Wellbeing, Psychological Capital, and Unemployment: An Integrated Theory

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ABSTRACT

Research clearly shows that unemployment negatively affects a person's wellbeing, which in turn can impair his/her ability to regain employment. Studies also suggest a person's 'psychological capital' (personality traits that influence the productivity of labour) moderates the impact of unemployment on wellbeing and facilitates re-employment. Different economic and psychological theories attempt to explain this relationship, and support for each has led to suggestions that they be integrated. This paper combines five theories, and using cross-sectional data from the Housing, Income and Labour Dynamics in Australia (HILDA) survey, tests the integrated model by estimating simultaneous structural equations for labour market status (LMS) and wellbeing. Preliminary results indicate a simultaneous relationship between LMS and wellbeing exists, and psychological capital does significantly influence wellbeing and (indirectly) LMS. The results suggest policies that enhance psychological capital and wellbeing can improve labour productivity and (ceteris paribus) help lower unemployment.

INTRODUCTION

Both economic and psychological research provides convincing evidence that unemployment adversely affects a person's wellbeing. Research also suggests a person's 'psychological capital' (PK) (personality traits that influence the productivity of labour) helps moderate the impact of unemployment on wellbeing and facilitates re-employment. While the impact of unemployment on wellbeing has been well documented, the simultaneous effect of poor wellbeing on labour market status (LMS) and the moderating role of PK have been less well explored. Various economic and psychological theories (discussed later) describe how LMS, wellbeing, and PK interact with each other, and support from applied studies has led to calls to integrate them (Muller et al., in press; Waters and Moore, 2002). This paper combines five theories (two from economics and three from psychology) into one and tests the theory by estimating simultaneous structural equations for LMS and wellbeing. ANOVA analysis is also used to explore the assumption that the longer a person remains unemployed, the greater the negative impact on wellbeing and PK, increasing the risk of long term unemployment.

The paper is divided into four parts. Part 1 provides background information on the effects of unemployment on wellbeing, the concept of PK, and how it is likely to influence LMS. The different theories of unemployment are then reviewed and an integrated model presented. Part 2 describes the method used to test the integrated model, and Part 3 discusses the key results. Part 4 then summarises the research, the implications for economic theory and policy, weaknesses of the study, and opportunities for further research.

I. BACKGROUND INFORMATION

Labour market status and wellbeing

Numerous studies have examined the effects of unemployment on wellbeing, dating back as far as the 1930s. Three key findings to emerge from the research are the following:

a) Unemployed people have poorer psychological health than employed workers. Compared to employed individuals and those in low-paid jobs, the unemployed are significantly more likely to suffer: anxiety; depression; hostility; paranoia; loss of confidence; reduction in self-esteem; poorer cognitive performance; loss of motivation; learned helplessness; lower happiness; suicidal ideation; lower levels of coping; psychosomatic problems; and behavioural problems (Theodossiou, 1997; Goldsmith et al., 1997; Layard, 2005; Morrell et al., 1998; Flatau et al., 2000; Creed et al., 1999; Shamir, 1986; Murphy and Athanasou, 1999).

b) The impact of unemployment worsens over time and may have a scarring effect. Liem and Liem (1988) found that unemployment leads to psychological impairment after approximately 2 months. The symptoms increase further after 4 to 5 months and health continues to deteriorate between 8-12 months of continuous unemployment. Those who regain employment within 4 months of becoming unemployed recover quite quickly. Individuals hired after being unemployed for 4 to 7 months recover, but only after 5 to 8 months of re-employment.

Clark et al., (2001) found wellbeing is lower not only for the current unemployed but also for those with higher levels of past unemployment. Men who have been unemployed for roughly 60 percent of their time in the labour force over the past three years are indifferent (in terms of life satisfaction) between current employment and unemployment, suggesting a scarring effect.

c) Psychological capital (PK) significantly influences the productivity of labour and LMS.
PK is defined as "those features of personality[1] psychologists believe contribute to an individual's productivity. These may include a person's perception of self, attitudes toward work, ethical orientation, and general outlook on life." (Goldsmith et al., 1997, p. 815).[2] Judge et al. (1997; 1998; 2001) have identified four personality traits that are good predictors of a person's productivity:

- Self-esteem – A person's belief that they are a lovable, valuable and capable individual, influencing feelings of adequacy, confidence and desire for achievement.
- Self-efficacy –"A person's belief in his or her ability to perform competently in whatever is attempted." (Wood & Wood, 1996, p. 724; Bandura, 1997).
- Locus of control – A person's belief about how much control they have over situations in their life. "[P]eople with an internal locus of control see themselves as primarily in control of their behaviour and its consequences; those with an external locus of control perceive what happens to be in the hands of fate, luck, or chance." (Wood & Wood, 1996, p. 717).
- Emotional stability – "[T]he ease and frequency with which the person becomes upset and distressed." (Carver et al., 2000, p. 65). It "represents the tendency to exhibit poor emotional adjustment and experience negative affects such as fear, hostility, and depression" (Judge et al., 1998, p. 170).

Based on a meta-analysis of research, Judge et. al. (2001) found these four traits explain 20-30 percent of individuals' work performance. Because the four traits are highly correlated with each other (between 0.47 and 0.86) the authors combined them into a single construct called 'core self-evaluations' –""basic conclusions" or "bottom-line evaluations" that represent one's appraisal of people, events, and things in relation to oneself." (Erez & Judge, 2001, p. 1270). In this research, the core self-evaluations construct is used to measure PK.[3]

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[1] Personality refers to "A person's unique and stable pattern of characteristics and behaviours" (Wood et al., 1996).

[2] Alternative terms used to describe PK in economic research include: 'personality' or 'psychological traits'; 'non-cognitive traits'; 'Affective human capital'; 'Wider human capital'; 'Personal capital', and 'Soft skills'.

[3] The five factor theory has also been used to study the relationship between personality and performance. However only conscientiousness has been found to be a consistently good predictor of performance across a

PK is expected to influence a person's motivation to engage in job-search activity, which will facilitate re-employment. Motivation refers to "the sum of the forces [including PK] that produce, direct, and maintain effort expended in particular behaviours" (Jewell, 1985, p. 347). More highly motivated individuals are expected to exert greater effort and therefore be more productive. Motivation theories such as 'goal-setting theory', 'expectancy theory' and 'learned helplessness theory'[4] suggest individuals with higher self-efficacy, self-esteem, and a more internal locus of control will be more motivated and committed to achieving goals (such as employment). They are more likely to evaluate negative events or outcomes optimistically and persevere in the face of aversive conditions because they see themselves as capable of producing desired outcomes. They also strive to meet higher expectations for themselves, and are more likely to draw on positive thoughts about their strengths and previous successes after a failure experience (Judge et al., 1998; Dodgson et al., 1998). People with low core self-evaluations are more likely to reduce their effort or give up (Goldsmith et al., 2000; Robbins et al., 1994; Earley et al., 1987).[5]

Support for the idea that PK influences LMS also comes from studies evaluating the benefits of personal development training in employment programs seeking to reduce the negative psychological effects of unemployment on wellbeing. These interventions have sought to:

- Teach problem solving and coping skills that inoculate participants against setbacks in job seeking and the prolonged effects of unemployment;
- Improve mental health by reducing depression, psychological distress, guilt, anger, and helplessness, and life-satisfaction;
- Improve attitudes toward work;
- Increase self-efficacy and self-esteem to speed re-employment (Eden & Aviram, 1993; Caplan et al., 1989; Proudfoot et al., 1997; Creed et al., 1996; 1998; 1999).

Such studies found that personal development training:

- Significantly improved job seekers' ability to find employment;
- Improved the self-esteem, self-efficacy, coping skills, life-satisfaction and mental health of participants;
- Resulted in higher quality reemployment in terms of earnings and job satisfaction;
- Increased motivation among those who continued to be unemployed, including expectations of reemployment.

The studies often conclude that labour market programs should include training to improve psychological health, encourage positive aspects of coping (such as promote an internal locus of control), build self-esteem and self-efficacy, promote greater participation in meaningful leisure activities, and challenge perceptions of deprivation.

PK is also expected to affect LMS by influencing the likelihood that a person will exit a job. Personality influences a person's perceptions and attitudes toward their work environment, including job satisfaction, involvement, and commitment. These attitudes in turn affect motivation and outcomes such as ability to cope with stress, absenteeism, performance, and intentions to quit. People with poorer core self-evaluations are more likely find demanding or insecure jobs stressful, producing behavioural problems including procrastination, avoidance, absenteeism and turnover (Robbins et al., 1994; Parker et al. 2003; Bliese et al., 2001; Nelson et al., 1995; Seligman et al., 1986). In conjunction with the research of Liem & Liem cited earlier, such findings suggest re-employed individuals with poor PK may be at greater risk of dropping out of the labour market again because they are

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range of individuals and professions. Extroversion, neuroticism, agreeableness, and openness to experience produced inconsistent findings (Salgado, 1997; Barrick & Mount, 1991; Tett et al., 1991).

[4] 'Learned helplessness' refers to a condition in which a person begins to believe they have no control over situations as a result of exposure to failure experiences and negative consequences.

[5] Other theories linking core self-evaluations to motivation and performance include 'self-consistency theory' (Korman, 1970), 'control theory' (Judge et al. 1998), and Maslow's hierarchy of needs (Muchinsky, 1983).

unable to cope well with work stresses as their PK hasn't had adequate time to recover after re-employment. Employers are also more likely to retrench under-performing workers.

Theories of unemployment and wellbeing

Different economic and psychological theories attempt to explain the effects of unemployment on wellbeing. The following describes five models (the first two from economics and the remaining three from psychology), which are then integrated.

a) Skills atrophy model

The skills atrophy model is an economic theory of hysteresis, which argues that during periods of unemployment the work skills (human capital) of the unemployed become outdated and redundant, making them less employable. This makes it harder to return to work even when jobs become available. "[U]nemployed workers may [also] gradually lose the motivation, self-confidence or the self-discipline needed to get to the workplace and fulfil job requirements." (The Economist Economic Dictionary). This loss of skills and demoralisation increases the probability that the unemployed will remain jobless at any given wage and become long-term unemployed as they are increasingly marginalised (Quiggin, 1995).

b) Social-psychological theory of hysteresis

Darity and Goldsmith (1993) also proposed a theory of hysteresis based on the adverse social psychological consequences of exposure to a long period of unemployment, underemployment, or multiple spells of unemployment. Unemployment produces adverse health effects, including a loss of self-esteem, fear, depression, and a sense of 'learned helplessness'. This reduces a person's motivation to search for employment (as well as the intensity and persistence of job search activity) because they believe their own actions will have little or no effect on their circumstances, resulting in persisting unemployment. If perceived helplessness also diminishes cognitive efficiency, the unemployed are likely perform less well at job interviews or evaluations relative to those who have avoided feelings of helplessness, such as new entrants, re-entrants, and those searching for employment while still employed. Helplessness may also reduce the motivation to acquire skills that increase the likelihood of re-employment or make it relatively more difficult to learn new skills even if motivated enough to engage in skill acquisition efforts. Moreover, a re-employed worker whose sense of helplessness lingers may under-perform compared to stably employed co-workers, increasing their likelihood of being returned to the unemployed pool. These effects are all expected to contribute to persisting unemployment and hence an increase in the rate of unemployment.

c) Agency restriction theory

Fryer's (1986) 'agency restriction model' argues that financial deprivation (i.e. the loss of the manifest benefit of employment - income) is the main negative consequence of unemployment. Fryer believed individuals strive for meaningful determination in line with their personal values and goals. Unemployed people, having lost their income, would have greater difficulty making plans for the future, causing psychological distress.

d) Latent deprivation theory

Jahoda (1981; 1982) argues that paid employment also helps meet five important latent psychological needs: time structure; social contact outside of the immediate family; being part of a collective purpose; engagement in meaningful activities, and; having social status. Unemployment reduces an individual's capacity to meet these psychological needs, leading to higher levels of distress.

e) Reverse causation theory

Kasl's (1982) 'reverse causation theory' argues that unemployment has a negative impact on an individual's self-esteem. This poor health in turn interferes with his/her ability, or desire, to find work. The longer the individual remains out of the labour market, the more damage occurs to his/her self-esteem, creating a negative cyclical effect between psychological health and job search activity. Consequently, the individual remains out of the labour market for longer periods of time.

Existing studies provide support for the validity of these theories. Compared to the employed, unemployed people experience greater financial strain (Rantakeisu, 1999; Turner 1995), have less structured and purposeful time use (Wanberg, et al., 1997), lower levels of activity (Waters & Moore, 2002c), are involved in fewer social activities (Underlid, 1996), feel less involved in a collective purpose, and have a lower sense of status (Creed & Muller, 2003). Waters and Moore (2002) and Kulik (2001) found financial deprivation, alternate roles, social support, and leisure activities, have a significant effect on self-esteem and psychological health during unemployment.

Support also exists for Kasl's reverse causation theory. Higher self-esteem facilitates re-employment (Caplan, 1989; Vinokur and Schul, 1997). Waters and Moore (2002a) found self-esteem isn't highly predictive of employment status, but re-employed individuals rated their latent deprivation lower and their internal locus of control higher than those continuously unemployed. Vinokur and Schul (1997) also found that higher self-efficacy and a more internal locus of control significantly predicted a person's likelihood of becoming re-employed over a six-month period. Individuals with higher emotional stability were also more likely to fair better both health and employment wise (Creed & Watson, 2003). Waters and Moore (2002a) therefore conclude that Kasl's theory still holds true if his theory is broadened beyond self-esteem to also consider these other psychological traits.

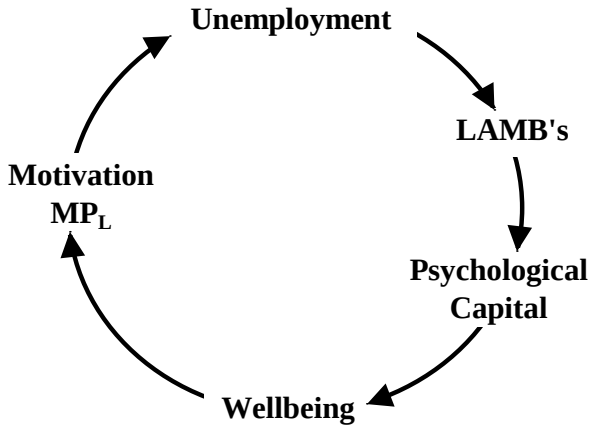
An integrated model

Figure 1 combines the key concepts of these five theories. The model hypothesises that unemployment (or under-employment) deprives people of important latent and manifest benefits (LAMB's) associated with employment, which in turn negatively impacts on wellbeing (e.g., depression, anxiety, fear, stress, etc.) Poorer wellbeing adversely effects the person's motivation to engage in job-search activity or the acquisition of human capital skills that facilitate re-employment. Potential employers also avoid hiring individuals with poor wellbeing because they perceive them as less productive. Such individuals are therefore likely to remain unemployed for longer periods of time, which in turn further negatively affects their LAMB's and wellbeing (a scarring effect). A vicious downward cycle may develop, creating the risk of long-term unemployment.

PK helps moderate the negative impact of unemployment on wellbeing and facilitates re-employment. Individuals with healthier core self-evaluations are likely to cope better with the loss of LAMB's, and remain motivated to engage in job search activity and skills acquisition. Potential employers will also hire labour with healthier PK who are more productive. Unemployed people are therefore more likely to regain work, breaking the vicious cycle. However the longer a person remains unemployed, the more his/her PK is likely to be eroded. The failure to find work may result in learned helplessness, negatively affecting core self-evaluations, and therefore motivation as the individual increasingly feels he/she cannot influence their circumstances. As PK deteriorates it has less of a moderating effect on wellbeing and motivation, increasing the chances of long term unemployment. Workers at greatest risk of becoming long term unemployed are those who have poor PK at the time of becoming unemployed or who are unsuccessful in regaining employment relatively quickly and experience a significant deterioration in their PK. Individuals who do regain employment but have poor PK are at greater risk of developing negative attitudes toward work and quitting

their jobs, increasing the probability that they will re-enter the negative unemployment/wellbeing cycle.

Figure 1: Integrated Model of Unemployment Effects



The model therefore predicts that unemployment and wellbeing have a simultaneous relationship. PK and the LAMB's are significant variables influencing wellbeing and (indirectly) LMS. Healthier PK helps people regain employment. However the longer a person remains unemployed, the more their PK will be eroded. These presuppositions form the basis for developing and testing the structural equations for LMS and Wellbeing in the following sections.

II. METHOD

Data

Wave 4 cross-sectional data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey is used to estimate the equations. "The HILDA Survey is a broad social and economic survey, with particular attention paid to family and household formation, income and work." (HILDA User Manual).[6] The sample includes 9777 respondents aged between 17 and 64 years. 74.9 percent of respondents are employed, 3.4 percent are unemployed, and 21.7 percent are 'not in the labour force' (NILF). 52.5 percent of respondents are female and 47.7 percent male.

Measures

Labour Market Status (LMS). LMS is measured using a dichotomous dummy variable with a value of 1 for 'employed' and 0 for 'unemployed or NILF'. Individuals who are unemployed or NILF are treated as a distinct labour force state. Debate exists over whether unemployment and NILF are distinct labour force states (see Flinn & Heckman, 2003). However this study found that, in terms of wellbeing and PK, the two states are very similar. A comparison of individuals NILF who had no unemployment history with those who had an unemployment history found that there was no statistically significant difference between the two in terms of wellbeing and PK (results not reported here). 37 percent of NILF individuals had an unemployment history of (an average) 34 weeks, suggesting that a significant proportion of those not in the labour force could be unemployed individuals who have dropped out of the labour market. Combining the two states facilitates greater comparison of the two distinct labour market states – 'employed' and 'unemployed or NILF' – given the small percentage of unemployed individuals in the sample.

[6] Information about the HILDA Survey, including questionnaires, is available on the HILDA website, www.melbourneinstitute.com/hilda/data.html.

Wellbeing. Wellbeing is measured using the SF-36 Health Survey included in the HILDA self-completion questionnaire. "The SF-36 Health Survey is an internationally recognised diagnostic tool for assessing functional health status and well-being." (HILDA Manual, p. 43) with "proven test-retest reliability and sound psychometric qualities." (Adam & Flatau, 2005). The scale comprises 36 items, scored from 0 to 100, measuring eight distinct aspects of health: mental health, general health perceptions, physical functioning, role limitations due to physical health, bodily pain, social functioning, vitality, and role limitations resulting from emotional problems (ibid.).

Psychological capital. PK is measured using a proxy for the core self-evaluations construct. HILDA asks seven questions that provide a measure of self-efficacy and locus of control including "There is no way I can solve some of the problems I have" and "What happens to me in the future mostly depends on me."[7] While there is no measure of self-esteem or emotional stability, Judge et al., (2001) discussed earlier found the two missing components of the core self-evaluations construct are highly correlated with self-efficacy and locus of control. Responses to the seven questions are therefore totalled to provide a proxy estimate of each respondent's core self-evaluations (PK).

Latent and Manifest Benefits (LAMB's). No explicit measures for the LAMB's exist in the HILDA survey. However Creed, Waters & Machin (in press) have provided a validated scale for measuring latent and manifest benefits, and questions asked in HILDA were used as proxies for each component of the scale. These are:

- Financial deprivation – Estimated using the respondents rating of the question, "Given your current needs and financial responsibilities, would you say that you and your family are…"(Six point scale from 'Prosperous' to 'Very poor')
- Social support – Total score for rating of ten statements including, "I seem to have a lot of friends" and "I have no one to lean on in times of trouble".
- Time structure – Response to question, "How often do you feel you have spare time that you don't know what to do with?"
- Social status – Rating of their satisfaction or dissatisfaction with their home, employment opportunities, finances, and neighbourhood.
- Collective purpose – Rating of their satisfaction with "Feeling part of the local community"
- Meaningful activities – Response to the question, "Are you currently an active member of a sporting, hobby or community-based club or association?"

Procedures

Two Stage Least Squares (2SLS) regression techniques were used to estimate the following simultaneous structural equations for LMS and wellbeing:

$$LMS_t = \alpha_1 + \alpha\ Wellbeing_t + \alpha Human\ Capital_t + \alpha\ Demographics_t + \mu_t$$

$$Wellbeing_t = \beta_1 + \beta LMS_t + \beta LAMB's_t + \beta PK_t + \mu_t$$

Labour Market Status (Employed or unemployed/NILF) is a function of a person's wellbeing (SF-36 score), human capital variables (level of education, years of work experience), and demographic characteristics (age, gender, indigenous status, children, and remoteness of region lived in within Australia). The second equation expresses wellbeing as a function of a

[7] The seven questions are indicated by HILDA to be a measure of self-efficacy, but some of the questions closely resemble those posed in Levenson's (1981) locus of control scale.

person's LMS, latent and manifest benefits (financial deprivation, social support, meaningful activities, social status, time structure, collective purpose), and psychological capital. At this stage, LAMB's and PK are assumed to be exogenous variables.

Data is in natural logarithm form to estimate elasticity coefficients. Analysis Of Variance (ANOVA) is also used to investigate whether PK, wellbeing, and the LAMB's deteriorate as the length of unemployment increases.

III. RESULTS

LMS equation

Results for the fist equation (Table 1) show that LMS is significantly influenced by a person's wellbeing, human capital (education and experience), age, gender, and children. Ethnicity and remoteness were found to be largely insignificant. Based on elasticity's, the coefficient for wellbeing (0.84) suggests LMS is more responsive to a change in psychological and physical health than a change in human capital or demographic variables (roughly 4 to 8 times more responsive). The contribution of wellbeing to LMS for males (0.92) is significantly higher than that of females (0.76) perhaps suggesting males derive a greater sense of identity from employment than females. Higher levels of education or more years of experience have a positive affect on whether a person is employed or unemployed/NILF. However the older a worker becomes (particularly as they approach retirement age), the more likely they are to become unemployed of drop out of the labour market. Children also have a small, but significant effect on LMS (-0.01), with parents (more so females) likely to be unemployed or NILF.

Wellbeing equation

Table 2 presents the regression results for the Wellbeing equation, showing that LMS, four of the five LAMB's, and PK variables significantly influence wellbeing. The coefficient for LMS (0.39) suggests that obtaining work gives a positive boost to an individual's psychological wellbeing. This is particularly so for males who's wellbeing is significantly more responsive to a change in LMS compared to females (0.55 for males compared to 0.35 for females). Apart from 'collective purpose', all of the latent and manifest benefits derived from employment significantly influence wellbeing. Greater social support, meaningful activities, social status, and time structure positively affect wellbeing, while financial deprivation negatively affects wellbeing. Social support is the most significant of these LAMB's variables. A one percentage point increase in the social support measure is associated with approximately a 0.27 increase in the wellbeing measure. The other variables will result in around a 0.03-0.11 change in wellbeing. The 'Time Structure Squared' variable indicates increased time structure improves wellbeing, but at a diminishing rate. The results show no significant difference between males and females in terms of the impact of LAMB's on wellbeing.

Wellbeing is also sensitive to a change in PK. A one percent increase in the core self-evaluations measure will result in around a 0.49 percent increase in the FS-36 wellbeing score. This supports the argument that higher self-esteem, self-efficacy, emotional stability, and a more internal locus of control, have a positive impact on wellbeing, and therefore indirectly on LMS through its affect on wellbeing in the LMS equation.

The Hausman Specification Test results (not reported here) indicate that there does exist a significant simultaneous relationship between LMS and wellbeing, supporting the validity of the integrated model.

Table 1: 2SLS Cross-Section Results for Labour Market Status Equation

		All			Male			Female		
Variables	*Expected sign*	*Coefficients*	*Standard error*	*t-ratio*	*Coefficients*	*Standard error*	*t-ratio*	*Coefficients*	*Standard error*	*t-ratio*
Constant		-3.04	0.19	-15.85	-3.37	0.24	-13.84	-2.69	0.29	-9.42
Wellbeing										
Wellbeing (SF-36)	+	0.84	0.04	19.11	0.92	0.06	16.61	0.76	0.07	11.70
Human Capital										
Education: Postgraduate[1]	+	0.08	0.03	2.94	0.07	0.03	2.29	0.07	0.04	1.66*
Education: Graduate	+	0.09	0.02	4.48	0.08	0.03	2.90	0.09	0.03	3.32
Education: Bachelor	+	0.09	0.01	6.36	0.05	0.02	2.57	0.11	0.02	5.61
Education: Diploma	+	0.04	0.02	2.41	0.05	0.02	2.28	0.04	0.02	1.51
Education: Certificate 3 or 4	+	0.03	0.01	2.45	0.02	0.01	1.06	0.05	0.02	2.44
Education: Certificate 1 or 2	+	-0.13	0.04	-3.58	-0.06	0.05	-1.03	-0.16	0.05	-3.42
Education: Year 12	+	0.03	0.01	2.14	0.04	0.02	2.12	0.03	0.02	1.48
Currently enrolled in a course	-	-0.03	0.01	-2.35	0.02	0.02	1.16	-0.06	0.02	-2.97
Experience (Years)	+	0.22	0.01	23.24	0.17	0.02	9.99	0.23	0.01	18.28
Long term health disability or condition	-	0.03	0.02	1.67*	0.00	0.02	0.26	0.04	0.02	1.77*
Demographics										
Gender (Male)	+	0.06	0.01	6.03						
Age 25 to 34[2]	-	-0.29	0.02	-14.19	-0.20	0.03	-7.20	-0.32	0.03	-10.44
Age 35 to 44	-	-0.38	0.02	-15.18	-0.31	0.04	-8.62	-0.36	0.04	-10.09
Age 45 to 54	-	-0.42	0.03	-15.03	-0.40	0.04	-9.45	-0.37	0.04	-9.13
Age 55 to 64	-	-0.70	0.03	-22.53	-0.65	0.05	-13.71	-0.65	0.04	-14.80
Aboriginal or Torres Strait Islander	-	-0.02	0.03	-0.74	-0.03	0.04	-0.62	-0.02	0.05	-0.40
Children	-	-0.01	0.00	-3.82	0.01	0.00	2.10	-0.03	0.01	-5.06
Region: NSW Balance[3]	+ or -	-0.03	0.02	-1.89	-0.04	0.02	-1.82*	-0.02	0.03	-0.87
Region: Melbourne	+ or -	0.01	0.02	0.53	0.01	0.02	0.28	0.01	0.02	0.32
Region: Victoria Balance	+ or -	0.00	0.02	0.03	0.02	0.02	0.62	-0.01	0.03	-0.49
Region: Brisbane	+ or -	-0.03	0.02	-1.68*	-0.02	0.02	-0.95	-0.05	0.03	-1.64*
Region: QLD Balance	+ or -	-0.03	0.02	-1.94	-0.06	0.02	-2.55	-0.02	0.03	-0.59
Region: Adelaide	+ or -	-0.04	0.02	-2.05	-0.02	0.03	-0.88	-0.07	0.03	-2.19
Region: SA Balance	+ or -	-0.05	0.03	-1.77*	-0.04	0.03	-1.27	-0.05	0.04	-1.16
Region: Perth	+ or -	-0.04	0.02	-1.95	-0.01	0.03	-0.31	-0.08	0.03	-2.31
Region: WA Balance	+ or -	-0.03	0.03	-1.00	-0.04	0.04	-1.10	-0.02	0.05	-0.35
Region: Tasmania	+ or -	-0.04	0.03	-1.55	-0.09	0.03	-2.78	0.01	0.04	0.32
Region: NT	+ or -	0.03	0.06	0.54	0.00	0.08	0.03	0.05	0.09	0.51
Region: ACT	+ or -	0.01	0.04	0.17	0.00	0.04	0.04	0.01	0.05	0.25
r^2		0.30			0.31			0.28		
Adjusted r^2		0.30			0.30			0.28		
F		90.27			44.07			45.25		
Significance level		0.00			0.00			0.00		

[1] Base level of education is 'Less than Year 12'

[2] Base age is '17-24 years old'

[3] Base region is Sydney

* Statistically significantly different from zero at the 0.1 confidence level

Table 2: 2SLS Cross-Section Results for Wellbeing Equation

		All			Male			Female		
Variables	*Expected sign*	*Coefficients*	*Standard error*	*t-ratio*	*Coefficients*	*Standard error*	*t-ratio*	*Coefficients*	*Standard error*	*t-ratio*
Constant		1.22	0.12	9.77	1.23	0.17	7.10	1.24	0.18	7.04
Labour Market Status										
Labour Market Status (Employed)	+	0.39	0.02	18.11	0.55	0.04	15.55	0.34	0.03	10.72
LAMB's										
Financial Deprivation	-	-0.10	0.02	-6.53	-0.06	0.02	-3.11	-0.12	0.02	-5.41
Social Support	+	0.27	0.02	14.09	0.25	0.03	9.89	0.28	0.03	9.80
Meaningful Activities	+	0.03	0.01	3.70	0.03	0.01	3.21	0.03	0.01	2.28
Social Status	+	0.11	0.02	5.00	0.04	0.03	1.42	0.11	0.03	3.72
Time Structure	+	0.10	0.02	4.34	0.07	0.03	2.14	0.12	0.03	3.37
Time Structure Squared	-	-0.03	0.01	-2.28	-0.02	0.02	-1.05	-0.05	0.02	-2.34
Collective Purpose	+	0.00	0.01	-0.35	-0.01	0.01	-0.91	0.01	0.02	0.74
Psychological Capital										
Core self-evaluations	+	0.49	0.03	17.34	0.55	0.04	12.85	0.49	0.04	12.22
Adjusted r^2		0.31			0.36			0.28		
F		327.77			188.11			151.90		
Significance level		0.00			0.00			0.00		

ANOVA results

In estimating the equations, the assumption was made that the LAMB's and PK are exogenous variables (i.e. a person's LMS does not affect the LAMB's or PK). This contradicts the expectation stated earlier that the longer a person is unemployed the greater is the damage to PK and LAMB's.[8]

To test the assumption that wellbeing and PK deteriorate with length of unemployment, ANOVA analysis was used to compare the wellbeing and PK scores of employed individuals with people unemployed for different lengths of time (1-4 weeks, 5-16 weeks, 17-26 weeks, 27-52 weeks, over 52 weeks). The unemployed were separated from those not in the labour force (NILF) to see if there was any significant difference between the two groups in terms of wellbeing and PK. Only those individuals with no history of unemployment were included in the NILF category. The LAMB's scores for the employed, unemployed, and NILF individuals were also compared to see if there was any evidence that they also deteriorate significantly over time compared to the employed and NILF, which would help explain why wellbeing deteriorates.

The results (Table 3) show both the wellbeing and PK of people unemployed for more than six months is significantly lower than that of the employed. People not in the labour force also have significantly lower wellbeing than the employed but not the unemployed. This is also true for PK, except for those who are only newly unemployed (less than one month), perhaps because those who are very short term unemployed haven't yet begun to experience a deterioration in PK.[9]

Latent and manifest benefits also appear to worsen with the length of unemployment. The negative effects of financial deprivation are significant after 17 weeks of unemployment. The decline in social support and meaningful activities is most significant after 6 months of unemployment, perhaps as individuals withdraw from their social support networks. Social status and time structure are immediately lower for the unemployed compared to the employed, suggesting there is a negative stigma associated with not having a job and the unemployed have idle time. A sense of collective purpose (found to be insignificant in the regression analysis) is also significantly lower for the unemployed compared to the employed after 17 weeks.

Individuals who are NILF suffer significantly higher levels of financial deprivation, and have lower levels of social support, meaningful activities, social status, and time structure compared to the employed. Only collective purpose was found to be insignificantly different.

The results of the ANOVA analysis therefore provide some support for the prediction of the integrated model that wellbeing and PK will deteriorate as the length of unemployment increases, at least in part as a result of worsening LAMB's.

IV. DISCUSSION

The aim of this study was to examine whether or not a person's wellbeing and LMS simultaneously influence each other, and whether PK moderates the impact of unemployment on wellbeing and facilitates re-employment. The idea was tested by first integrating different economic and psychological theories into one model and then testing the model using regression and ANOVA techniques. Together the theory and applied results suggest that:

[8] Attempts to calculate equations for each of the endogenous variables proved impracticable because of the lack of data and psychological theory to guide the process. Thought was also given to lagging the endogenous variables to make them exogenous. While this makes statistical sense, it does not make theoretical sense. For example, the financial deprivation a person felt last year while employed is unlikely to be a good reflection of the financial deprivation they experience this year if unemployed.

[9] Results comparing those people who are NILF with the unemployed are not reported here.

Table 3: ANOVA Comparison of Psychological Capital, Wellbeing, and LAMB's Between the Employed and Unemployed/NILF

Dependent Variable	Labour Market Status	Sample Size	Mean Difference (Employed - Unemployed/NILF)	Standard Error	Significance (*p* value)
Wellbeing	Employed	6954			
	Unemployed 1-4 weeks	22	-4.16	6.04	0.49
	Unemployed 5-16 weeks	21	11.78**	6.18	0.06
	Unemployed 17-26 weeks	45	5.63	4.23	0.18
	Unemployed 27-52 weeks	54	10.76*	3.87	0.01
	Unemployed over 52 weeks	146	10.58*	2.37	0.00
	NILF	2082	13.01*	0.71	0.00
Psychological capital	Employed	6954			
	Unemployed 1-4 weeks	22	0.16	0.31	0.62
	Unemployed 5-16 weeks	21	-0.04	0.32	0.89
	Unemployed 17-26 weeks	45	-0.09	0.22	0.67
	Unemployed 27-52 weeks	54	0.52*	0.20	0.01
	Unemployed over 52 weeks	146	0.27*	0.12	0.03
	NILF	2082	0.37*	0.04	0.00
Financial Deprivation	Employed	6694			
	Unemployed 1-4 weeks	18	-0.08	0.19	0.66
	Unemployed 5-16 weeks	17	0.14	0.19	0.46
	Unemployed 17-26 weeks	36	-0.22**	0.13	0.09
	Unemployed 27-52 weeks	46	-0.56*	0.12	0.00
	Unemployed over 52 weeks	130	-0.74*	0.07	0.00
	NILF	1942	-0.29*	0.02	0.00
Social Support	Employed	7320			
	Unemployed 1-4 weeks	19	0.02	0.24	0.95
	Unemployed 5-16 weeks	20	0.39**	0.23	0.10
	Unemployed 17-26 weeks	40	0.14	0.16	0.38
	Unemployed 27-52 weeks	50	0.30*	0.15	0.04
	Unemployed over 52 weeks	146	0.43*	0.09	0.00
	NILF	2124	0.16*	0.03	0.00
Meaningful Activities	Employed	6711			
	Unemployed 1-4 weeks	18	-0.11	0.11	0.32
	Unemployed 5-16 weeks	17	-0.04	0.12	0.75
	Unemployed 17-26 weeks	35	-0.08	0.08	0.35
	Unemployed 27-52 weeks	46	-0.13**	0.07	0.07
	Unemployed over 52 weeks	132	-0.16*	0.04	0.00
	NILF	1941	-0.05*	0.12	0.00
Social Status	Employed	7317			
	Unemployed 1-4 weeks	19	3.31*	1.30	0.01
	Unemployed 5-16 weeks	20	2.07**	1.26	0.10
	Unemployed 17-26 weeks	40	5.10*	0.89	0.00
	Unemployed 27-52 weeks	50	4.23*	0.80	0.00
	Unemployed over 52 weeks	146	6.45*	0.47	0.00
	NILF	2123	6.00*	0.14	0.00
Time Structure	Employed	6694			
	Unemployed 1-4 weeks	18	0.65*	0.20	0.00
	Unemployed 5-16 weeks	17	0.92*	0.20	0.00
	Unemployed 17-26 weeks	36	0.87*	0.14	0.00
	Unemployed 27-52 weeks	46	0.74*	0.12	0.00
	Unemployed over 52 weeks	132	0.85*	0.07	0.00
	NILF	1937	0.27*	0.02	0.00
Collective Purpose	Employed	7317			
	Unemployed 1-4 weeks	19	1.16*	0.50	0.02
	Unemployed 5-16 weeks	20	0.14	0.49	0.78
	Unemployed 17-26 weeks	40	0.61**	0.35	0.08
	Unemployed 27-52 weeks	50	0.68*	0.31	0.03
	Unemployed over 52 weeks	146	0.63*	0.18	0.00
	NILF	2124	0.08	0.05	0.16

* The mean difference is significant at the .05 level.

** The mean difference is significant at the .10 level.

- A person's psychological and physical wellbeing is an important variable affecting LMS, and LMS significantly influences wellbeing. People with a job are healthier and happier.
- Unemployment does affect a person's wellbeing by impacting on latent and manifest benefits derived from employment. The longer a person remains unemployed, the greater the negative effects on LAMB's.
- A person's PK significantly influences wellbeing. People with healthier core self-evaluations have higher wellbeing, which helps facilitate re-entry into the labour market. People with healthier PK are expected to be more motivated to engage in job search activity and productive, making them attractive to potential employers. Healthier PK may also help individuals remain in employment by positively influencing attitudes toward work. However PK appears to deteriorate the longer a person remains unemployed, which may hinder re-employment and trap a person in a negative unemployment-wellbeing cycle that results in long-term unemployment and causes psychological scarring.

Policy and theory implications

A number of policy implications arise from these findings. Firstly, initiatives designed to improve a person's wellbeing and PK are likely to improve the productivity of labour, the employment status of job seekers, and increase 'gross national happiness'. The results support the recommendation (discussed earlier) that labour market programs should include training that improves both human capital skills and PK by enhancing core self-evaluations. The significant influence of LAMB's on wellbeing suggests initiatives designed to link up the unemployed with services such as employment service providers or financial and career practitioners more quickly may also help minimise the deterioration in social support and time structure of the unemployed.

The results also suggest that investing in longer term initiatives to improve people's PK (for example, through the education system) will help develop resiliency skills that reduce hysteresis-type unemployment and improve peoples' ability to manage social and economic changes associated with structural reform. For example, the Australian Blueprint for Career Development currently being trialled (based on similar initiatives in the USA and Canada) teaches key competencies designed to help young people become more resilient, adaptive and committed to ongoing learning and development, and better able to effectively manage their careers. The first of these competencies is building and maintaining a positive self-image (i.e., building PK).

There are also important theoretical implications for economics arising from the research. The results suggest that psychological variables such as wellbeing and PK do have a significant influence on economic factors such as employment and the productivity of labour. Historically mainstream economists have excluded psychological variables from economic research because of: (1) a lack of guidance in mainstream economic theory on which personality or behavioural traits may influence productivity; (2) a lack of frameworks for measuring personality, and; (3) a lack of data collected on personality traits in large data sets. This has raised concerns of omitted variable biases in economic theories and models, and highlights the need for greater cooperation between economists and psychologists to create more robust economic theories.

Weaknesses and opportunities for further research

A number of methodological weaknesses exist in the applied research. Firstly, the study was reliant on proxy measures for PK and LAMB's in the HILDA dataset, which may have affected the validity of results, particularly for variables found to be insignificant. Secondly, small sample sizes for some categories of unemployment are likely to have weakened the quality of the ANOVA results as the samples may not be reflective of the population. Thirdly, the assumption made in estimating the structural equations that PK and LAMB's are exogenous is limiting, particularly in light of the ANOVA analysis. The results of this study

should therefore be considered preliminary as further analysis utilising the longitudinal data contained in HILDA is needed to address this endogeneity problem and validate the results.[10]

The study also highlights opportunities for future research. Longitudinal analysis could be used to examine the reciprocal effects of unemployment on wellbeing by considering changes across various waves of HILDA data. Use of the core self-evaluations construct to measure PK could also be increased. To date, few studies have utilised the concept, instead focusing on individual traits.[11] Measurement of core self-evaluations may provide a practical way for economists to integrate personality into economic theory (for example, incorporating PK into the neoclassical production function) and applied research. A third opportunity for research relates to the role PK plays in influencing the productivity of labour at work. The interaction of PK, human capital, and organisational social capital has to date not been well researched and requires additional investigation, including the assertion made in this study that workers with poor PK are more likely to quit.

Finally (at a more philosophical level), discussion of economic policy often focuses on issues of efficiency and productivity, with less consideration given to the likely impact of structural reform on PK and wellbeing. This is likely to have fuelled the 'economic rationalism' debate of the last two decades. Closer interdisciplinary research between economics and psychology will hopefully facilitate a shift away from the Newtonian (mechanical) view of society that currently dominates mainstream economics to a more 'living economy' perspective – "A study of economics as if people matter".

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[10] The author is currently undertaking this analysis and hopes to report the findings at a later stage.

[11] In fact, the author is not aware of any other economic research that has utilised the core self-evaluations construct.

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