain rising happiness but falling life satisfaction in some former Eastern Block countries. However, Inglehart et al. (ibid.) are pragmatic about their preferred SWB measure, arguing that a combined life satisfaction and happiness measure is a more reliable indicator of SWB than either measure used separately.
5. Diener et al. (2009, chapter 10) review the literature on the link between SWB and worker productivity and report a strong correlation, but argue that the causal direction has not been determined. However, there is undoubtedly much evidence that high levels of SWB are beneficial to success in many life domains (Diener and Biswas-Diener, 2008).

6. The positive psychology movement also embraces ‘wisdom research’. See, for example, Baltes and Staudinger (2000). Suffice to say there are many different psychological theories of wisdom, and teasing out their varying links with SWB research is beyond the scope of this chapter.
7. Also see the contributions in Amichai-Hamburger (2009), which focus on the links between technological change (mostly in ICTs) and psychological wellbeing across a number of life domains, including the work domain (O’Driscoll et al., 2009).
8. Arguably, in that way people are nudged towards choices that they themselves would recognise as better (Thaler and Sunstein, 2009).
9. See Dewe and Kompier (2008) for some scenarios regarding the evolving nature of work in KBEs.

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