Comments on <u>Labor Market Behavior by Truman Bewley</u>

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<u>The Paper</u>

The purpose of this paper, as Professor Bewley states, is to "separate the economic from the psychological aspects of labor market behavior and argue that the psychological ones deserve careful study."

More than a decade ago Professor Bewley set out to answer a difficult question, "Why don't wages fall in a recession?" After years of painstaking research, involving literally hundreds of interviews with market participants and many, many hours of decoding unstructured information, he reached the answer. "The only one of the many theories of wage rigidity that seems reasonable is the morale theory of Solow and Akerlof." (page 422)

A particularly convincing story starts with a bad technology for writing contracts: the obligations in each state of the world for both parties to a labor contract cannot be written down in advance, maybe because verifiable performance is hard to measure. Then, worker's cooperation is crucial for firm performance and one can easily imagine wage rigidity as managers avoid wage cuts for fear of appearing unfair and alienating workers.[2]

The present paper can be understood as the logical continuation of that project. It is Bewley's attempt to put some psychological structure to the worker's behavior towards the firm. The series of psychological phenomena that he describes fall into three broad categories:
1. Those related to adjustment to change,
2. Those related to dealing with groups,
3. Those related to the governance of emotions.

Examples of category 1 include denial, loss aversion and habituation. Examples of category 2 include empathy, reciprocation, fairness, and identification with an organization. Examples of category 3 include the effect of mood on performance and the role of reason in surmounting many emotional reactions.

This is a fascinating paper for people who start with the belief that behavioural assumptions are important. It is less compelling for those who start with different priors. In my comment I discuss some of the reasons for this. I also comply with the organizer's request of informing my comments with some of the research on happiness that others and I are trying to develop by explaining some approaches that can be tried by those of us who follow Bewley's general research strategy. My general point is that happiness research is a good complement to Bewley's approach in the quest of making the "behavioural" case more compelling to outsiders to the field.

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[1] Address: Harvard Business School, Boston, MA02163. Tel (61) 4955048. rditella@hbs.edu   I thank Robert MacCulloch for allowing me to draw on our joint research on happiness.
[2] See Williamson (1985), Grossman and Hart (1986), *inter alia*. For experimental evidence connecting such incompleteness to wage rigidity, see Fehr and Falk (1999).

A New Method: Why is Pay Secret?

A preliminary remark about methodology is in order. Economic papers that I know are of three pure types: they are either theory, empirical or they tell stories (usually cases). This paper falls into neither of these categories. Sure, it is empirical in the sense that it deals with actual information. But it is neither a statistical test of alternative hypothesis nor does it contain the detailed description of the institutional information contained in most cases. Instead, it is a set of reports. Bewley talks to people and reports what he concludes. A typical statement is "companies try to discourage employees from sharing pay information". (page 4)

What is unclear is how are we supposed to take this. For example, can we disagree? If so, how are we supposed to do it without making it uncomfortably personal?

For what is worth, I would like to agree. At the very least this sounds like a fascinating issue, one that has been completely overlooked in the literature and one that may help us understand key aspects of labor markets. One possibility is to think that high turnover gets in the way of communication. Bewley himself seems to think so. He states ""Less information is shared among secondary sector workers, because high turnover and changing part-time schedules keep them from getting to know each other. Also, such workers care less about inequities, because they take their jobs less seriously." (page 4). I found this hypothesis counter intuitive. A simple approach is to ask people with different turnover rates about this, and then compare the answers. I administered a one-question survey in my floor at Harvard Business School. The question was

How frequently would you say that you have discussed your pay with other people over the last year?

	Number of Responses by:	
	Tenured faculty	**Untenured faculty**
Never	1	1
Infrequently	4	3
Somewhat Infrequently	0	4
Frequently	0	2
N	5	10

I use the scores 1=Never, 2=Infrequently, 3=somewhat infrequently and 4=Frequently. The average for tenured faculty is 1.8 and for untenured faculty is 2.7.

A couple of points are worth mentioning. First, I reach a different conclusion than Bewley. In my sample, to the extent that there are differences between these groups, it is workers on low turnover who talk less about pay. Thus, the idea that familiarity facilitates communication is not supported by my data.

What are the reasons for these differences across studies of the same issue? It is hard to tell, and this is my second point. Bewley does not specify how he reaches his conclusions, which data he trusts, which he discards, etc. Whereas the limitations of my approach are painfully transparent for everyone to see, particularly when the exact wording of the question used (presented in the Appendix) is inspected, Bewley does not *really* allow us to observe how he produces knowledge. His approach is too personal. We find the paper interesting and worthy of study because of what

we know about him, not because of what we know about his methods of research. For people like me, who admire Bewley and sympathize ex-ante with most of what he says, this is not a problem. But is his approach likely to convince people who work in other traditions and are a priori less sympathetic? I don't think so.

Distinguishing Behavioural from Standard Models: Relative Income and Happiness

This is particularly important because a key challenge, described by Bewley at the outset of the paper, is to "separate the economic from the psychological aspects". Consider the hypothesis that people care about their relative income, which Bewley reminds us was invoked by Keynes to explain wage rigidity. This is a favourite theme in behavioural economics (see, for example, Easterlin (1974) who invoked it to explain why happiness levels where stationary in the post war US in the face of large increases in income). A sceptic will argue that showing that people care about relative income is not enough to make this into an interesting behavioural story. The reason is that relative income measures are *contained* in those describing just income.

To see this simply note that the income of an individual i in a given year t, denoted y_{it}, can be written, by definition, as the product of the average per capita income in the country, GDP_t, and the individual's personal income position in the country in that year, r_{it}. Taking logs,

$$log\ y_{it} \equiv log\ r_{it} + log\ GDP_t \tag{1}$$

A key problem in producing a test of these ideas and communicating with the "other side" (i.e. people with different priors) is that they don't believe in listening to what people say. Although it is tempting to trace this reluctance to a narrow mind, there are good scientific reasons to be sceptical of subjective data. For example, some economists are troubled by the fact that individuals answer differently in response to slight changes in question wording. Other sources of concern are what is sometimes called "strategic bias" (when respondents bias their answers to reflect their preferred outcome), "information bias" (when respondents pass opinion on which they themselves have little experience with), and "social desirability bias" (when respondents bias their answers towards the social norm).[3]

One approach is to use hard data. After all psychological traits can sometimes be measured using more conventional data, and my own impression is that a lot of the progress in economic psychology is coming from such work. An alternative is to use subjective well being data, which places a very light informational burden on respondents and is less likely to have the kind of bias described in the preceding paragraph. A simple form of these data is the answer given to a simple well being question such as *Are you Happy?*

This data is useful because we can try and distinguish between economic and psychological stories, the objective of Bewley's paper. Call $HAPPINESS_{it}$ the answer given by individual i in year t to this question. Now a more informative test of the relative income hypothesis, I would argue, is to test if $\alpha = \beta$ in the following regression

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[3] Diamond and Hausman (1994) discuss some of these concerns in a classic paper justifying the economist's reluctance to use subjective data in the context of contingent valuation studies used to assess environmental damage.

$$HAPPINESS_{it} = \alpha \log r_{it} + \beta \log GDP_t + \varepsilon_{it} \tag{2}$$

If they are, then it seems that relative income is not a relevant part of preferences, and that the anecdotal preoccupation with relative income and status that various researchers have documented is simply an expression of the fact that anybody worried about income is worried about relative income in the sense of equation (1) above. For what is worth, Robert MacCulloch and I have tested this restriction using data for 1/2 a million people in the OECD over 20 years and could not reject $\alpha = \beta$.[4]

Loss Aversion: Quantification

An important theme in Bewley's paper is loss aversion. This hypothesis, vaguely stated, suggests that people suffer more for loosing a certain amount than for gaining that amount.[5] A key limitation with Bewley's approach is that it is hard to know how important each of the identified effects is. We know, intuitively that he must be right and Loss Aversion, Habituation, etc must play a role. But that is still a step away from making it an interesting economic issue. Maybe the role of loss aversion is minuscule and a description of preferences that ignores it is perfectly OK Maybe, including all these behavioural complications is academic.

Again, a formal test of these ideas is possible with happiness data. Table 1 presents the results from looking at a panel of 20,296 Germans during 16 years (1984-2000) who are asked the question

"In conclusion, we would like to ask you about your satisfaction with your life in general, please answer according to the following scale, 0 means completely dissatisfied and 10 means completely satisfied,

How are you satisfied with your life, all things considered?

0   1   2   3   4   5   6   7   8   9   10
completely dissatisfied   completely satisfied

Using the scores as the dependent variable, we can run an OLS regression of the form

$$HAPPINESS_{it} = \alpha\, y_{it} + \beta\, Positive\, \Delta_{it} + \delta\, Negative\, \Delta_{it} +$$
$$\Omega\, PERSONALCONTROLS_{it} + \eta_i + \lambda_t + \varepsilon_{it} \tag{2}$$

where η_i is an individual fixed effect and λ_t is a year dummy. The vector of personal characteristics includes age, marital status, health, children and employment status variables.

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[4] See Di Tella and MacCulloch (2003).
[5] Kahneman and Tversky (1979) state "an alternative theory of choice is developed, in which value is assigned to gains and losses rather than to final assets and in which probabilities are replaced by decision weights. The value function is normally concave for gains, commonly convex for losses, and is generally steeper for losses than for gains". See also Kahneman, Knetsch and Thaler (1991).

Changes in income at the point in time, *t*, are defined as $\Delta = \{Income\ (t+1) - Income(t-1)\}/2$. Positive Changes in income are defined as *Positive* $\Delta = \Delta$ for $\Delta > 0$ and $= 0$ for $\Delta < 0$. Negative Changes in income are defined as *Negative* $\Delta = \Delta$ for $\Delta < 0$ and $= 0$ for $\Delta > 0$. [6]

This time the evidence I am presenting is quite consistent with the Loss Aversion hypothesis set out by Bewley. Controlling for the level of income, people seem to declare themselves less happy when they are undergoing a decline in income. A similar effect is not observed when the change is positive. The effect can be quantified. A person who is on mean income (equal to 55,800 DM in 1995 values) happens to report a similar level of happiness to a person who is on 57,000 DM and is on that income as a consequence of a decline in his income of 1,440 DM (which is the average decline in our sample).

A number of auxiliary hypotheses can be tested. For example, Bewley claims that there is an insult effect and a standard of living effect. Since we have pretty good income data, we can separate income into labor income and non-labor income. We can then test if these different effects exist, how they compare to each other in terms of size, and if they vary according to the circumstances (e.g., Bewley emphasizes that wage cuts are more easily accepted if they reflect a market downturn).

Cardinality: The Million Dollar Question

My final point is that Bewley's approach, as well as most work dealing with subjective data, relies on some notion of cardinality. He has done so both when he has compared the answers of his many informants and when he has compared the different answers of the same informant. This is important. When subject A says he cares a lot about an issue, is that really more than when subject B says he cares a bit? Consider my survey of secrecy in pay. Different scoring systems yield different conclusions. The question is which of all possible scoring methods are the interviews summarised in this paper using?

Most economists instinctively reject notions of cardinality. And we all understand that if a pauper says that he would really love to have ten dollars, and Bill Gates says he wouldn't mind having 10 dollars, it does not mean that a redistribution of 10 dollars is worth doing. After all, Bill may be a modest man, at least in his manner of speaking.

But this is a hypothesis. Maybe Bill and the pauper do share the same habits in language. And maybe what they say is indeed comparable. Maybe Bewley's use of one or other cardinal scoring methods makes no difference.

Happiness data allows us to approach the issue of testing for cardinality in two simple ways. First, we compare how income affects people answers across different regions (Table 2). And second we compare how income affects happiness responses across people and within people (Table 3). Again these tables are taken from ongoing research with Robert MacCulloch.

Table 2 suggests that a similar change in happiness responses is obtained if a person receives X more income than if two persons have an X difference in income. Table 3 suggests that giving X income more to people elicits a similar change in happiness responses across different regions. Of course a proper test requires a good sense of what "similar" means, and what role is OLS estimation playing. But a simple inspection of these tests suggests, at the very least, that it would

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[6] Income is defined as the sum of total family income from labor earnings, asset flows, private retirement income, private transfers, public transfers, and social security pension minus total family taxes.

be foolish to reject cardinality on principle. Paradoxically, this would make Bewley's work, as well as a large portion of recent work in psychology using subjective data, both more convincing and more surprising.

Conclusions

It is clear that Bewley's work has advanced the field of behavioural economics tremendously, particularly by making a strong case for the relevance of the field through its connection to macroeconomics. If you don't believe me you should read Akerlof (2001). But the approach used will not be so useful in convincing "others" (i.e., people with different priors). These people want tests they can replicate. The open-question approach helps with the problem of framing a lot, but it is unclear how much cardinality is required.

In general, more quantification seems to be needed and the approach used by Bewley and others is not designed to deal with this problem. We know loss aversion matters, but how much? Proving something is statistically significant is not the same as showing it is economically significant. We need more work on finding ways of making the case for economically significant behavioural effects. Personally, I am hopeful that happiness data will prove to be a good complement of Bewley's approach.

Table 1:
The Determinants of Happiness, Germany, 1984-2000: Asymmetric Income Effects.

Dependent Variable: Happiness	(1)	(2)	(3)
log Income	**0.26** **(0.01)**	**0.27** **(0.01)**	**0.16** **(0.02)**
log Income (t-1)			**0.15** **(0.02)**
Changes in Income: All Δ's	0.01* (5e-3)		
Positive Δ		-0.02* (8e-3)	0.01 (0.01)
Negative Δ		**0.04** **(0.01)**	**0.06** **(0.01)**
Personal Controls, Fixed Effects	Yes	Yes	Yes
Observations	113,438	113,438	113,426

From: Di Tella, MacCulloch, et al (ongoing research)
Note: [1] OLS regressions, include person and year fixed effects. [2] Bold-face denotes significant at the 1 percent level; Starred coefficients at the 10 per cent level. [2] Income is measured at the individual level and is scaled down by a factor of 10,000 DM. [3] Changes in income at the point in time, *t*, are defined as *Δ = {Income (t+1) - Income(t-1)}/2*. Positive Changes in income are defined as *Positive Δ = Δ* for *Δ > 0* and *= 0* for *Δ < 0*. Negative Changes in income are defined as *Negative Δ = Δ* for *Δ < 0* and *= 0* for *Δ > 0*.

Table 2: The Determinants of Happiness in Germany, 1984-2000:
Comparing Between and Within Variation for all Individuals.

	(1)	(2)	(3)	(4)
	Between Individuals	**Within Individuals**	**Between Individuals**	**Within Individuals**
***Dependent Variable*: Happiness**				
Income	**0.12**	**0.07**		
	(0.01)	**(3e-3)**		
Income Squared	**-1.6e-3**	**-9e-4**		
	(1.8e-4)	**(1e-4)**		
Log Income			**0.397**	**0.302**
			(0.02)	**(0.01)**
Other Personal Characteristics				
Education (number of years)	**-0.01**	0.01*	-4e-3	0.01*
	(4.0e-3)	(6.6e-3)	(4e-3)	(0.01)
Age	**-0.07**	**-0.06**	**-0.08**	**-0.06**
	(0.01)	**(4e-3)**	**(0.01)**	**(4e-3)**
Age squared	**0.09**	**0.03**	**0.09**	**0.03**
	(0.01)	**(5e-3)**	**(0.01)**	**(5e-3)**
Marital Status: Married	**0.22**	**0.13**	**0.20**	**0.13**
	(0.03)	**(0.02)**	**(0.03)**	**(0.02)**
Divorced	-0.03	-0.09	-0.03	-0.08
	(0.29)	(0.06)	(0.29)	(0.06)
Separated	**-1.02**	**-0.37**	**-1.05**	**-0.35**
	(0.19)	**(0.04)**	**(0.19)**	**(0.04)**
Widowed	**-1.33**	**-1.13**	**-1.29**	**-1.08**
	(0.37)	**(0.07)**	**(0.37)**	**(0.07)**
Problems: Parent Died past Year	0.42*	-0.09*	0.45*	-0.07
	(0.22)	(0.05)	(0.23)	(0.05)
Handicapped	**-0.64**	**-0.17**	**-0.65**	**-0.17**
	(0.04)	**(0.02)**	**(0.04)**	**(0.02)**
Invalid in household	**-1.10**	**-0.47**	**-1.10**	**-0.47**
	(0.07)	**(0.03)**	**(0.07)**	**(0.03)**
No. hospital nights past year	**-0.02**	**-0.01**	**-0.02**	**-0.01**
	(2e-3)	**(5e-4)**	**(2e-3)**	**(5e-4)**
Children: Total number	**-0.07**	-0.01*	**-0.07**	-0.02*
	(0.01)	(0.01)	**(0.01)**	(0.01)
Birth in the past year	**0.68**	**0.18**	**0.64**	**0.18**
	(0.11)	**(0.02)**	**(0.11)**	**(0.02)**
Employment Status: Unemployed	**-1.52**	**-0.65**	**-1.52**	**-0.65**
	(0.06)	**(0.02)**	**(0.06)**	**(0.02)**
Retired	0.11	1.0e-3	0.07	-0.02
	(0.08)	(0.03)	(0.08)	(0.03)
School	-0.07	0.02	-0.04	0.03
	(0.07)	(0.03)	(0.07)	(0.03)
Military	-0.82*	**-0.36**	-0.74*	**-0.36**
	(0.37)	**(0.06)**	(0.37)	**(0.06)**
Job/location changes: Fired	**-0.82**	**-0.17**	**-0.82**	**-0.17**
	(0.11)	**(0.03)**	**(0.11)**	**(0.03)**
Moved home	**-0.70**	**-0.06**	**-0.67**	**-0.06**
	(0.14)	**(0.02)**	**(0.14)**	**(0.02)**
Observations	20.297	152.640	20.296	152.640

Note: From ongoing joint research with Robert MacCulloch. [1] columns (1) and (3) OLS regressions are cross sections, while (2) and (4) include person fixed effects. [2] Bold-face denotes significant at the 1 percent level; Starred coefficients at the 10 per cent level. [2] Income is measured at the individual level and is scaled down by a factor of 10,000 DM.

Table 3: The Determinants of Happiness in Germany, 1984-2000.
Comparing Men in the Different Federal States.

Dependent Variable: Happiness	(1)	(2)	(3)	(4)	(5)
	Region Name				
	Lower Saxony	**Nord Rhein Westfalen**	**Hessen**	**Rheinland Pfalz**	**Bavaria**
Log Income	**0.21**	**0.20**	**0.31**	**0.26**	**0.23**
	(0.07)	**(0.04)**	**(0.06)**	**(0.08)**	**(0.05)**
Other Personal Characteristics					
Education (number of years)	0.04	0.01	5e-3	0.01	-0.02
	(0.03)	(0.02)	(0.03)	(0.04)	(0.02)
Age	**-0.08**	**-0.08**	**-0.09**	-0.05*	**-0.04**
	(0.02)	**(0.01)**	**(0.02)**	(0.02)	**(0.02)**
Age squared	**0.07**	**0.05**	**0.06**	0.04	-4e-4
	(0.02)	**(0.01)**	**(0.02)**	(0.03)	(0.02)
Marital Status: Married	**0.32**	**0.21**	**0.33**	5e-3	0.08
	(0.09)	**(0.05)**	**(0.10)**	(0.11)	(0.07)
Divorced	-0.25	-0.04	0.06	-0.34	0.10
	(0.27)	(0.20)	(0.32)	(0.35)	(0.25)
Separated	**-0.47**	**-0.30**	-0.18	-0.49*	**-0.52**
	(0.19)	**(0.12)**	(0.20)	(0.22)	**(0.14)**
Widowed	**-1.21**	**-1.71**	-0.73	-0.99*	**-0.99**
	(0.42)	**(0.29)**	(0.64)	(0.46)	**(0.35)**
Problems: Parent Died past Year	0.10	-0.07	-0.36	0.25	-0.22
	(0.20)	(0.16)	(0.33)	(0.28)	(0.19)
Handicapped	**-0.25**	**-0.14**	-0.17	-0.02	-0.15*
	(0.10)	**(0.06)**	(0.10)	(0.10)	(0.08)
Invalid in household	**-0.38**	**-0.40**	-0.30	**-0.89**	**-0.63**
	(0.12)	**(0.09)**	(0.19)	**(0.16)**	**(0.12)**
No. hospital nights past year	**-0.01**	**-0.01**	**-0.01**	**-0.01**	**-0.01**
	(3e-3)	**(2e-3)**	**(2e-3)**	**(2e-3)**	**(2e-3)**
Children: Total number	0.04	0.02	-0.04	-0.10*	-0.01
	(0.04)	(0.02)	(0.03)	(0.05)	(0.03)
Birth in the past year	2e-3	-0.01	0.11	0.29*	0.16*
	(0.11)	(0.06)	(0.11)	(0.12)	(0.08)
Employment Status: Unemployed	**-0.69**	**-0.79**	**-1.02**	**-1.21**	**-0.64**
	(0.09)	**(0.05)**	**(0.11)**	**(0.11)**	**(0.07)**
Retired	-0.07	0.01	0.13	-0.05	0.02
	(0.13)	(0.09)	(0.13)	(0.15)	(0.11)
School	0.10	0.12*	-0.15	0.38*	6e-4
	(0.12)	(0.07)	(0.15)	(0.15)	(0.11)
Military	-0.22	-0.20	-0.29	-0.14	**-0.59**
	(0.21)	(0.13)	(0.22)	(0.25)	**(0.17)**
Job/location changes: Fired	-0.27*	**-0.23**	-0.22	0.32*	-0.24*
	(0.13)	**(0.08)**	(0.15)	(0.16)	(0.10)
Moved home	-0.06	0.02	-0.19*	0.01	0.11
	(0.12)	(0.07)	(0.12)	(0.14)	(0.09)
Observations	6.571	16.702	6.014	4.454	10.362

Note: From ongoing joint research with Robert MacCulloch. [1] OLS regressions, include person and year fixed effects. [2] Bold-face denotes significant at the 1 percent level; Starred coefficients at the 10 per cent level. [2] Income is measured at the individual level and is scaled down by a factor of 10,000 DM.

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Appendix 1

Description of the Survey administered at Harvard Business School.

Survey

As part of a project on Labor Market Behavior, I am studying pay and communication. It would be extremely helpful if you could answer just one question:

How frequently would you say that you have discussed your pay with other people over the last year?

Never	I prefer to keep these things to myself
Infrequently	I have discussed it with members of my immediate family
Somewhat Infrequently	I have discussed it with co-workers who are also friends
Frequently	I have discussed it with friends and acquaintances