Forever Young Mr. J.K. Galbraith!
Executive Pay, Unfair Wages and Economic Growth

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Abstract

We examine the idea that excess managerial compensation acts as a reference wage in a fair wage-effort model of efficiency wages. We utilise the Australian Business Longitudinal Survey (1995-98) and the BHPS (1990-2002) to estimate the impact of excess managerial pay on labour productivity and worker pay satisfaction. We account for human capital wage effects. The evidence provides the following new insights: (a) the efficiency wages premium boosts productivity; (b) non-productivity related excess managerial pay has a detrimental effect on labour productivity and worker pay satisfaction; (c) premium efficiency wages correlate positively with excess managerial pay; (d) Bewley's (1998) claim of an asymmetric efficiency wages effect is confirmed: both the efficiency wage and the excess managerial pay effects are much larger in bad times, and (e) the change in the unemployment rate exerts has a positive but modest effect on productivity.

1. Background

Since classical economics, wages have been central to understanding business fluctuations and unemployment. The modern perspective on wages has focused on rigidity and efficiency wages theory is one approach that highlights the role of wages as an influence on work effort and productivity. Although classical labour economics relied heavily on social comparisons, the idea of wage comparisons re-emerges in modern economics with Keynes (1936) and Duesenburry (1949). The former proposed a generalised theory of fair wages that contrasted with the competitive model of wage determination (Bewley 1999). At the individual level, however, Duesenburry (1949) was first to introduce the idea of social comparisons in the theory of consumption with the concept of 'relative income'.

Yet, there is no solid consensus as to the precise relation between wages and effort. One proposition is the 'shirking' model that relies on imperfect monitoring of work effort and the fear of dismissal if caught shirking. In this approach, firms pay wage premium to discourage shirking by increasing the price of a job loss. This model has been criticised for its underlying view of humans being pre-disposed to shirking and driven by fear (Fehr and Gächter 2000). Further, Bewley (1999, 1998) has shown that there is also little empirical support for this particular interpretation of efficiency wages.

A more credible alternative is the fair wage-effort model proposed by Akerlof (1982) and Akerlof and Yellen (1990). They built on inter-disciplinary insights that acknowledge social comparisons and notions of 'equity' or 'fairness' as key motivating drivers of economic behaviour. The credibility of this 'gift exchange' model of efficiency wages derives from its conceptual appeal and its consistency with empirical facts. The model rests on a very rich scholarly tradition on human motivation that transcends disciplinary boundaries. At the core of this tradition are the concepts of social comparison and referencing. Fehr and Falk (2002; 1999) have confirmed the importance of fairness and reciprocity at the workplace.

Although elegant and intuitive, however, the fair wage-effort hypothesis imposes major challenges at the empirical level. A major obstacle is an illusive definition of 'reference' group(s). Partly due to the Keynesian legacy, there is the standard approach of 'external' reference groups (i.e., external to the firm), as in Akerlof (1982) and Krueger and Summers (1988).

In contrast, insights from the social status literature and other disciplines have motivated a shift towards 'internal' groups of comparison (see Akerlof and Yellen 1990). This approach has gained momentum in view of Danthine and Kurmann 2004) who show that efficiency wages models with external reference groups are incompatible with the wage rigidity in the real business cycle, general equilibrium framework. Exhaustive evidence in Bewley (1998) favours the internal reference wage approach. Since, several studies have found the internal reference wage model to be consistent with data (Galizzi 2001; Goldsmith *et al.* 2000) but contradictory results have also been reported (Gneezy and Rustichini 2000; Bloom 1999).

Related to the above is the charge at fair wages as a 'vague notion'. Cahuc et al. (2004) stress the fact that the literature lacks robust theoretical foundations from which social comparisons arise. Put differently, a greater understanding of the causes that motivate social comparisons is required if we are to avoid ad hoc specifications of fair wages. So far, the literature has seen

a great variety of specifications for social comparisons. Although still at the experimental stage, the literature is exposed to serious estimation problems involving unobservable factors and identification (Manski 2000). The above specification issues also lead to the serious identification problem of the efficiency wages hypothesis as against the human capital model. That is, how do we know that a so-called efficiency wages effect is not actually a human capital effect?[1]

Empirical research has attempted to overcome some of the estimation problems. One approach has focused on the wage premium in excess of returns to human capital, market demand or industrial organisation factors. Goldsmith *et al.* (2000) take a system approach to overcome the two-way connection between work effort and labour income. They use a self-reported measure of motivation as a proxy for work effort and define efficiency wages as the disparity between actual wage and expected wage where the latter is based on personal characteristics. Here, the reference wage is internal but unrelated to other workers. Their approach is a break from the standard of external referencing and deals with feedback effects from productivity to labour income. The authors utilise several complementary measures of human capital and they account for the potential link between human capital and work motivation.

There is also the sophisticated econometric approach to accounting for unobservable human capital effects. Huang *et al.* (1998) exploit survey data on observable human capital and uses a flexible empirical model that can clearly evaluate the empirical relation between observable and unobservable effects for human capital. They find that the two inputs are markedly different but the former explains 88% of movements in productivity. Galizzi and Lang (1998) is another attempt at dealing with heterogeneity in human capital. They consider the average wage in other comparable firms as the reference wage and find it to be inversely related to the employee quit rate. There are also time-series attempts at testing for Granger causality between wage growth and productivity like Fuess and Millea (2002) who find only partial support for the efficiency wages hypothesis in Japan. However, these studies fail to overcome the main criticism by Cahuc et al. (2004) regarding the need for strong foundations. Goldsmith *et al.* (1999) excepted, they also seem in conflict with Bewley (1999, p. 415) who rejects the external reference wage model.

In search of a more comprehensive rationale for 'fair wages' and a reference group, we enter institutional economics and J.K. Galbraith in particular. Galbraith (1978) endeavours to map the relation between purpose and structure in the modern corporation. He reasserts the Berle and Means (1932) 'pathbreaking' view of the separation of ownership and control but Galbraith's enduring contribution rests on his methodology that comprises of two main principles. First, an appreciation of the forces driving change in the structure of modern capitalism is required. He was, thus, able to observe the need for planning, innovation and some monopoly power in the product market. This necessitates large capital investment and the separation of ownership and control. The second principle refers to the alignment of managerial objectives and incentives to those of society in general. In the 1960s, economic stability, macroeconomic management and progressive taxation were widely acceptable social goals. In that context, Galbraith (1978) sided in favour of the modern corporation and relied on social norms to dissuade management from pecuniary interest. However, the Galbraithian 'system' is an open system that has allowed Galbraith (2004) to acknowledge the potential for managerial abuse or what he calls 'innocent fraud'. He was also able to experience and

[1] Carmichael (1990) provides a detailed discussion of the problem.

comment on a persistent shift in social norms towards a dynamic economy with strong private incentives, the return to a rising income inequality in the USA, human capital theory used 'in defence of inequality'[2] and the decline of union power (Parker 2005).

The potential conflict between management and ownership has also been acknowledged in the corporate governance literature. Conventional wisdom in financial economics has long applied agency theory in search of an optimal compensation scheme as a resolution to the principal-agent problem. Hence, the pervasive shift in favour of performance-based executive pay and more vigilant corporate governance. Yet, Bebchuk and Fried (2003), Bebchuk and Grinstein (2005) and Tirole (2006) maintain that many of these reforms are largely ineffective and management remains capable of influence over its own compensation. One of the implications is a weak link between executive pay and performance. Of course, a comprehensive review of the literature is beyond this study. For our purposes, it suffices to know that management exerts an influence over its remuneration.

Empirical evidence in labour economics also draws attention to a management role in efficiency wages. One compelling piece of evidence is that education and human capital are associated with higher earnings and productivity (Sianesi and van Reenen 2003, JES). When explaining time trends in the wage structure and income distribution the literature consensus breaks down. The standard view rests on a 'skill-bias technical change' as an important driver of income inequality. Yet, a series of empirical facts seems to contradict this hypothesis: a widening gap within occupational classes; the pay dispersion in the US is higher in narrowly defined skilled classes; the existence of a sizable minority that is 'over-educated' and earn much less than others of similar education levels; evidence contradicting claims of a meritocratic U.S. labour market; the fact that income dispersion has not grown rapidly in Europe despite the easy flow of technology across countries; inequality in the U.S. increased sharply since the late 1970s when productivity appears to have slowed down, and huge income increases were confined to the very top wage shares.[3]

Finally, we draw on research in personnel economics and organisational behaviour that focus on the link between management and worker morale. Although much of the evidence relies on subjective employee assessments, the number of employees reporting dissatisfaction with management is staggering. Branham (2005) investigates the causes of employee quits and finds that 75% of American workers say they lack leadership, 82% of all Americans believe that 'executives help themselves at the expense of the company', only 39% of American trust senior leaders and only 50% of American employees believe managers are concerned with the wellbeing of workers.

This study focus on management as the principal reference group rests on the following reasons. First, the modern manager has acquired the status of the 'boss' and is in the position to evaluate employees' contribution to the firm and decide on the remuneration of workers. Thus, the manager is the person directly responsible for the wage structure within the firm. Second, managers are also employed and are expected to produce results that add value to the firm. In that sense, they are accountable and comparable to other employees. Thus, the performance of low and middle management is continuously under scrutiny by employees. Employees who are also shareholders have added incentive to monitor and compare their pay

[2] See Welch (1999).

[3] As documented in Devroye and Freeman 2002, Piketty and Saez (2001, 2006), Dew-Becker and Gordon (2005), Cawley *et al.* (1998); Steelman and Weinberg (2005).

with that of management. Third, employees are aware of management's discretion over its compensation. Although pay secrecy impedes income comparisons, management' lifestyle and business performance shed light on the question of excess managerial compensation. More importantly, employees have an interest to know whether there is a disparity between management pay and performance since that can impact on their future compensation or employment status.

The last two points have important implications for efficiency wages theory. They provide a solid rationale for the emergence of wage comparisons at the workplace. In contrast to existing models, management-worker wage comparisons have the potential to benefit all stakeholders since they provide valuable information on managerial performance but they are also subject to rent seeking, as in standard efficiency wages models.

2. Methodology

An Empirical Model

We follow Layard *et al.* (2005) and Sanchez and Toharia (2000) to state the efficiency wages hypothesis in terms of a Cobb-Douglas production function:

$$Y_{it} = A_i K_{it}^{\alpha} E_{it}^{\beta} \ell^{\varepsilon_t} \tag{1}$$

$$where\ E_{it} = e\left[\frac{W_{p,it}}{W_{x,it}}, u_{it}\right] h_{it}^{b_1}\ L_{it}\ = L_{it}\ h_{it}^{b_1}\ W_{p,it}^{b_2}\ W_{x,it}^{b_3}\ u^{b_4}{}_{it}$$

Here Y_{it} is output produced by firm i in period t, A_{it} is the level of technology, E_{it} is stands for 'effective' labour that comprises of human capital per worker, h_{it},, labour quantity, L_{it}, and work effort, $\varepsilon_{it}(\cdot)$, while K_{it} represents the capital stock and ε_{it} is an $I(0,\sigma^2)$ error term. The basic fair wage-effort hypothesis states that work effort, e_{it}, is determined by the wage premium the workers receive, $W_{p,it}$ and the reference or fair wage, $W_{x,it}$, and unemployment, u_{it}. In principle, we adapt the Goldsmith *et al.* (1999) approach and define the wage premium as the weighted average of all workers' wage in excess of that justified by their human capital and industry characteristics. However, we extend the Goldsmith *et al.* (1999) model to include the possibility that workers compare their premium wage with the reference wage, $W_{x,it}$, which they treat as fair. We conjecture that the reference wage is the average weekly earnings of managers in excess of that justified by overall productivity and industry standards. It is predicted that $W_{p,it}$ and u_{it} induce greater work effort while $W_{x,it}$ has an adverse effect.

Next we explore the empirical implications of the model. Taking logs and the first difference in the simplified version of (1) leads to the growth accounting relation

$$g_Y = c + \alpha\, g_K + \beta\, g_L + \gamma_1\, g_h + \gamma_2\, g_{W_p} + \gamma_3\, g_{W_x} + \gamma_4\, g_u + \varepsilon \qquad (2)$$

Where g denotes growth rate in firm i,, ε is an error term, c is a firm-specific constant and we omit the time subscript. It follows from the above that for our fair wage-effort model to be valid the following should hold: $0<\alpha<1$, $0<\beta<1$, $0< \gamma_1 <1$, $\gamma_2 >0$, $\gamma_3 <0$ and $\gamma_4 >0$.

For comparison with the empirical literature of economic growth, we seek to account for conditional convergence in human capital models. Thus, we follow Dowrick and Rogers (2002) to include the log of lagged output, y_{t-1}, and arrive at the expanded specification of

$$g_Y = c + \theta\, y_{t-1} + \alpha\, g_K + \beta\, g_L + \gamma_1\, g_h + \gamma_2\, g_{W_p} + \gamma_3\, g_{W_x} + \gamma_4\, g_u + \varepsilon \qquad (3)$$

Empirical Methodology

The empirical methodology adopted in this paper consists of the following stages:

1. We employ the ABS 1997 *Survey of Education and Training* (SET 97) for Australia and the British Household Panel Survey, 1990-2002 (BHPS) for UK to estimate Mincerian returns to human capital for individual employees. We also obtain estimates of average weekly earnings (AWE) for non-managerial employees and managers.

2. We then summarise the estimates of human capital and AWE by gender, employment status, firm size and industry. Further, we obtain industry summary estimates of human capital and AWE for non-managerial employees, and AWE for managers over thirteen years in both SET 97 and BHPS.

3. For Australia, the above summaries are then linked to the ABS Business Longitudinal Survey, 1994/5-97/8 (BLS) on the basis of employment data by gender, employment status, firm size and industry. These estimates are then adjusted for changes in education levels and time spent on training to estimate the human capital stock and AWE for individual non-managerial employees by gender and employment status (i.e., full-time vs. part-time) for the period 1994/5 - 1997/8. Finally, we complete the linking of the two datasets by adjusting further on the basis of firm-industry AWE disparities to arrive at employment weighted averages of AWE and human capital for employee and an estimate of managerial AWE at the firm level.

4. Next, we undertake estimates of the premium efficiency wages component for workers and managers, W_P and W_X respectively. Then we employ dynamic panel data (DPD) estimation techniques to test the maintained fair wage-effort hypothesis as stated in equations (2a) and (2b).

5. Finally, we exploit BHPS to examine whether the maintained hypothesis is consistent with the British experience. Here, we apply Probit and fixed-effects panel estimation techniques to test whether the excess earnings differential (W_x/W_p) impacts on pay

satisfaction ratio and weekly hours worked on the assumption that pay satisfaction and working hours proxy work effort.

Stage 1

In the light of Hartog (2000) and Voon and Miller (2005) we use LW (log of AWE) as the dependent variable and account for under-education and over-education to obtain separate estimates for males and females non-managerial employees. We decompose years of education, E, as the sum of required education, E_R, under-education, E_U, and over-education, E_O defined as follows: E_R = the median of E by occupation class, E_U = (E_R – E) and E_O = (E – E_R). Additional explanatory variables include: EX (experience), EX2 (experience squared), SK (a dummy for skilled labour based on occupational rankings), PT (a dummy for part-time work), TRAIN (a dummy if the person participated in training in 1997) and industry dummies. Further, we pay attention to the potential for a selection bias when one does not account for the choice between participation and no participation in the labour market. Hence, we employ the Heckman (1979) model and use the following variables for the selection equation: MAR (a dummy for marriage); HED (dummy for attainment of more than 12 years of education); AGE50 (dummy for age is 50 years or more); NESOB (dummy for non-English-speaking overseas-born background); TWOP (dummy for two parents with dependent kids); KIDS14 (dummy for presence of kids below the age of 14); CARE (dummy for being a carer); DED (dummy for participation in further education), and TRAIN defined earlier.

Note, in contrast to Voon and Miller (2005) who utilise Census data, we exploit SET 97 that allows for a more accurate measurement of years of education by incorporating information on 'second highest qualification' completed by individuals. More importantly, SET 97 provides data on 'new qualifications' for vocational purposes and facilitates estimation of returns to training.

Due to space limitations, Heckman estimates of returns to education are censored but we note that all coefficients have the right sign and are highly significant. As expected, the overeducated receive lower returns as compared to those with just-the-right level of education. Returns to training are at 13% for men and 9% for women, while the part-time penalty is at 9.7% for men and 8.5% for women. Although most variables in the selection equation are significant, participation in training is the most important factor in the decision to participate in the labour force: the TRAIN coefficient is 0.57 for men and 0.64 for women.[4]

Stage 2

The predicted values of (conditional on labour participation) are then used to construct series for human capital and AWE by gender, employment status, firm size and industry for 1997. A similar procedure is applied to managerial staff to arrive at an estimate of AWE by size and industry (data availability did not allow for further disaggregation as is the case with other employees).

Stage 3

[4] Results are available upon request but will appear in a forthcoming working paper at http://www.cfses.com.

Next, we move to link the two ABS datasets by exploiting employment data at four common levels of disaggregation: gender, full-time vs. part-time status, firms size and industry (only available at one-digit level). In order to facilitate dynamic analysis, we go the extra mile to utilise the coefficient estimates of TRAIN and PT in order to adjust the human capital and AWE estimates of employees not participating in training and full-time work. In addition, we adjust backwards for 1994/5-1995/6 and forwards for 1997/8 all estimates on the basis of person-specific information on the time (on annual terms) spent on further education for vocational purposes and on training in 1997. This assumes that the 1997 patterns of further education and training are the same as those in 1994/5-1995/6 and 1997/8.

Using detailed employment data from BLS, we then proceed to construct a weighted average of human capital[5] and AWE series for a synthetic panel of firms classified according to size (i.e., four classes) and industry for all four years.[6] The procedure is replicated for managers at a more aggregated level, see above.

These summary estimates are then linked to the ABS Business Longitudinal Survey, 1994/5-97/8 (BLS) using detailed employment data disaggregated by gender, employment status, firm size and industry. Guided by SET 97 information, these estimates are then adjusted for changes in education levels and time spent on training to estimate the human capital stock and AWE for individual non-managerial employees by gender and employment status (i.e., full-time vs. part-time) for the period 1994/5 - 1997/8. This adjustment is solely based on coefficient estimates for E_R and TRAIN. Finally, we complete the linking of the two datasets by adjusting further by the firm-industry mean AWE ratio to arrive at employment weighted averages of AWE and human capital at the firm level. This then allows us to obtain an estimate of managerial AWE as a residual.

Stage 4

Once the linking of the two datasets is complete, we begin to undertake the main task of this study which is to test models (2) and (3). As a first step, we estimate the growth rate of the efficiency wages premium for workers and the growth rate of the excess AWE for managers, g_{Wp} and g_{Wx} respectively. The former is derived as the residual from a weighted OLS regression of workers' wage growth, g_W, on their human capital growth, g_h, and the average growth of wages at the industry level (all employees are included here), g_{W*}. On the other hand, g_{Wx} is the residual from a weighted OLS regression of managerial AWE growth, g_M, against g_{W*} and productivity growth at the firm level, g_p.[7] The results are presented in table 1. Several findings are worth noting. First, human capital growth explains about 73% of growth in employee wages. Second, the average wage growth at the industry proves to be a very strong predictor of managerial AWE growth, g_M, and share a correlation coefficient of 0.85. Also, the two premium wage growth variables, g_W and g_M exhibit a correlation coefficient of 0.47 that is significant. We wish to ensure that these results are not an artifact of the particular methodology adopted in linking the two datasets. We, thus, return to the SET 97 survey to see whether our results hold with the original data. We are able to confirm this but the results are suppressed due to space considerations.

[5] As outlined in Wößmann (2003, pp. 251-52).

[6] In order to employ dynamic panel data estimation, we extend the sample backwards by one year by using taking the average value of estimates for 1994/5 and 1995/6.

[7] We test DPRO for exogeneity but the Davidson and MacKinnon (1993) test statistic proves not significant.

3. Empirical Evidence

Australia

We press on with our main task of estimation. We apply fixed effects panel estimation for equation (2) and the Arellano and Bover (1995) *System GMM* panel estimator for equation (3), for it is likely that y_{t-1} is endogeneous. This estimator exploits information on all series to obtain separate instruments for each lag and each time period, and then uses GMM to weight them. Given our large sample, the two-step GMM estimator is employed but a finite-sample correction is also used following Windmeijer (2005) who demonstrates that the correction makes the two-step robust GMM estimator more efficient than the one-step estimator.

Table 2 reports fixed-effects estimates as well as system GMM estimates. They provide evidence in support of the maintained hypothesis. The constant excluded, all coefficients are of the right sign and are highly statistically significant. It seems that both, the efficiency wages premium workers receive, W_p, and the reference wage, W_x, have a large impact on economic growth. We note that the coefficient of W_p is higher than that of W_x.[8]

We persist with an evaluation of the idea that wage cuts would have a greater adverse effect on employee morale than in good times (Bewley 1998). To test this, we take the median value of BLS firm profits as the threshold and assume that firms below this point as experience 'bad' times while the rest are assumed to live in 'good' times. We again employ fixed effects and GMM panel estimation as in table 2 above. The results appear in table 3 and clearly show that Bewley's (1998) assessment that the efficiency wages effect is not symmetric over the business cycle is quite valid. The estimated coefficients of the wage premium, W_p, and the reference wage, W_x, in 'bad' times are double than the corresponding coefficients witnessed in 'good' times. The system GMM estimates are overall lower than those of fixed effects as is expected due to the added lagged variable of value added. Yet, the asymmetry still holds. Note also that the coefficient of y_{t-1} has the right sign but in 'bad' times it is almost double that seen in 'good' times. This suggests that convergence is also asymmetric over the business cycle. Observe also that the change in the unemployment rate has a positive but very modest effect on productivity that does not compare with those of efficiency or reference wages.

The finding of an asymmetric effect on productivity deserves attention in the context of renewed interest in wage rigidity as key to understanding unemployment. Hall (2005) shows that unemployment can easily arise as a result of wage stickiness due to a 'wage norm'. An asymmetric efficiency wages effect can be seen as a 'wage norm' that can 'reduce the payoff to hiring' (Hall 2005, p. 64). Such a disincentive may be associated with an asymmetric effect on productivity as the one observed in this study. By extension, we need to know more about the cyclical movement of the excess managerial compensation. The model considered here suggests that workers severely punish the firm during a recession, if the excess compensation management receives in such times is positive.

Finally, with respect to Australian data, we test for robustness by examining the panel of synthetic firms that was constructed in the process of linking SET 97 with BLS. Although a

[8] We also experimented with the average industry wage growth as a proxy for external reference wage. We found this variable to be positive and significant as in previous literature. Upon inspection, however, this was due to a strong correlation with managerial earnings growth and the excess managerial wage growth rate.

finite sample, this panel is not subject to contamination from transformations and the linking methodology adopted above. This panel is simply the summary of original SET 97 data at a more aggregated level. We repeat the estimation procedures employed so far and find that the results hold in most of the tests. The only difference is that all estimated coefficients are no more significant when the 'good' times sub-sample is used. This may be due to the shrinking of the sample size or it that our efficiency wages model is not consistent with the Australian data in 'good' times.

Britain

Given the nature of our main hypothesis and the extend of departure from standard models of efficiency wages, we are reluctant to confine our study to a single country. We, thus, seek to utilise another powerful longitudinal survey; namely, the British Household Panel Survey. We were able to gain access to all thirteen waves covering the period 1990-2002. For our purposes, we acknowledge that BHPS is limiting since it is only a household panel. We are not aware of the existence of a business longitudinal panel as rich as the Australian BLS. Thus, we settle with the modest task of examining proxies for work effort against estimates of efficiency wage premium and excess managerial compensation as described earlier.

In contrast to SET 97, however, the BHPS is in fact a longitudinal survey and contains far more detail with respect to occupational classes and industry classifications. In brief, we replicate the exercise undertaken above with Australian data. Due to space limitations we are only able to present the main results.

We first estimate returns to education. As in the Australian case, the dependent variable is the log of Gross Pay (LW) in the last payment and we include the following explanatory variables: required education, E_R, undereducation, E_U, overeducation, E_O, experience, EXP, experience squared, EXP2, a dummy variable for being married, MAR, a dummy for working full-time, FT, a dummy for the presence of kids below the age of 12, KIDS12, a dummy for training, TRAIN, industry dummies and a constant. The selection variables are: MAR, a dummy for having attained 12 or more years of education, HED, number of children in the household, NCHILD, a dummy for being on maternity leave, MATERN, a dummy for having participated in training, TRAIN, FT, a dummy for being born overseas in a country with an official language other than English, NESOB, a dummy for being a carer, CARE, and KIDS12. We use all 13 waves pooled together for non-managerial employees only.

Due to space constraints, we do not report the results and we move to use estimates of the log of efficiency wages premium, W_p, and the industry mean of the log of excess managerial compensation, W_x, to test whether they impact on work effort for the UK. Note, W_x is estimated as the residual of a regression of against managers' average of the log of human capital and the mean LW for other employees. We rely on Clark and Oswald (1996) who make the link between satisfaction and social comparisons to focus on the variable of 'pay satisfaction' (JBSAT2 in BHPS code). We recode the variable as a dummy that takes the value of one if the person reports being satisfied with her pay (values 4 to 7, in original data) and is equal to zero if they express dissatisfaction (values 1 to 3). Then we run panel Probit estimation with JBSAT2 as the dependent variable against the following regressors: LW, the management-worker excess wage differential, ME_WEX (i.e., the difference between W_x and W_p), over-education, E_O, MAR, FT, a dummy for being a male, MALE, and weekly hours worked, HOURS.

Table 4 has the estimation results. These indicate that pay satisfaction positively relates to human capital and marriage. In contrast, our variable of interest, ME_WEX, has the opposite effect. That is, the excess pay differential between management and workers makes workers less happy about their overall pay. Put simply, when managerial pay increase by more than productivity growth and the efficiency wages premium employees are not happy. Provided there is a direct positive link between the BHPS self-reported pay satisfaction indicator and work effort, we conclude that the hypothesis advanced here has been consistent with worker experience in Britain over the period 1990-2002.

Last, we take HOURS as the dependent variable the regress it against all the other variables described above. Using fixed effects panel estimation, table 4 reports the estimation results. On the assumption that working hours is an indicator of work morale or work effort, the results again confirm the earlier findings with respect to pay satisfaction. The main difference now is that marriage has a dampening effect on working hours as it would be expected.

4. Conclusion

In summary, we have proposed a new fair wage-effort hypothesis that builds on insights from institutional economics and corporate governance. The hypothesis rests on the idea that management is in a position to be a likely candidate for a reference wage group to other employees. The model outlined here draws on human capital theory to identify both the efficiency wage premium and excess managerial compensation. More importantly, the model departs from existing literature in its emphasis on growth differentials and dynamic analysis within the framework of economic growth theory.

We have exploited two powerful longitudinal surveys over the 1990s in Australia and Britain to test our particular specification. We have employed dynamic panel data estimation techniques and have attempted to link a rich survey on education and human capital to the Australian Business Longitudinal Survey to bridge the gap between survey data and growth empirics. Our empirical results critically depend on the validity of our data linking approach but some preliminary robustness tests have been supportive of the maintained hypothesis. Of course, future research is required to further test the robustness of this hypothesis.

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Table 1. Premium Worker Wages (W_P) and Excess Managerial Pay (W_x)

$$(A): g_W = a_0 + a_1 g_h + a_2 g_{W*} + g_{W_p} \quad (B): g_M = b_0 + b_1 g_p + b_2 g_{W*} + g_{Wx}$$

Constant	0.002 (0.002)	0.017 (0.004) *
a_1	0.726 (0.005)*	
a_2	-0.124 (0.003)*	
b_1		0.211 (0.009)*
b_2		0.692 (0.007) *
R^2 (overall)	0.82	0.74
No. Obns	10008	10008

* denotes significance at 5% level.

Table 2. Fair Wage-Effort and Managerial Earnings, Australia Panel Estimation Results

$$g_Y = c + \theta y_{t-1} + \alpha g_K + \beta g_L + \gamma_1 g_h + \gamma_2 g_{W_p} + \gamma_3 g_{W_x} + \gamma_4 g_u + \varepsilon \qquad (3)$$

	Fixed Effects	System GMM
Constant	-0.005 (0.003)	8.135 (0.967)*
θ		-0.596 (0.071)*
α	0.064 (0.005)*	0.037 (0.008)*
β	0.308 (0.011)*	0.181 (0.022)*
γ_1	0.636 (0.014)*	0.390 (0.032)*
γ_2	0.962 (0.029)*	0.574 (0.058)*
γ_3	-0.760 (0.023)*	-0.491 (0.052)*
γ_4	0.050 (0.008)*	0.031 (0.011)*
R^2 (overall)	0.289	
No. Observations	10008	7506

* denotes significance at 5% level.

Table 3. Fair Wage-Effort Asymmetry and Managerial Pay, Australia Panel Estimation Results

$$g_Y = c + \theta y_{t-1} + \alpha g_K + \beta g_L + \gamma_1 g_h + \gamma_2 g_{W_p} + \gamma_3 g_{W_x} + \gamma_4 g_u + \varepsilon \qquad (3)$$

	Fixed Effects		System GMM	
	Bad Times	Good Times	Bad Times	Good Times
Constant	-0.028 (0.004)*	0.059 (0.006)*	10.378 (0.985)*	6.724 (1.286)*
θ			-0.789 (0.075)*	-0.444 (0.086)*
α	0.069 (0.006)*	0.048 (0.010)*	0.038 (0.008)*	0.025 (0.013)*
β	0.321(0.013) *	0.351 (0.030)*	0.150 (0.025)*	0.178 (0.046)*
γ_1	0.720 (0.018)*	0.391 (0.026)*	0.326 (0.039)*	0.316 (0.044)*
γ_2	1.336 (0.042)*	0.573 (0.045)*	0.707 (0.078)*	0.374 (0.067)*
γ_3	-0.962 (0.030)*	-0.362 (0.039)*	-0.469 (0.062)*	-0.299 (0.074)*
γ_4	0.051 (0.009)*	0.015 (0.016)	0.023 (0.012)	0.044 (0.019)*
R^2 (overall)	0.325	0.212		
No. Observations	7323	2685	5532	1974

* denotes significance at 5% level.

Table 4. Fair Wage-Effort and Managerial Earnings: UK Panel Estimation Results, 1990-2002

Panel Probit		Panel (Fixed Effects)	
Constant	-0. 368 (0.216)	Constant	-10.173 (0.764)*
LW	0. 398 (0.018)*	LW	6.038 (0.057)*
ME_WEX	-0.142(0.018)*	ME_WEX	-0.574 (0.064)*
E_O	-0.032 (0.004)*	E_O	0.019 (0.015)
MAR	0.088 (0.018)*	MAR	-1.153 (0.067)*
FT	-0.058 (0.027)*	FT	11.578 (0.075)*
MALE	-0.077 (0.023)*	MALE	1.228 (0.098)*
HOURS	-0.033 (0.001)*		
ρ	0.428	R^2 (overall)	0.715
No. Observations	66593	No. Observations	69874

* denotes significance at 5% level.