The firm as a community explaining asymmetric behavior and downward rigidity of wages

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A R T I C L E   I N F O

A B S T R A C T

This paper models the firm as a community à la Akerlof [Akerlof, G.A., 1980. A theory of social custom, of which unemployment may be one consequence. Quarterly Journal of Economics 94, 749–775] to account for asymmetric behavior and, in particular, downward rigidity of wages. It is shown that, through social interaction among workers in the firm community, wage cuts can give rise to a large, discontinuous fall in labor productivity (known as "catastrophe"). Furthermore, this large fall in labor productivity will persist or display inertia (known as "hysteresis") even if the wages are restored to the pre-cut level and beyond. Our catastrophe/hysteresis finding with respect to wage cuts can rationalize the downward rigidity of wage behavior and is consistent with the interview evidence of *fragile worker morale* emphasized by Bewley [Bewley, T.F., 1999. Why Wages Don't Fall During a Recession. Harvard University Press, Cambridge] and others in explaining why employers are sensitive to and refrain from cutting worker pay.

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1. Introduction

Why do wages exhibit downward rigidity? Searching for answers to this question can be stretched back at least as far as Keynes's *General Theory*. Although many explanations have been proposed, the state of knowledge seems to remain unsatisfactory.[1]

In a highly praised book, Bewley (1999) made a recent attempt to answer the puzzling question of why wages do not fall during a recession.[2] He conducted a massive number of interviews with more than 300 business people and labor leaders in the northeast of the United States during the early 1990s. After careful assessment in the light of his interview evidence, Bewley concluded that the most important factor inhibiting wage cuts was the psychological factor of morale, which has nothing to do with any conventional economic theory. This morale story of wage rigidity emphasizes that employers are sensitive to and refrain from cutting worker pay on the basis of the belief that doing so would hurt worker morale and, consequently, labor productivity.[3] According to Bewley (p. 54), "In the mind of business leaders, morale has to do with

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[1] See Bewley (1999, chapter 20) for a critical review of the existing theories on wage rigidity. Recent panel-data studies suggest that wages are not completely rigid downward. See Akerlof et al. (1996), Kramarz (2001), and Howitt (2002) for assessments of this strand of the literature.

[2] For a summary of the book, see Bewley (1998). Howitt provided a review of Bewley's book.

[3] Other interview studies with owners and managers of firms, including Kaufman (1984), Blinder and Choi (1990), Agell and Lundborg (1995), and Campbell and Kamlani (1997), all have a similar finding: pay cuts will adversely affect labor effort and productivity.

workers' mood and with the willingness to cooperate with company objectives." Workers have so many opportunities to take advantage of their employers if they want to. Good morale will motivate workers to perform well even without coercion and financial incentives. However, morale is fragile and may deteriorate easily. Cutting wages could be an important input that triggers the evaporation of worker morale.

After suggesting a morale theory of wage rigidity, Bewley (p. 436) concluded at the end of his book,

> "Companies do use financial incentives and try to maximize profits, and workers want as much money as possible. Workers do cheat, and discipline is vital to organizational effectiveness. What is missing is an appropriate theory of the firm as a community, because more than financial incentives and discipline are needed to make companies function well."

We believe this concluding passage embodies Bewley's deep reflection on the received theories of the firm in the light of his own interview findings. In this paper we respond to Bewley's call by modeling the firm as a community (in addition to those features associated with financial incentives and discipline). Via such a model, we attempt to account formally for the downward rigidity of wages.

If labor productivity were continuous in wage payment, then small changes in the wage would always produce small changes in productivity. In such a world, employers could formulate their wage policy through trial-and-error, since continuous wage adjustments always lead to continuous variations in labor productivity. This "continuous" world, which is the maintained assumption in the existing literature, can hardly match the phenomenon that employers are sensitive to and refrain from cutting worker pay as documented by Bewley and many others. By contrast, labor productivity *is not* continuous with respect to the wage payment in our firm-as-a-community model. This discontinuous world, as we shall show, fits Bewley's fragile morale story well and can explain why wages are rigid downward. To our knowledge, this is the first paper ever to demonstrate formally that adjusting wages may give rise to discontinuity in labor productivity.[4]

It is important to recognize that the phenomenon of wage rigidity actually consists of two parts: downward rigidity and upward flexibility. Ideally, a model should be able to explain not only the downward wage rigidity but also the upward wage flexibility.[5] We believe this asymmetric behavior of wages is the most intriguing feature of the whole phenomenon. However, we know only a handful of models in which the asymmetry of wages emerges explicitly.[6] Our firm-as-a-community model is capable of accounting for asymmetric behavior as well as downward rigidity of wages.

The rest of the paper is organized as follows. Section 2 introduces our model. We analyze the model and explore its implications for wage behavior in Sections 3 and 4. Section 5 concludes.

2. Model

Consider a firm in which workers may or may not supply effort e, which takes on the value 1 if effort is supplied and 0 otherwise. If workers do not shirk or shirk but do not get caught, they receive the real wage w, which is set by employers. If workers shirk and get caught, they receive a lower wage, which is normalized to 0 without loss of generality. Workers, whose only source of income comes from employment, are assumed to maximize a utility function:

$$U = m + (1 - e) - \lambda R, \tag{1}$$

where m is real wage income, $-R$ denotes reputation loss in the firm community, and λ represents a subjective sensitivity indicator with respect to such loss of reputation. The setting of the utility function above indicates that individuals care not only about their income and leisure, but also about their reputation within the firm. As Akerlof (1980, p. 753) put it colorfully: 'persons want to be "rich and famous".'

Workers are heterogeneous in the sense that λ is idiosyncratic and varies across individuals. For convenience, we let λ be uniformly distributed with support on [0, 1]. Given $-R$, the higher the value of λ, the higher will be the reputation loss for a worker. It is assumed that, due to some exogenous reasons (asymmetric information, non-verifiable problems, etc.), the firm does not pay differential wages on the basis of λ.[7]

Our model will reduce to a simple shirking model if $R \equiv 0$. Since the R term in (1) plays a key role in this paper, we discuss the modeling of the R term in detail.

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[4] Shafir et al. (1997) have recognized the importance of the discontinuity issue and cited some evidence in support of the plausible discontinuity in work effort from wage cuts. However, they fall short of providing a formal model, and their focus is not on wage rigidity either.

[5] For evidence on the asymmetric behavior of wages, see Holzer and Montgomery (1993), Campbell and Kamlani (1997), Bewley (1999, chapters 10–12), and the references cited in Howitt (2002).

[6] Exceptions include Holmstrom (1983), who developed a two-period implicit contract model in which wages are rigid downward because workers are insured against downside fluctuations, but wages have to be flexible upward to retain workers who may quit, and Lindbeck and Snower (1988), who considered an insider–outsider model in which wages will remain unchanged as demand falls but will increase as demand rises. These exceptions are interesting. However, it seems difficult for them to explain why employers are sensitive to cutting worker pay and why downward wage rigidity has to do with worker morale.

[7] One may think of the workers in our model in terms of a particular rank or class in the firm (a group of workers who receive more or less the same wage payment). Strand (1987) and Albrecht and Vroman (1998) extended the celebrated Shapiro and Stiglitz (1984) shirking model to include adverse selection as well as moral hazard.