

Looking Inside the Labor Market: A Review Article *

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When unemployed workers are available, why don't firms cut wages until the excess supply is eliminated, as would happen in the ideal markets depicted by conventional economic theory? This question has been central to the great macroeconomic debates that arose from the Keynesian Revolution. Keynesian economists, from Modigliani (1944) through Fischer (1977) and the various authors represented in Mankiw and Romer (1991), have argued that wage rigidity reflects social, institutional and other forces that prevent the labor market from clearing, create involuntary unemployment and justify macroeconomic intervention.

On the other side, new classical economists have argued that what appears to be wage stickiness is actually a *result* of market-clearing forces, operating in a complex real-world environment.¹ For example, Lucas and Rapping (1969) argued that intertemporal substitution makes short-run labor supply highly elastic, so that declines in demand result in relatively little movement in the market-clearing wage. Barro (1977) argued that efficient wage contracts stipulate sticky wages so as to provide income insurance to risk-averse workers, but that this does not stop a contract from also specifying an efficient level of employment, *as if* markets were clearing. Rogerson (1988) even derived such a contract-based explanation from an Arrow-Debreu general equilibrium model with indivisible labor.

Many alternative explanations have been proposed for apparent wage stickiness, involving bargaining, monopoly unions, market misperceptions, hold-up problems, multiple equilibria, dual labor markets, adverse selection, the stigma of unemployment, shirking, intersectoral reallocation, search and recruiting costs, fairness, insiders versus outsiders, menu costs, and so on. Yet none of these explanations has found enough empirical support for anyone

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¹ As Laidler (1999) has recently documented, these new-classical arguments are more new than classical. Wage rigidity of the sort that mainstream Keynesians emphasize was in fact a central theme in the writings of orthodox pre-Keynesian monetary economists, going back at least as far as Thornton (1802).

to claim victory, and the issue remains unresolved, as do most of the other issues that have divided Keynesian macroeconomists from their opponents.

When Truman Bewley (1999) was puzzling over the question of why wages didn't fall during the 1990-91 recession, it occurred to him that instead of constructing yet another model, or undertaking yet another econometric test of existing models, he might learn something by simply asking the people whose behavior is so puzzling why they behave the way they do. So, during 1992 and 1993, he interviewed 336 managers, labor leaders and employment counselors, mostly in Connecticut but some in other nearby states, asking them not only why they think nominal wage cuts are so rare but also a variety of other questions designed to elicit their views on nearly every known theory of wage adjustment and unemployment.

The answers came as a surprise to him. According to knowledgeable and intelligent participants in labor markets, the most important factor inhibiting wage cuts is one that has nothing to do with any conventional economic theory, namely the psychological factor of morale.

The explanation for downward nominal wage rigidity that emerges from these interviews goes roughly as follows. Good morale among a firm's workforce has a positive effect on the firm's profits, by increasing the workers' productivity, effort, creativity and cooperativeness, and by reducing absenteeism and turnover; well motivated employees also tend to provide good customer service, giving the firm a good reputation. However, morale is fragile, and will deteriorate quickly if workers feel they are being slighted or treated unfairly or if, for whatever reason, they cease to identify with the goals of their organization.

According to this theory, workers would interpret a cut in nominal wages as a hostile act. Unless they saw it as necessary to save the firm from financial ruin they would regard it as unfair. Because of this, and because of the shock of a discontinuous fall in their standard of living, morale would fall, and therefore so would the firm's profits. This is why firms believe that cutting pay in response to rising unemployment would normally be a bad idea. Likewise they believe that replacing existing workers with outsiders willing to work for less would also generally be a bad idea, and for the same reason; it would upset the internal equity of a firm's wage structure and would strike workers as unfair, creating serious morale problems.

Laying workers off when demand has fallen is not, however, regarded as unfair, and although it demoralizes those who are laid off, those employees leave the organization and

therefore their discontent does not spread through the workplace as it would had they remained at the firm with reduced pay. So except in cases of extreme financial difficulty a firm's response to a fall in demand will typically be to cut jobs rather than cut wages.

This contribution to the growing literature on behavioral macroeconomics threatens to disturb the tranquil state of macroeconomic theory that has prevailed in recent years. Peaceful coexistence between Keynesians and their opponents has been maintained by a set of ground rules, the common acceptance of which has allowed differences to be addressed, if not settled, in orderly fashion. The most important of these rules are that all individual behavioral relationships should be derived from the premise of individual rationality, and that all observable actions should be shown to obey the conditions of a rational-expectations equilibrium. Although these rules were once quite controversial, having been championed by new classical economics and resisted by Keynesians, the leaders of new Keynesian economics have agreed to live by them, not out of any deep commitment but because the rules have seemed flexible enough not to constrain their arguments. For example, the conditions of rational expectations equilibrium do not imply continuous market-clearing, as long as one takes into account institutional or other constraints not recognized in the purest forms of walrasian equilibrium theory. Thus macro theory has come to be defined by many as constituting dynamic general equilibrium theory.

Bewley defies these rules by maintaining that what drives people is not just pecuniary self-interest, as in conventional general equilibrium theory, but the psychological factor of morale. Moreover he argues, contrary to the most basic notions of rationality, that morale is affected crucially by nominal wages, independently of what happens to real wages. That is, money illusion matters. Taken at face value, the argument undermines the microfoundations of modern macroeconomics, and implies that the rules by which macroeconomists have agreed to study the labor market preclude an understanding of how that market actually works.

He is not the first notable theorist to propose such non-conformist ideas concerning the determination of wages. In particular, Robert Solow (1979) based his efficiency wage theory on the idea that a worker's effort will depend not only on material incentives but also on morale. Akerlof (1982) argued that what matters to a worker is not just his or her own wage and working conditions but whether or not they are "fair" in relation to those of some reference group, and that a worker also cares about the well-being of fellow workers. Akerlof and Yellen (1990) drew on theories developed by psychologists and sociologists to argue that people who are paid less

than they think they are worth reduce effort in proportion to the shortfall. As yet, however, these challengers have not been taken seriously enough by defenders of the orthodoxy to spark a major controversy comparable to the great Keynesian debates.

Bewley's argument will be hard for conventional macroeconomists to ignore, partly because of the extraordinary thoroughness and honesty with which he evidently conducted his investigation, and the sheer volume of direct evidence he provides, and partly because the question he investigates has been brought back to center stage recently years in the controversy over the appropriate long-term inflation target for monetary policy. In particular, Akerlof *et al.* (1996) have revived Tobin's (1972) idea that downward nominal wage rigidity prevents some labor markets from clearing when inflation is low, because the required adjustment in real wages would imply a nominal wage cut. Many Keynesians are likely to stop playing by new-classical rules that have been so thoroughly discredited, when so much is at stake, unless a strong counterargument is presented.

1. Empirical evidence

Each of Bewley's 336 interviews was done in person, most of them lasted for one or two hours, some as long as five; two of them were followed by re-interviews, many of them by follow-up telephone conversations, and about thirty of them by plant visits. Instead of submitting a questionnaire to his subjects or asking them each to respond to a predetermined list of questions, as was done in a similar context by Blinder *et al.* (1998), he told the interviewees what he was trying to understand, sent them a list of possible questions in advance, and then let them talk freely, asking questions only towards the end of the interview. He allowed the set of questions to evolve from one interview to another as he learned from experience what was important and what wasn't. In the process he gathered detailed information shedding light on almost every theory that has seriously been proposed concerning wage (in)flexibility.

He reports that at the outset he did not pay much attention to morale, but it soon became apparent that managers see morale as the overriding factor in determining the success of their employee relations. His adaptive strategy allowed him then to shift his questioning over time to focus more on the issue of morale. It also allowed him to gain the cooperation of many people to whom the theories he originally wanted them to talk about seemed ridiculously naïve.

This method of empirical investigation has several drawbacks, most of which Bewley acknowledges and addresses in the book. The fact that it involves survey data rather than official government statistics is not *per se* a problem, considering that almost all statistical agencies also compile their data from what are in effect surveys. In this case, however, the relatively unstructured interview form and the qualitative, interpretative nature of the questions being asked make for results that are not easily quantified. The bulk of the book consists of a selection of direct quotations, organized by subject. Frequent tables are presented tabulating the results. But the classification schemes underlying these tables are largely subjective. Moreover, many of the tables describe the fraction of interviewees that mentioned a particular subject, sometimes in response to questions that varied from one person to another, sometimes in a freeform discussion with no prompting.

Perhaps the most troubling aspect of Bewley's empirical method is that he asked people not just what they do but what they think – not just whether they have cut wages but why or why not. Actions might be verifiable but thoughts aren't. Because of this, and because of the possibility (Friedman, 1953) that people could be behaving as if they thought one way even though they are not conscious of any such thoughts, economists are right to be skeptical of data concerning self-reported mental states.

In this case, however, the reports deserve to be taken at face value, mainly because they show an unusual deal of consensus. Bewley reports that “All employers thought cutting the pay of existing employees would cause problems.” (p.173) Sixty-nine percent of the employers interviewed stated that cutting pay would hurt morale and demotivate workers. Most of the remaining thirty-one percent reported that it would lead to problems with turnover, and when these employers were asked why not just cut the pay of all but the best workers most of them said the main reason is that this would cause too many problems with morale. (p. 174)

Moreover, Bewley's findings concur with other direct surveys of employers in different times and places. Kaufman (1984) interviewed managers of 26 small non-unionized firms in Britain in 1982, and reports that most of them stressed fairness and morale as the main reason for not cutting wages. Blinder and Choi (1990) interviewed managers of 19 firms in 1988, all of whom responded that an unfair wage policy would reduce the quality of job applicants, all but one of whom responded that it would reduce workers' effort, and all but three of whom responded that it would create turnover problems. Most of them also explained that whether or

not wage cuts would lead to turnover and/or reduced effort depended on “how it is justified;” if made to save the firm or to bring wages in line with competitors workers were likely to accept it, but otherwise not. Agell and Lundborg (1995) surveyed 170 Swedish manufacturing firms, most of whom said that fairness and morale are of overriding importance in setting wages. More than eighty percent of these firms answered that in order for wage cuts to be accepted by workers at least 50% of the firm’s jobs would have to be at risk. Campbell and Kamlani (1997) polled 184 compensation executives, mostly from Business Week 1000 firms. When asked by how much effort would fall if they cut wages by ten percent, the average answer was about twenty percent. Almost all agreed that effort would fall by more following a wage cut if workers thought the firm was highly profitable than if they thought that the firm was losing money, and sixty-nine percent said that the main reason for the adverse effects of wage cuts was loss of gratitude and loyalty.

Given the variety of different types of companies involved in these surveys, and the variety of different strategies followed by different managers, the fact that so many of them agree on morale as being the primary factor accounting for their unwillingness to cut wages is at least something that ought to be accounted for by any theory of wage determination. Someone genuinely seeking the truth would not continue to maintain *a priori* principles in a situation where those who are most in a position to know the truth systematically deny that the principles apply, without some strong reason for believing that the insiders are suffering from some collective delusion or conspiring to lie.

The direct interview method of Bewley and others has thus exposed an empirical regularity that has escaped other types of investigation. The vast psychological literature that Bewley surveys in the appendix to his chapter 4 suggests that there is just a small and barely significant relationship between morale and performance at the level of the individual, although the relation is somewhat stronger at the level of the organization. And although the factor of morale has been discussed in the theoretical literature I know of no econometric study that has found it to be an important element in wage determination.

Finally, the facts that Bewley and others have uncovered concerning employers’ states of mind is backed up by other facts that Bewley uncovered about their actual experience. For example, of those (55) employers that did in fact experience wage cuts, fifty-one percent reported that the cuts led to serious morale problems, as compared to only nineteen percent

reporting that morale was not hurt. If morale is not in fact a serious problem discouraging firms from cutting wages then what accounts for these facts?

2. Nominal versus real wages

Bewley's evidence does not make it entirely clear whether real or nominal wage cuts are more damaging to morale. The distinction is however quite important, since real without nominal wage stickiness is not enough in most theories for aggregate demand shocks to have real effects even in the short run. He did pose the question to six of his subjects, who told him that nominal wage rigidity was stronger than real rigidity. He concludes that this is true for two reasons. First, the shock of a lower standard of living is more drastic when one's nominal wage is cut discontinuously than when one's standard of living is eroded gradually by inflation. Second, acts of commission tend to be more offensive than acts of omission. It is one thing to allow your employees to suffer from inflation. It is another thing altogether to take the positive action of cutting their nominal pay. People tend to blame their employers much more for the latter than the former.

A great deal of evidence has been produced in recent years concerning the extent of downward nominal wage rigidity, much of it motivated by the debate over the appropriate long-run inflation target for monetary policy. Lebow, Saks and Wilson (1999) and Altonji and Devereux (1999) provide recent surveys. Although the evidence is not entirely unambiguous, I interpret it to show that nominal wage cuts are much more rare than if there were no nominal rigidity, and that there is a sharp asymmetry. Nominal wages are rigid downward but not upward. Thus it seems quite likely that morale is indeed damaged by nominal wage cuts independently of what is happening to real wages.

The most direct evidence of downward nominal wage rigidity comes from cross-sectional distributions of wage changes, which almost always show a sharp spike at zero with relatively little mass below zero. Moreover, when the distribution shifts to the left, its shape tends to change, with mass piling up at zero. Striking evidence of this sort was presented by Fortin (1996) using Canadian collective bargaining contract data. The clearest evidence seems to come from studies that have examined the employment records of individual firms. Baker, Gibbs and Holmstrom (1994) examined the pay records of individual workers in a large U.S. firm over the period from 1969 to 1988, with over 50 thousand observations, and found fewer than 200 (less

than 0.4%) negative observations. Wilson (1999) studied two firms, one of which was the same as that studied by Baker, Gibbs and Holmstrom, the other being a non-profit U.S. firm whose books she analyzed from 1982 to 1994; in these two firms 0.1% and 0.0% respectively of employees who stayed on the same job during a year experienced a wage cut that year. Fehr and Götte (2000) examined the data of two large Swiss firms, finding wage cuts in only 1.7% of observations in the one firm and 0.4% in the other. Altonji and Devereux studied the books of a large U.S. financial firm from May 1996 to May 1997 and found that less than 0.5% of salaried employees and less than 2.5% of hourly employees had wage cuts; most of the wage cuts among hourly employees involved unusual circumstances such as a switch from full-time to part-time work or a change in the form of compensation (less base pay but more bonus). All of these studies found that a significant fraction of observed wage changes were zero. Taken together, this evidence from individual firms' books suggests that nominal wage cuts are indeed rare, and that when they take place they are almost always associated with some unusual circumstances. Direct evidence of this sort is still however quite scanty.²

The main ambiguity with respect to the cross-sectional distribution of wage changes comes from household panel data. In the 10 panel studies surveyed by Parkin (2001), almost all show that between 10 and 20 percent of observed wage changes are negative, indicating that wage cuts are much more frequent than one would judge from other evidence. Reporting error however makes these household studies difficult to interpret. Most investigators have concluded that it results in an overstatement of the frequency of negative wage changes. Akerlof *et al.* (1996) go so far as to argue that all of the negative observations can be attributed to reporting error. But McLaughlin (1994) finds minimal downward rigidity in U.S. data even after accounting for measurement error. Also, Smith (2000) argues that reporting error works in the other direction in her study of British household panel data, since wage cuts were reported much more frequently by those that answered affirmatively when asked if they checked their pay stub before responding to the wage survey.³

² Beissinger and Knoppik (2001) also find considerable evidence of downward nominal wage rigidity in German administrative data taken from social security accounts of many firms, involving 600 thousand observations.

³ Riddell (2001) argues that the large number of pay cuts in Smith's sample may be simply the result of the extraordinary circumstances (the Thatcher revolution, deunionization, etc.) the UK was experiencing at the time, and not indicative of what happens in normal times. Also, workers who checked their pay stubs may well have been *more* prone to reporting error than others, because they were checking the wrong number. That is, they were asked to report on their normal base pay, whereas their pay stub would tell them only their most recent actual pay.

Altonji and Devereux (1999) attempt to resolve the issue of reporting error in household panel data by examining PSID data with the use of a custom-designed econometric technique that allows explicitly for reporting error. Fehr and Götte (2000) perform a similar exercise on two Swiss panel data sets. These authors estimated an equation of the form:

$$\Delta \ln w_{it} = \begin{cases} x_{it}'b + e_{it} - \ln w_{it-1} + m_{it} & \text{if } x_{it}'b + e_{it} - \ln w_{it-1} \geq 0 \\ m_{it} & \text{if } x_{it}'b + e_{it} - \ln w_{it-1} \in [-\alpha, 0) \\ x_{it}'b + e_{it} - \ln w_{it-1} + m_{it} + \lambda & \text{if } x_{it}'b + e_{it} - \ln w_{it-1} < -\alpha \end{cases}$$

where w_{it} is the wage of worker i in period t , x_{it} is a vector of explanatory variables, e_{it} is an error term, m_{it} is measurement error, b is a vector of coefficients, and α and λ are scalar constants. In this equation, $x_{it}'b + e_{it}$ is the “notional” wage that would be observed if downward rigidity were not binding and if there were no measurement error, and α is the “threshold” notional wage cut that must be surpassed before an actual wage cut will take place. Thus α is a measure of the degree of downward nominal wage rigidity. They estimate α to be in the order of 0.2, implying that in order for a wage cut to take place the notional wage must fall by at least twenty percent. Although the paucity of negative observations can make α and λ hard to estimate precisely, these papers both reject overwhelmingly the hypothesis of perfect flexibility. Thus even in household panel data where one finds the weakest evidence, a careful examination taking measurement error into account finds a substantial degree of downward nominal wage rigidity.⁴

3. The challenge to conventional macroeconomics

Economists have become so adept at rationalizing the seemingly irrational that it would be astounding if no one was able to construct an explanation for Bewley’s evidence that obeys the usual rules of modern macroeconomic theory. According to these rules, individuals’ objective functions need to be homogenous of degree zero in all nominal magnitudes; therefore if

⁴ It has been suggested that experience with low inflation should eventually teach people to overcome their resistance to wage cuts. This notion is effectively refuted by the fact that the Fehr-Götte study found a large degree of wage rigidity in a time and place where inflation was, and for a long time had been, practically zero.

money illusion is to play a role in observed behavior it must come in through the rules for selecting among equilibria. So, for example, workers who react sullenly to a cut in nominal pay and refuse to cooperate might simply be “punishing” their employers in accordance with a trigger strategy that is part of a subgame perfect equilibrium of a repeated “prisoner’s dilemma” type of game with conventional payoffs, in which the threat of such punishments helps to enforce dynamic cooperation.

An even simpler rationalization⁵ could be provided by supposing that workers must make a dichotomous choice each period either to cooperate with others or not to cooperate. The payoff structure might be that of a “coordination game” (Cooper, 1999) in which if others cooperate a worker’s best reply is to cooperate but if others don’t then the best reply is not to. Then each period there would be two possible one-shot Nash equilibria; the “cheerful” equilibrium in which all workers cooperate and the “sullen” one in which none cooperate. Under this interpretation, bad morale is what one observes when the sullen equilibrium prevails, but there is nothing about it that defies conventional rationality.

The first of these interpretations is hard to square with one of the facts that Bewley provides, namely that most of the resistance to wage cuts seems to come from the employers rather than the employees. People frequently offer to work for less in times of slack demand. Also, many employers told Bewley that outsiders had often offered to work for less than the going wage on a job. Typically such offers were refused, on the grounds that an across-the-board cut would cause too many morale problems down the road, and that paying some workers less than others in the same category would damage morale by upsetting internal equity. It is hard to believe that morale problems are just a veil for some rationally calculated punishment in the face of this evidence, for why would workers want to punish a firm for doing what they had asked? In addition, one has to worry about the sub-game perfection of punishment strategies to enforce dynamic cooperation in the context of an employment relationship that has a finite life.

However, nothing that I can find in Bewley’s study would refute the second “multiple equilibrium” view. When there are two possible one-shot Nash equilibria each period, then there is nothing in standard game theory to rule out the possibility that whenever no-one’s wage is cut people will act according to the first (cheerful) equilibrium and whenever someone’s wage is cut they will act according to the second (sullen) equilibrium.

⁵ This was suggested to me by Daron Acemoglu.

Lakatos (1970) argues that the hard core of a scientific research program is typically protected by such a thick layer of interpretation that it is not directly refutable. This certainly seems to be the case with conventional macroeconomics, whose hard core consists of the basic principles of general equilibrium theory. But while a research program might be immune to absolute refutation by evidence such as Bewley presents, it is not immune to evidence that make it seem implausible. If the process of refining it to account for awkward facts turns it into a patchwork of *ad hoc* modifications it will lose its power as an organizing framework and its credibility as a predictive device. In Lakatos's terms, it will become a regressive research program, increasingly vulnerable to being overthrown by some competing research program.

It is on these grounds that Bewley's argument is likely to affect the course of macroeconomic debate. For if morale is just a mask for rational non-cooperation, why is non-cooperation triggered by wage cuts? As with other models of multiple equilibria, plausibility demands an explanation based on institutions, evolution or adaptive learning. Perhaps such an explanation can be provided, but even then I suspect that it will be a difficult task to persuade open-minded economists that some such story of multiple equilibrium is anything but an *ad hoc* device for explaining this one awkward set of facts.

Moreover, what appears to trigger bad morale is not just real wage cuts but nominal wage cuts. This element of money illusion rests uneasily on a foundation of rational behavior. Indeed one of the first principles of rational behavior that economics students are taught in the theory of household choice is the very absence of money illusion. To learn later that money illusion shows up in collective behavior despite this fundamental principle, because of a peculiar rule for selecting among multiple equilibria, is likely to cause at least a certain amount of cognitive dissonance, even bad morale, among recruits to the discipline.

The difficulty of casting Bewley's argument plausibly in conventional terms is illustrated by Bewley's own attempt to sketch a formal theory of mood and effort in chapter 21. The maximization in this theory takes place in two stages; people first choose their mood and then act on the basis of a given mood. The first stage choice is assumed to be made unconsciously. As Bewley acknowledges, although the formalism is conventional the theory strays far from

conventional notions of rationality, and the fact that mood influences second-period choices jars with the assumption that these choices are made rationally.⁶

4. Reciprocity Theory

It is one thing to discredit a research program and make it look regressive. To propose an alternative that appears progressive is much harder, and few economists will be persuaded to abandon the principles of modern macro theory without some coherent alternative. One of the virtues of Bewley's book is that it provides an alternative explanation, which can be seen as an example of the theory of "reciprocity" that Rabin (1993) and others have been developing, and which Fehr and Gächter (2000) have shown is consistent with a host of experimental evidence.

According to reciprocity theory, people will spend considerable resources to punish others for what they perceive as hostile acts, and will also spend considerable resources to reward others for what they consider as friendly acts. These punishments and rewards do not arise from subgame-perfect strategies of a conventional game, because they occur in situations with a finite horizon, where by conventional theory people should take other's past acts as bygones rather than handing out costly punishments and rewards.

Reciprocity theory is supported by Frank's (1988) arguments to the effect that human emotions evolve to solve strategic problems that can't be solved by people who are rational in the conventional sense of maximizing a utility function that depends only on one's own material well-being. That is, a reputation for self-destructive retaliation is often useful in deterring others from engaging in hostile acts, but it is not credible in an emotionless world of narrow rationality. Such retaliation does not benefit the retaliator after the fact, but the emotions that trigger it

⁶ MacLeod and Malcomson (1993) provide an ingenious argument for downward nominal wage rigidity in a standard game-theoretic framework. In their model, an optimal labor contract always involves a fixed wage, subject to renegotiation when there is a shock to the firm's willingness to pay, or to the worker's opportunity cost, that would destroy the surplus that one side is receiving. In the event of such a shock, the contract adjusts but only by enough to make the affected side just willing to continue the match, with no surplus. Thus in the event that the firm finds its willingness to pay has fallen below the initially stipulated wage, it will earn no surplus from any of the investments it has made to improve the quality of the match. It follows that, in the presence of inflation, a fixed nominal contract that will be gradually eroded in real terms is better than a fixed real wage because it reduces the probability that the firm's willingness to pay will fall below the wage, and hence increases the firm's *ex ante* incentive to make Pareto-improving investments. By reducing that probability it also reduces the probability that the wage will ever have to be negotiated downward. Unfortunately, although this theory provides a clever explanation for downward nominal wage rigidity, it makes no reference to what Bewley identifies as the most important factor in understanding wage rigidity, namely morale. It is nevertheless surprising that Bewley failed to mention this theory in his almost exhaustive survey (chapter 20) of the literature.

benefit the genes that produce such emotions if they prevent their hosts from being victimized as often as they might be.

Notice that Frank's argument is based on biological evolution but not on evolutionary game theory. The argument is not that individual's *strategies* evolve until we end up in a certain configuration that can be understood as a subgame perfect equilibrium of a conventional game. Rather, human *emotions* have evolved over the millennia to the point where we can do *better* than we could if limited to such conventional equilibria. That's the sense in which reciprocity theory is fundamentally at odds with the principles of modern macro theory. For Frank's argument to apply in this case it suffices that the emotions that trigger adverse reactions to nominal wage cuts have provided useful reactions to potentially threatening situations encountered over the course of human evolution; since one cannot pick one's emotions to fit the situation they may be of no use at all in the particular context of post-industrial-revolution labor markets.⁷

The reciprocity theory of downward nominal wage rigidity carries with it a number of implications that are potentially refutable by field data. Specifically, it does not deny that wage cuts occur in some cases, but it predicts when they are more or less likely to occur. So, for example, they are less likely to occur the greater a firm's recent profitability, because a more profitable firm will have a harder time making a wage cut seem fair. They are less likely to occur the smaller are labor costs as a fraction of the firm's total cost, because the direct increase in profit from the reduction in unit labor costs will be smaller relative to the damage that a disgruntled workforce can inflict on the firm's profit. They are more likely to occur in firms where workers have relatively little contact with the public and where they are therefore less likely, when disgruntled, to damage the firm's reputation. They are less likely to occur in the economy's "primary" labor market; that is where job tenure is relatively long and firms make a long-term investment in their employee relations, than in the "secondary" sector where part-time and temporary workers are commonly employed, because the threat of disgruntled workers

⁷ This remark applies to the theory of Rotemberg (1994), which embodies into a familiar maximizing framework the psychological factor of morale that Bewley emphasizes. In this theory, as in the above-mentioned theory sketched by Bewley in chapter 21, the maximization takes place in two stages, in the first of which workers choose utility functions that include "altruism," in such a way as to maximize the private (non-altruistic) utility will arise from strategic situations in the second stage when their actions will be governed by the utility function chosen in the first stage. The interpretation of this two-stage maximization favored by Rotemberg is that the first-stage choice of utility functions is done by "natural selection." But natural selection did not choose a degree of altruism on the basis of 21st-century strategic considerations.

quitting is less of a consideration when the worker is more likely to quit, or be laid off, in any event. And they are less likely to occur in situations where employees have frequent contact with one another, and hence where they have plenty of opportunities to exchange relative salary information, than in situations where workers tend to be relatively isolated from one another, because in the latter situation internal equity is less threatened by having cuts in entry-level pay.

While these observations suggest further empirical tests that have yet to be performed, meanwhile the theory has already been tested experimentally by Fehr and Falk (1999) who find results that mirror Bewley's explanation quite closely. In the context of an experimental double auction between firms and workers, when effort cannot be contracted at the time of the wage bargain, they show that workers attempt to underbid each other but firms often refuse to hire underbidders. Those workers who accept lower wages also put forth less effort, and in some cases even pay a cost to reduce effort and thereby damage the firm. Moreover, when the experiment is modified so that effort can be contracted at the time of the wage bargain, underbidders are no longer refused. In other words, workers, when given a chance, will pay a personal cost to reward firms that pay high wages and to punish those that pay low wages, and firms anticipate this reciprocation by offering high wages.

The theory also conforms with survey evidence, such as that of Kahneman *et al* (1986), Shafir *et al* (1997) and Levine (1993) concerning what constitutes "fair behavior." As several authors have pointed out, it accords with the advice of almost all textbooks on industrial relations. It also accords with what astute mainstream labor economists were once led by their experience to believe, in an age when their experience was not filtered as finely by a priori principles as it is now. For example, Rees (1973) believed that the main reason why even non-union firms did not routinely cut wages when unemployment rose was that "... workers universally regard a wage cut as an affront because they view their money wage as a measure of their worth and of the esteem in which they are held. A non-union employer therefore fears that a wage cut will be so resented as to cause a drop in productivity or to encourage the formation of a union." (p.226) and that one of the principal reasons why nominal wage cuts are resisted much more than equivalent real wage cuts resulting from inflation is that "... price rises are much more impersonal and cannot be blamed on the workers' own employer." (p.227)⁸

⁸ Laidler (1999, p.157) shows that fairness was also seen as an important determinant of wages in the early 20th century writings of such mainstream economists as Pigou and Hicks.

5. The Consequences for Macroeconomics

Bewley's book is about the causes of wage stickiness not the consequences. His findings do not directly imply, for example, that high inflation should be pursued because it reduces the fraction of workers who will become unemployed when market-clearing real-wage adjustments require a nominal wage cut. For, as several authors have observed, short-term wage changes may not have a major macroeconomic allocative effect. That is, temporary decreases in a worker's marginal product need not be reflected in a synchronous decrease in the worker's wage in order for the employer to continue hiring him or her in the context of a long-term employment relationship where the employer can be compensated for this overpayment in some later period by paying the worker less than the marginal product. Indeed even permanent decreases in the worker's marginal product can be accommodated with no cut in wages and no change in the quantity of labor demanded and supplied if the worker is expected to have a rising wage profile, as is typically the case. All that may be needed is a flattening of the profile, not a nominal cut. Moreover, as Bewley pointed out, the secondary sector of the economy, where part-time and temporary jobs prevail, exhibits much more flexibility in nominal wages than does the primary sector. It is interesting in this regard that Altonji and Devereux found no evidence that nominal wage rigidity affected the probability of being hired or laid off.⁹

Moreover, if money illusion is as common a phenomenon as the above-mentioned evidence suggests, then there are many reasons for believing that the price system will work better at low rates of inflation, despite downward nominal wage rigidity. To take just one example, historical cost accounting introduces several distortions into conventional business accounts, some of them tending to overstate a firm's profits and some of them tending to understate them. The higher the overall rate of inflation the greater are these distortions and hence noisier is the signal provided by conventional accounts. Thus even aside from the fact that income taxes are not inflation neutral, inflation degrades the quality of information on which capital is allocated in financial markets. Although I know of no way to estimate the social cost of this distortion it is certainly not obvious that it is less than the social benefit one gets from higher inflation as a result of avoiding the constraints of downward nominal wage rigidity.

⁹ The evidence is mixed on this score. Fehr and Götte find that wage sweepups caused by nominal rigidity are strongly correlated with unemployment in their sample.

Likewise, downward nominal wage rigidity does not directly imply that the economy is less stable than it would have been with more wage flexibility, and hence more in need of active stabilization policies. For as Keynes himself maintained, increased wage flexibility can itself be a cause of cyclical instability, by amplifying the destabilizing force of debt-deflation and by giving rise to destabilizing expectations.¹⁰

Although Bewley's work will not settle the substantive debates related to wage rigidity, it is likely to have a profound influence on the way macroeconomists construct models. In particular, the concepts of morale, fairness and money illusion are almost certain to play a big role in macroeconomic theory. His demonstration that there exist in reality simple robust behavioral patterns that cannot plausibly be founded on traditional maximizing behavior also raises the prospect of a more empirically oriented, more behavioral macroeconomics in the future. With luck that will also be a macroeconomics that is not rejected as nonsense by the most intelligent and knowledgeable people whose behavior its practitioners purport to explain.

Regardless of the outcome of the debate that his book is certain to provoke, Bewley's field research has made an outstanding contribution to our knowledge of labor markets, by providing a close-up view of exactly what happens from the vantage point of the participants. He deserves enormous credit for having invested a large amount of time and effort into the kind of data-gathering exercise that most academics shun for its lack of private payoff but which, when conducted by someone with a deep understanding of the theoretical issues involved, as is clearly the case here, can have a substantial social payoff.

¹⁰ Formal analyses of Keynes's position on wage flexibility are provided by Tobin (1975), De Long and Summers (1986) and Howitt (1986). The latter two contributions make it clear that the destabilizing expectational mechanism does not in any way depend on non-rational expectations.

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