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Loss avoidance in nominal frames and fairness in downward nominal wage rigidity and disinflation

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ABSTRACT: This paper proposes a more general definition of loss avoidance, relates it to fairness and applies it to the labor market. By influencing judgments about what is a fair wage readjustment, it can lead to coordination failures, generating downward nominal wage rigidity (DNWR) and disinflation costs even with common knowledge of credible policies. This suggests that policies with good frames, including inflation targeting, can mitigate the sacrifice ratio.

KEY WORDS: framing effect; higher order beliefs; Keynesian beauty contest; Phillips curve; inflation inertia.

JEL CLASSIFICATION: C72, D03, E31, E42, E52, J30

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The New Keynesian Phillips curve does not explain the causes behind the relationship or the costs of credible gradual disinflation.¹ However, a proposed explanation involves coordination failure related to higher order expectations.² Although the present study is aligned with this view, unlike most studies, it follows Simonsen (1988), who proposed that positive sacrifice ratios can occur even with common knowledge about the rate of reduction in the growth of nominal aggregate demand.

This paper's contribution is to propose that one mechanism behind this effect (which could be called 'the Simonsen effect'), is that guessing which level of (nominal) wage readjustment is considered fair is a Keynesian 'beauty contest' in which loss avoidance can influence the choice of strategies. This concept was introduced by Cachon and Camerer (1996) (hereafter CC) as an equilibrium selection principle under which agents expect that others will avoid strategies that always result in real losses. This paper extends this concept to incorporate the idea that agents might also believe that others tend to avoid strategies resulting in nominal payoffs below a reference point under a given frame.

1. Concepts and the Coordination Game in the Labor Market

Definition I: reference points are the frontiers between losses and gains in individual choice.³

Definition II: reference transactions are the frontiers between losses and gains associated with transactions with others.⁴

¹ See, e.g., Ball (1994) and Fuhrer (2006).

² See, e.g., Woodford (2003).

³ See Kahneman and Tversky (1979).

⁴ See, e.g., Kahneman, Knetsch and Thaler (1986, hereafter KKT).

Both are also simply called references. A transaction of special interest is the payment involved in the interaction between worker and firm; the wage.

Definition III: an unfair wage is one set below important references unless the firm has a good justification, such as a difficult financial situation.⁵

The past nominal wage is considered the most important reference,⁶ but the expected wage readjustment of other workers is also considered an important one.⁷ This can lead to a coordination problem where a broader concept of loss avoidance may play a role in solving. CC's original concept of loss avoidance and Tversky and Kahneman's (1981) concept of a frame are:

Definition IV: Loss Avoidance (original definition) is an equilibrium selection principle in which (players) "expect others to avoid strategies that always result in losses."

Definition V: a frame is the way agents receive information, reflecting which information is salient. It influences the determination of agents' references and expectations about the references of others and defines how salient those references are.

This paper proposes the following concept of loss avoidance.

Definition VI: Loss Avoidance (broader concept) is the belief that under a frame in which a real or nominal reference is sufficiently salient, there is a tendency for others to avoid strategies that are expected to result in outcomes framed as losses.

The laboratory experiment by Fehr and Tyran (2001) corroborates this kind of loss avoidance, although they do not use this particular term. Although they analyze a game

⁵ See, e.g., KKT and Akerlof, Dickens and Perry (1996).

⁶ See, e.g., KKT.

⁷ See, e.g., KKT.

with a unique pure strategy equilibrium, loss avoidance in the form proposed here influences higher order beliefs during the evolutionary path taken to reach it.

Because past inflation is usually very salient, it is the main bad reference in disinflation. Regarding DNWR, it is worth noting that Bewley (2005) criticizes Keynes for proposing that “downward wage rigidity is explained by employees’ preoccupation with pay differentials with respect to workers in similar jobs at other firms,” because Bewley “found, however, that such external pay differentials are not an issue, except in highly unionized industries.”⁸ However, if Keynes’ proposition is interpreted merely as a concern with maintaining relative pay positions, the concept of loss avoidance can conciliate Keynes’ proposition with DNWR through a concern about reference readjustment. This is conveyed by the equation below, with the fair wage readjustment being a readjustment similar to that expected to be received by other workers:

$$\log(W_t^F) - \log(W_{t-1}) \equiv dwf_t = E_{t-1}[dw_t] \equiv E_{t-1}[\log(W_t) - \log(W_{t-1})],$$

where W_t^F is the average fair wage, W_t is the average wage, and dwf_t is the (average) fair nominal wage readjustment, which is equal to the expected average wage readjustment $E_{t-1}[dw_t]$, which can be influenced by frames and social norms.

To understand this chain, consider the game described in Figure 1, in which the real payoffs of firm k are a function of its own wages and those set by other firms. Prices are markups over wages and, when firms set nominal wages, they must decide whether to take into account references of workers that imply wages above the level compatible

⁸ Page 311.

with full employment ('bad references'). For the reasons below, the optimal response in the case described here is to choose the strategy chosen by other firms.

- If all other firms consider the bad references, nominal wages and prices are high so the economy moves to high unemployment. In this case, if firm k chooses not to take the bad references into account, this behavior is considered unfair and the payoff of the firm is three, whereas firm k's payoff would be six when taking bad references into account.
- If other firms do not consider the bad references, nominal wages and prices are low so unemployment is low. In this case, if firm k takes the bad references into account, its costs and therefore its prices are too high, so its sales are below those of other firms and its payoff is just one. If firm k does not consider bad references and all firms do likewise, workers may not see this behavior as unfair when everyone realizes that they are in this good equilibrium. Hence, the payoff of each firm would be ten.

Consequently, if the given frame treats bad references as salient, the expected probability that other firms will take them into account is high, which leads each firm to do so.

2. Evidence and Implications for Policy

This result reinforces the importance of existing literature on the role of central banks' communication on coordination,⁹ bringing into focus the relevance of the design of the frame of a policy. Arguably, explicit inflation targeting generates a better frame in disinflation than does a monetary anchor. This is because it transfers to the targeted

⁹ See, e.g., Morris and Shin (2002) and Demertzis and Viegli (2008).

inflation some of the headlines that would be dominated by references that promote inflation inertia, namely past inflation indices. More complex concepts (such as monetary targets and Taylor rules) are much less likely to be salient to ordinary cognition than is targeted inflation. While Demertzis and Viegi (2008) modeled the importance of inflation targeting as salient information to promote coordination among agents, they ignored loss avoidance and did not discuss disinflation.

Whether inflation targeting generates better coordination is controversial, but forms a consensus in the literature.¹⁰ Gonçalves and Carvalho (2009) found evidence that inflation targeting strongly and robustly affects sacrifice ratios.

An interesting policy case is the Brazilian Real Plan, under which wage and price readjustments were officially pegged for three months to an exogenous daily index, replacing former informal pegging to past inflation. Subsequently, the index was frozen and inflation and unemployment decreased, thus successfully substituting a much lower reference for nominal wage readjustments.

The asymmetry inherent in loss avoidance may also help explain the asymmetric effects of monetary policy.¹¹

3. Conclusion and Implications for Macroeconomic Theory

The paper proposes a broader concept of loss avoidance and shows that a bad frame can lead the economy to a sub-optimal equilibrium during periods of disinflation, reinforcing concerns about central bank communication and favoring the proposition that policy makers should consider how macroeconomic information is framed.

¹⁰ See, e.g., Mishkin and Schimdt-Hobbel (2007).

¹¹ See, e.g., Cover (1992).

Regarding macroeconomic theory, this paper's discussion helps to reconcile forward and backward looking Phillips curves¹²—salient past inflation may influence agents' forecasts—and rehabilitates Keynes's view of the mechanism behind DNWR.

¹² See, e.g., Fuhrer (2006).

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Figures

		Behavior of other firms	
		Take bad references into account	Do not take bad references into account
Macroeconomic consequences:		High nominal wages and prices relative to nominal demand and, therefore, high unemployment.	Low nominal wages and prices relative to nominal demand and, therefore, low unemployment.
Firm k	Takes bad references into account	Consequences for firm k : effort is not reduced; because wages are the same as in other firms, price and sales are also the same. Real payoff of firm k : 6	Consequences for firm k : effort is not reduced; because wages are higher than in other firms, its price is higher and the firm sells much less than others do. Real payoff of firm k : 1
	Does not take bad references into account	Consequences for firm k : effort is reduced, generating low productivity and low production. Real payoff of firm k : 3	Consequences for firm k : effort is not reduced, and with the same wage and price of other firms, sales are also the same. Real payoff of firm k : 10

Figure 1: The nominal wage-setting coordination game.