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Inflation Goals: Guidance from the Labor Market?

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As inflation rates in the United States decline, analysts are asking if there are economic reasons to hold the rates at levels above zero. A study of inflation's effects on the labor market suggests that low rates of inflation do help the economy to adjust to changes in labor supply and demand. When inflation's disruptive effects are balanced against this benefit, however, the labor market justification for pursuing a positive long-term inflation goal effectively disappears.

In most countries, reducing inflation has been a key objective. Governments view inflation as a force that inhibits economic growth by discouraging long-term investment, distorting the tax structure, and undermining the financial plans of firms and households. Although this perception of inflation clearly predominates in policy circles, some analysts have argued that maintaining a certain amount of inflation over the long term can improve a country's economic performance, largely by keeping unemployment in check.

In this edition of *Current Issues,* we explore this difference of views by examining the impact of inflation on the largest market in the United States—the labor market.[1] Unlike earlier researchers, we measure both the positive effects of inflation—the flexibility it gives employers to reallocate wages without laying off workers—and inflation's negative effects—the confusion and error it introduces in the wage-setting process.[2] Drawing on data from a detailed salary survey conducted by the Federal Reserve Bank of Cleveland over a forty-one-year period, we seek to determine whether inflation primarily enhances or impedes the efficient functioning of the labor market.

Our analysis reveals that low levels of inflation yield benefits that only marginally exceed costs; the costs of higher levels of inflation clearly outweigh the benefits. Moreover, even at low levels, inflation does not lead to any noticeable reduction in unemployment. Thus, while the evidence from the labor market suggests that current low rates of inflation do not entail the same risks as high inflation rates, it provides little justification for actively maintaining an inflation goal above zero.

Inflation's Costs and Benefits in the Labor Market—In Concept

Inflation affects labor market efficiency by influencing firms' wage-setting practices and compensation schemes. In economies with competitive labor, capital, and product markets, comparable workers at equivalent jobs will tend to be compensated similarly.[3] If an employer sets wages too low, it will lose employees; the resulting turnover will lead to lower profits. If an employer pays too much, it will either suffer a profit loss or be forced to lay off workers because it will be unable to price products competitively. Thus, any factor that interferes with firms' accurate wage setting can raise unemployment, worker turnover, or company failures. Since labor is typically a large component of companies' costs, such widespread interference in this market can impair the efficiency of the economy.

How Inflation Impairs Economic Efficiency: The Sand Effect. Inflation can cause firms throughout the labor market to err in setting wages. Such miscalculation—

which we call the "sand" effect—occurs in the first stage of the two-stage annual wage-setting process, when an employer's senior management sets the average wage change for its workforce.

In determining an appropriate wage change, management considers inflation forecasts, labor market surveys, and projections of sales and product prices.[4] Using this information, management seeks to adjust wages so that workers are neither over- nor underpaid. As a guide in achieving this goal, many firms try to keep their wage changes in line with those of other employers.

Inflation can, however, skew the outcome of employers' careful wage deliberations and undermine efforts to achieve parity in wages across firms. The higher the inflation level, the greater the uncertainty about future rates. In such an environment, employers may easily misjudge the change in employee living costs or their own sales performance for the coming year. Moreover, the prevailing uncertainty will contribute to inconsistencies in the labor market data that influence employer calculations of average wage changes. Thus, employers that differ in their data sources are likely to develop different perceptions of the state of the economy and to implement diverse wage changes. High and fluctuating inflation can also increase wage dispersion by compelling firms in unequal economic circumstances to make sizable salary adjustments: while some firms will be able to keep their salaries competitive, firms facing cash or other constraints may be temporarily unable to adapt.

Even if employers anticipate and try to avoid the wage mistakes that occur in a high-inflation environment, their preemptive efforts will introduce other costs. For example, firms opting to repeat the annual appraisal and wage-adjustment exercise at midyear will incur major expenditures of time and effort. In unionized companies, in the absence of explicit cost-of-living adjustments, such modifications will require reopening negotiation. Alternatively, companies might spend extra money gathering more information at the beginning of the year to avoid having to alter their wage decisions later. Whatever strategy companies choose, however, they will incur inflation-induced costs, and the economy will operate less efficiently.

How Inflation Promotes Wage Flexibility: The Grease Effect. Although inflation can introduce error in wage determinations, it also gives employers greater freedom to adjust wages to reflect changes in labor market supply and demand or variations in employee performance. This benefit—the "grease" effect—comes into play during the second stage of the wage-setting process, when each division of a firm allocates its share of the salary budget among its workers.

During the second stage, management reapportions the wages assigned to the various occupations within each division. Specifically, it seeks to match the wage that each occupation typically commands in the market. This market wage, in turn, reflects the amount and kind of training necessary, the rigor of the work requirements, and the supply of workers in that occupation relative to the demand for them. Since each of these conditions changes over time as technology, products, demographics, and input prices shift, the prevailing market wage for each occupation will also fluctuate.

Inflation allows management to respond flexibly to changes in the market wage for different occupations. It does so by enabling firms to overcome "downward wage rigidity"—a societal standard of fairness that essentially bars employers from cutting good workers' salaries.[5] To understand how inflation's grease effect operates, consider the position of a manager who must allocate a division's fixed salary budget among employees in two occupational groups—one with skills in rising demand and the other with skills in declining demand. In a noninflationary environment, the manager who wishes to keep the wage of the first group in line with the prevailing market wage may be forced to lay off workers in the second group because wage rigidity norms rule out a reduction in dollar wages. In periods of inflation, however, there is no need to resort to layoffs or dollar pay cuts: the manager can instead leave the wage of the second group unchanged or raise it by an amount less than the change in the cost of living. While such actions are, in effect, forms of pay reduction, they are typically not perceived as such by most workers.[6]

Inflation allows management to respond flexibly to changes in the market wage for different occupations. It does so by enabling firms to overcome "downward wage rigidity."

By preventing the overpayment of workers in occupations with declining market wages, inflation allows employers to avoid a number of less desirable alternatives—laying off workers, above all, but also charging higher prices than competitors (and thereby risking a loss of market share) or accepting lower profits. Moreover, by giving employers greater flexibility to adjust compensation in response to changes in labor market supply and demand, inflation helps to transmit appropriate wage signals through the economy. Thus, individuals making training decisions or choosing career paths will be

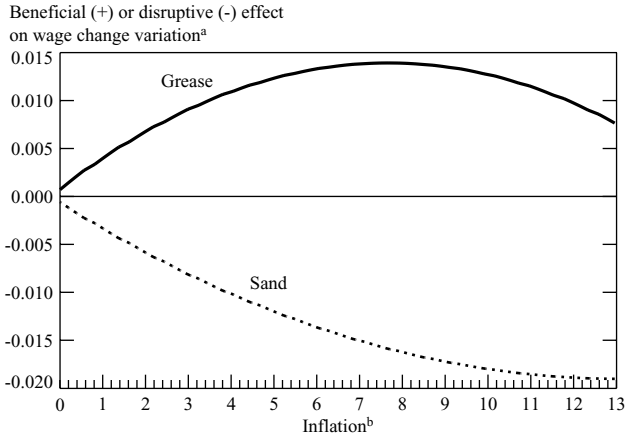
encouraged to pursue occupations that offer increasing, rather than diminishing, opportunities.

Estimates of Inflation's Effects in the Labor Market

How do we measure the grease and sand effects we have identified? Because inflation causes employers to miscalculate their salary budgets (sand), we can measure sand by estimating how much inflation increases wage-change disagreement among employers. Because inflation frees employers from wage rigidity, we can measure grease by assessing the degree to which inflation allows occupations to have different wage changes.[7] We present our empirical estimates of the grease and sand effects in Chart 1, drawing on our earlier studies of inflation's impact on firm-level wage changes (Groshen and Schweitzer 1996, 1997).

Grease Effect Esimates. Allowing for 1.5 percent productivity growth (about the average over the forty-one years represented in our data set), we find evidence that inflation does enhance occupational wage flexibility.[8] This benefit increases most rapidly at the lowest inflation rates. The grease curve levels off as it nears its peak (at an inflation rate of 7.5 percent), suggesting that inflation rates of 4 to 5 percent deliver most of the possible benefits from inflation. Interestingly, although our methods of measuring inflation's grease effects differ from those of other researchers, our results are consistent with earlier findings that a beneficial effect exists and operates most strongly at inflation rates up to 4 or 5 percent.[9]

Chart 1
Estimates of Inflation's Grease and Sand Effects on the Labor Market



Source: Authors' calculations, based on data from the Federal Reserve Bank of Cleveland Community Salary Survey. See Groshen and Schweitzer (1996, 1997).

[a] Measured as the predicted effect of inflation on the standard deviation of log wage changes.
[b] Defined as the annual percentage change in the consumer price index.

Sand Effect Estimates. Our sand effect estimates suggest that inflation significantly increases the disparity in employers' average wage changes (adjusted for the skills they employ). Because this inflation-induced sand is detrimental to the labor market, we plot it on the negative vertical axis in Chart 1.

If the sand effects in the labor market are considered in isolation, the preferred inflation goal is clearly zero. For inflation rates up to 13 percent—a range chosen to reflect the postwar U.S. experience with inflation—we find that the disruptive sand effects grow continuously as inflation rises.

Long-run inflation in the 2 to 5 percent range has a negligible effect on unemployment, lowering it by a mere 0.1 percentage point at most.

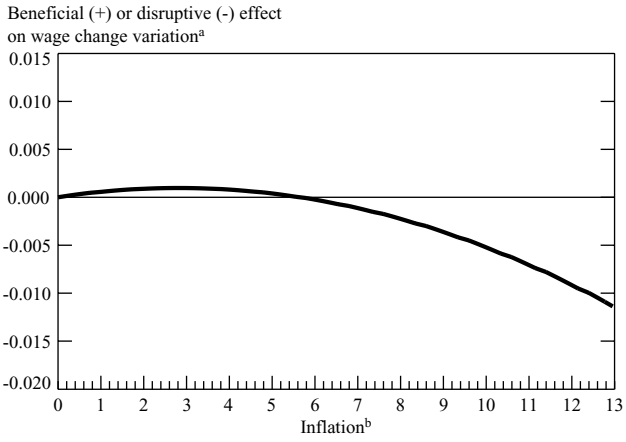
Although the disruption increases most rapidly at the lowest inflation rates, each increase in inflation further upsets employers' wage parities, suggesting that the negative impact of inflation is unbounded.[10] Our estimates are consistent with those of sand effects in retail markets.[11]

Net Benefits Estimate. The net impact of inflation can be determined if the grease and sand effects are measured equally well, in the same units, and in the same market. Our reading of the human resources literature and discussions with personnel administrators convince us that firms try to minimize upward and downward wage errors equivalently because the costs to the firms are symmetric. Under these conditions, a wage error will have the same effect on workers and firms whether its source is a lack of grease or too much sand.[12]

Subtracting our measure of inflation's sand disruptions from our measure of grease benefits yields a net benefits curve (Chart 2). If we compare this net effect with the pure grease effect plotted earlier, we find that benefits decrease and the peak of the curve shifts closer to zero.

Strikingly, at low inflation rates, the benefits observed in Chart 1 almost disappear. Indeed, the very flat net benefits curve near zero inflation suggests that little labor market efficiency is lost by moving inflation closer to zero. Furthermore, we conclude that the net benefits from inflation peak at about 2.5 percent inflation, meaning that 2.5 percent is the highest inflation rate justifiable on the basis of labor market efficiency.[13] Thus, our results directly contradict some analysts' findings that inflation should remain above 3 percent to promote efficiency in the labor market.

Chart 2
Net Impact of Inflation on the Labor Market



Source: Authors' calculations, based on data from the Federal Reserve Bank of Cleveland Community Salary Survey. See Groshen and Schweitzer (1996, 1997).

[a] Measured as the predicted effect of inflation on the standard deviation of log wage changes.
[b] Defined as the annual percentage change in the consumer price index.

At inflation levels above 7 percent, the disruptive effects of inflation on the labor market dominate the positive effects. Even further out, at levels above 10 percent, inflation's negative effects will mount very rapidly. Thus, these levels are likely to cause serious inefficiencies in the economy.

Net Unemployment Impact. Is our finding that a 2.5 percent rate of inflation yields a very small efficiency gain sufficient reason to pursue an inflation goal in this range? We address this question by converting our estimates of inflation's grease and sand effects into unemployment impacts. In this way, we test the argument—advanced in particular by those who favor maintaining inflation above a certain threshold—that inflation can help keep unemployment in check. To calculate inflation's effects on unemployment, we combine our measures of wage effects with estimates of the responsiveness of labor demand and supply to wage changes. This exercise shows that long-run inflation in the 2 to 5 percent range has a negligible effect on unemployment, lowering it by a mere 0.1 percentage point at most.[14]

Factors That Might Prompt Policymakers to Seek a Change in Inflation Levels

We have seen that although low levels of inflation do no harm in the labor market, the benefits generated are too slight to justify the pursuit of a particular inflation objective above zero. Nevertheless, under certain circumstances, the labor market might offer guidance to policymakers considering whether to seek a change in inflation levels. These circumstances include the persistence of very low inflation rates, fluctuations in productivity growth, and major shocks to the economy. We note that measures of these conditions are extremely imprecise and are available to policymakers only after long lags, so the conditions would be difficult to identify as they occurred. Nevertheless, in principle, they could support moving toward higher or lower inflation levels.

Very Low Long-Term Inflation. All estimates of the effects of inflation (including our own) assume that firms' wage-setting practices and compensation schemes do not evolve in response to an inflationary environment. The implicit assumption that such changes do not occur is the unavoidable result of limiting our analysis to the recent past, during which time inflation was not below 3 percent for any long period.[15] We produce our estimates of the grease and sand effects of very low inflation rates by projecting our findings over lower rates than were observed. Although this is a reasonable strategy (and the only one available for now), current research cannot fully rule out better, or worse, outcomes under very low inflation than our extrapolations suggest.

Outcomes could be better if the persistence of very low inflation rates had the effect of relaxing wage rigidity. The competition generated in an environment of very low rates could pressure workers and employers to accept alternative compensation schemes that allow year-to-year pay reductions. Although such schemes exist now—bonus and incentive pay and contingent contracts are notable examples—they would almost certainly proliferate if inflation remained below 3 percent for long periods. Widespread use of these pay schemes would reduce the need for grease, making inflation less helpful than before. Indeed, preliminary evidence from our data suggests that occupational wage flexibility has been higher in the low-inflation 1990s than would have been expected under historical relationships (Groshen and Schweitzer 1997). Thus, it is possible that we are underestimating the wage flexibility benefits that would accompany very low long-term inflation rates.

However, two other factors suggest that the outcome would be worse under a very low inflation regime. First, the only twentieth-century U.S. experience with so little grease in the labor market was during the Great Depression of the 1930s. At that time, wage rigidity was weakened, but only at the cost of high and long-lived unemployment. Moreover, even under these circumstances, practices favoring rigid wages were not eliminated permanently, and they rebounded strongly after the Depression.

Second, the societal standard that effectively prohibits cutting the wages of good workers may be an immovable one. The fact that U.S. inflation rates of 5 to 14 percent over the 1970s and 1980s failed to elevate the minimum acceptable raise above zero dollars (that is, the high rates

did not lead to widespread indexing) suggests that the zero-dollar wage change is a firmly entrenched standard of fairness. Popular acceptance of wage cuts for good workers could prove elusive, no matter how long inflation stays low.

In sum, the persistence of inflation rates below 3 percent could have effects on the labor market that we are unable to capture with our projections. Nevertheless, given the ambiguity of these effects, it is difficult to determine whether policymakers would want to pursue or to avoid very low inflation rates.

Productivity Growth Fluctuations. A second consideration in assessing the desirability of different inflation levels is productivity growth. Because productivity growth, like inflation, injects grease and sand into wage setting, policymakers must evaluate how advances and declines in this variable will interact with inflation.

The difficulty of gauging general productivity growth adds confusion (sand) in the first stage of wage setting. In the second stage, the effect of productivity growth on dollar wages adds grease. To understand the grease effect, suppose that the growth of trade allowed firms to operate on a larger scale, where average costs were lower and productivity was higher. As firms saw their sales rise and costs drop, they would add workers. Wages would then be bid up by the competition for workers, and firms would be willing to pay higher wages because labor hours were more productive than before.[16] The increase in funds targeted for wages would give employers the opportunity to alter the relative wages of different occupations. In this way, advances in general productivity act like inflation, increasing employer flexibility to adjust wages in response to market developments.

Now, imagine that a large oil price shock occurred, spurring so much reorganization that output stopped growing or fell for a while. Productivity growth could no longer ease wage rigidity, depleting the grease in the labor market. Under these conditions, policymakers might be justified in seeking a higher level of inflation to compensate for the economy's temporary shortage of grease.

Thus, the need for inflation will vary with fluctuations in productivity growth. As productivity growth strengthens, the amount of grease and sand in the labor market becomes greater, reducing the benefit of adding more inflation. Conversely, as productivity growth declines, the amount of grease and sand in the labor market also drops, increasing the net benefit of inflation.

Major Shocks to Occupational Markets. A third factor affecting policymakers' inflation preferences would be the onset of a major shock that affected occupations differentially. For example, suppose an abrupt hike in imported oil prices jacked up wages and the need for workers in occupations involved in providing domestic energy at the same time that it reduced wages and work opportunities in occupations in energy-intensive industries. Under these circumstances, unemployment would be minimized if wages could change more dramatically than usual: that is, enough to avert layoffs in shrinking jobs and draw workers rapidly into expanding ones. Until the adjustments were complete, the net benefits of inflation would be higher than normal and peak at a higher level. Thus, in the aftermath of shocks, allowing higher inflation would mitigate unemployment and other painful consequences of adjustment.

Conclusion

Our study of the labor market confirms that inflation has beneficial grease effects—it enables employers to adjust wages rapidly in response to ongoing changes in the supply of or demand for different groups of workers. When we take account of inflation's disruptive effects on wage determination, however, we find that the measured benefits of inflation fall sharply. Indeed, the net benefit is very small and is exhausted at inflation rates above 2.5 percent.

Although our analysis should alleviate concerns about the risks of maintaining the present low rates of inflation, it offers little reason to pursue a positive long-term inflation goal. We identify particular circumstances that might encourage policymakers to prefer higher or lower levels of inflation, but we find no indication that a specific long-run inflation target—of, say, 2 or 3 percent—would materially reduce unemployment or produce other benefits sufficient to override inflation's costs by a significant margin. Thus it appears that policymakers wishing to identify an optimal level of inflation will have to seek evidence in arenas beyond the labor market.

Notes

1. Labor costs account for two-thirds of production costs in national output.

2. The positive employment effects investigated in this article should be distinguished from those identified by Keynesian analysts. Keynesian theory holds that inflation can reduce short-run recessionary joblessness. In this article, we consider whether inflation can alleviate long-run unemployment over the entire business cycle.

3. Compensation includes wages, benefits, and working conditions. For simplicity, this analysis focuses on wages because they are the largest and most flexible component of compensation and show the effects of inflation more clearly than benefits or working conditions.

4. In a unionized company, wage determination also involves negotiation with union leaders and a long (usually three-year) time horizon.

5. The prohibition against wage cuts is embedded in the personnel policies of most firms. Worker opposition to wage reductions derives in part from money illusion: workers tend to focus on the

nominal, rather than the real (inflation-adjusted), value of their salaries. Thus, they will resist cuts in their dollar earnings more strongly than they resist equivalent increases in the prices of what they buy. In addition, workers oppose earnings reduction because they must meet significant fixed-dollar expenses such as mortgage and car loan payments.

6. Moreover, in a union setting, higher average wage gains make it more likely that the union will accept differential gains for different types of workers.

7. A wide range of tests supports the validity of this identification strategy. See Groshen and Schweitzer (1997) for a full description of these tests.

8. The relationship between productivity growth and inflation goals is described in Groshen and Schweitzer (1996). Our measure of productivity growth is the percentage change in output per hour (reported by the Bureau of Labor Statistics) based on pre-chain-weighted GDP data. Since analysts differ in their forecasts of future productivity growth, we choose the historical mean for this analysis: from 1956 to 1996, the mean is 1.62 percent.

9. See, for example, Akerlof, Dickens, and Perry (1996), Kahn (1995), and Card and Hyslop (1996). Other economic studies (McLaughlin 1994; Lebow, Stockton, and Wascher 1995) question the existence of downward wage rigidity and, thus, the need for grease. Our analysis convinces us that the negative results obtained in the latter two studies reflect data quality issues, not the absence of downward wage rigidity.

10. If the persistence of higher rates of inflation led companies to index their wages to inflation, the sand effect would level off. However, we do not detect strong evidence of a decline in the sand effect.

11. See, for example, Lach and Tsiddon (1992).

12. In simulations with differing labor supply and demand elasticities, we find comparable unemployment effects for grease and sand (Groshen and Schweitzer 1996, 1997).

13. If, as some analysts expect, productivity growth slows from 1.5 to 1 percent over the next decade, then more inflation would be needed to "grease" the economy. Under these conditions, the inflation rate producing the greatest net benefits would rise to 3 percent.

14. See Groshen and Schweitzer (1997) for a description of this simulation exercise. The net effect identified is far smaller than the grease effect estimates offered by Akerlof, Dickens, and Perry (1996). They calculate that 3 percent inflation lowers the unemployment rate from the level that obtains at 0 percent inflation by 1.7 to 2.6 percentage points. Significantly, however, this estimate excludes the sand effect.

15. Our sample includes wage information for the 1950s, 1960s, and early 1990s—low-inflation periods not covered in earlier studies. But while our sample provides some evidence of the effects of inflation rates of 2 to 3 percent, it offers no evidence of the effects of inflation at 0 or 1 percent.

16. Unlike inflationary wage hikes, productivity-induced wage increases are not eroded by corresponding increases in prices.

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