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WHY DO WORKERS DISLIKE INFLATION? WAGE EROSION AND CONFLICT COSTS

Joao Guerreiro
Jonathon Hazell
Chen Lian
Christina Patterson

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ABSTRACT

How costly is inflation to workers? Answers to this question have focused on the path of real wages during inflationary periods. We argue that workers must take costly actions ("conflict") to have nominal wages catch up with inflation, meaning there are welfare costs even if real wages do not fall as inflation rises. We study a menu-cost style model, where workers choose whether to engage in conflict with employers to secure a wage increase. We show that, following a rise in inflation, wage catch-up resulting from more frequent conflict does not raise welfare. Instead, the impact of inflation on worker welfare is determined by what we term "wage erosion"—how inflation would lower real wages if workers' conflict decisions did not respond to inflation. As a result, measuring welfare using observed wage growth understates the costs of inflation. We conduct a survey showing that workers are willing to sacrifice 1.75% of their wages to avoid conflict. Calibrating the model to the survey data, the aggregate costs of inflation incorporating conflict more than double the costs of inflation via falling real wages alone.

Joao Guerreiro
Department of Economics
University of California Los Angeles
Los Angeles, CA
jguerreiro@econ.ucla.edu

Jonathon Hazell
Department of Economics
London School of Economics
32 Lincoln's Inn Fields
United Kingdom
jadhazell@gmail.com

Chen Lian
Department of Economics
University of California, Berkeley
Evans Hall
Berkeley, CA 94720
and NBER
chen_lian@berkeley.edu

Christina Patterson
Booth School of Business
University of Chicago
5807 S. Woodlawn Avenue
Chicago, IL 60637
and NBER
christina.patterson@chicagobooth.edu

1 Introduction

People think inflation is one of the United States' worst problems (Pew Research Center, 2022, 2023). Why do people dislike inflation so much? One reason could be that prices rise faster than nominal wages when inflation is high, meaning real wages fall and workers become poorer (Shiller, 1997; Stantcheva, 2024; Afrouzi, Dietrich, Myrseth, Priftis, and Schoenle, 2024b). A classic view, for instance from Fischer and Modigliani (1978) or Mankiw's (2020) textbook, suggests that this cost of inflation is small. The argument is that nominal wages generally keep up with prices after an inflationary shock. As a result, real wages do not persistently fall and workers do not suffer much.

This paper argues that inflation imposes costs on workers beyond its impact on real wages. We start from the observation that employers do not automatically give workers raises when inflation is high. Instead, workers have to fight for these raises, which places them in conflict with employers. We propose a standard and tractable menu-cost style model that incorporates the role that costly conflict plays in determining wage growth. We show that accounting for "conflict costs" meaningfully changes our understanding of the costs of inflation, both analytically and quantitatively. In this setting, what matters for workers' welfare is not how inflation impacts real wages, but rather how inflation would affect real wages if workers did not choose to engage in more conflict as inflation rises, a concept we term "wage erosion." Our framework delivers a direct mapping between conflict costs and the wages that workers would sacrifice to avoid conflict, which we measure from a survey of US workers to be 1.75% of their wages. Combining our model with these estimates, we find that conflict more than doubles the costs of inflation to workers relative to the costs of inflation implied by falling real wages alone. We conclude that a "conflict cost" model is a tractable and quantitatively relevant way of understanding the welfare costs of inflation for workers.[1]

We start the paper with motivating survey evidence about the relationship between conflict and inflation. We fielded a survey to 3000 US workers at the start of 2024, in the aftermath of the post pandemic inflation, and arrive at two conclusions. First, we find that conflict is important for determining wage growth. A significant portion of workers say they took costly actions—that is, they engaged in conflict—to achieve higher wage growth than their employer offered. These actions include having tough conversations with employers about pay, partaking in union activity, or soliciting job offers. We find that these costly actions lead to higher wages, as participants who took these actions believe their wage growth would have otherwise been 3 percentage points lower. Conversely, those who did not take the costly actions believe conflict would have raised wages by 2 percentage points, suggesting sizable conflict costs that offset the benefit of higher wages.

[1] By the same logic, "conflict costs" can also be relevant for the welfare costs of other shocks that require nominal wage adjustments.

Second, we investigate *when* workers engage in conflict and find that conflict rises with inflation. Consistent with previous findings from Stantcheva (2024), respondents say that the costly actions were primarily motivated by wanting wages to keep up with inflation. Additionally, when asked how they would behave at different rates of inflation, respondents were more likely to engage in conflict with employers when inflation was higher. We complement this result with observational evidence that conflict between workers and firms is more likely when inflation is higher. In cross-country panel regressions using data from 1964 to 2022, we document a robust positive correlation between inflation and conflict, proxied by labor market strikes.

We propose a tractable "conflict cost" model to capture this state-dependent nature of wage setting, and deliver analytical and quantitative insights about how conflict affects the welfare costs of inflation. In line with our survey evidence, workers in the model receive a default nominal wage offer from their employer. Unless the offer is fully indexed to inflation, the worker's offered real wage falls when inflation rises. In response, workers optimally choose whether to engage in conflict with employers. Conflict increases the worker's nominal wage beyond their employer's offer, ensuring that it keeps up with inflation. However, conflict is costly. Similar to the menu cost literature, workers face idiosyncratic productivity shocks, and the "conflict cost" of increasing wages beyond the employer's offer takes the "Calvo-plus" form of Nakamura and Steinsson (2010) and Auclert, Rigato, Rognlie, and Straub (2024a). In our model, costly conflict is more likely when inflation increases, consistent with the state-dependence in our motivating evidence. Intuitively, as inflation rises, workers' real wages lag further behind in the absence of conflict. Thus, the wage gain they can achieve through conflict grows, leading more workers to choose costly conflict so that their wages can keep up with inflation.

Our main analytical result characterizes the welfare costs of inflation shocks to workers. The path of real wages is no longer sufficient to inform worker welfare in this setting. In particular, wage catch-up after inflation which workers achieve through more frequent conflict does not raise welfare. On the margin, the extra conflict costs paid by workers to ensure higher wages cancels out the benefits of the higher wages. The cancellation follows from worker optimality and the envelope theorem of Milgrom and Segal (2002), applied to discrete conflict choices. Instead, the impact of inflation shocks on worker welfare is determined by "wage erosion", which we define as how inflation shocks would affect real wages if workers' conflict decisions had not moved with inflation.[2] As such, the welfare costs of inflation in the labor market can be significant even if real wages do not fall, as workers must take more frequent costly actions to ensure wage catch-up. Moreover, unlike falls in the real wage, which redistribute from workers to firms, conflict costs create aggregate losses too.

How quantitatively important is conflict for the welfare costs of inflation? We answer this question

[2]Our definition of wage erosion relates to the intensive margins of price adjustment in Auclert et al. (2024a), however we study wage instead of price setting and normative rather than positive implications.

by calibrating our model using the survey and calculating the welfare costs of inflationary shocks to workers within that environment. We designed survey questions to directly inform the two parameters governing the importance of conflict in the model, namely: 1) the cost to an individual worker of conflict with an employer, and 2) the extent to which employers' default wage offers are indexed to inflation. In the survey, we find that conflict with employers is costly to workers – the median worker would sacrifice 1.75 percent of their wage to avoid conflict. We validate the survey estimate by showing that our measure of conflict costs predicts workers' reported conflict decisions in 2023. Second, workers believe that employers' wage offers are weakly indexed to inflation. Specifically, we asked workers to consider various hypothetical levels of inflation. Absent conflict, workers believe that employers would raise their wage offer by 0.05 percentage points for every percentage point increase in inflation.[3]

Our analysis shows that when calibrated to match these survey moments, conflict significantly raises the welfare costs of inflation. To solve the model, we rely on recent advances in Sequence-Space Jacobian methods in Auclert, Bardóczy, Rognlie, and Straub (2021) and Auclert et al. (2024a). In response to either transitory or persistent inflation shocks, incorporating conflict more than doubles the overall costs of inflation to workers. The same conclusion applies when we investigate the welfare costs of the post-pandemic inflation of 2021-2023. In various extensions, conflict continues to significantly increase the costs of inflation—for instance, at significantly higher levels of default wage indexation than our baseline calibration; or when wages and employment are determined in general equilibrium, allowing inflation to "grease the wheels" of the labor market (Blanco and Drenik, 2023). In sum, the "conflict cost" model is a quantitatively relevant and tractable way of understanding the welfare costs of inflation for workers.

Beyond the specific application to the costs of inflation, our conflict cost model is a natural way of introducing state-dependent wage setting into New Keynesian models. To model sluggish wage adjustments, the New Keynesian literature typically assumes time-dependent wage setting—for instance Erceg, Henderson, and Levin (2000), Gertler, Sala, and Trigari (2008), Gertler and Trigari (2009), Galí (2011), Galí, Smets, and Wouters (2012), Gertler, Huckfeldt, and Trigari (2020), Chodorow-Reich et al. (2023), Auclert, Bardóczy, and Rognlie (2023) and Auclert, Rognlie, and Straub (2024b). State-dependent wage setting is a natural alternative. After all, the state-dependent approach is common when modeling price setting (e.g., Gertler and Leahy, 2008), and state dependence is consistent with

[3] Our approach of directly measuring conflict costs differs from the menu-cost literature, which infers menu-costs from the moments of the price change distribution (e.g., Alvarez, Le Bihan, and Lippi, 2016). However, different from the menu-cost model, in our conflict-cost model, wages change without conflict for many reasons. For instance, the default wage offered by employers can grow due to partial indexation to inflation shocks. As a result, we would have to place hard-to-verify assumptions on the structure of the model to differentiate wage changes that arise with conflict from those that arise without conflict and to infer conflict costs from the distribution of wage changes. Our approach instead provides direct evidence on how much workers dislike conflict.

empirical evidence in our survey. Moreover there are distinct positive and normative implications compared to the time-dependent approach.[4]

Related literature. This paper contributes to the large literature on the costs of inflation. Previous work identifies inflation costs from a range of mechanisms, such as "shoe leather costs" of holding less money (e.g., Bailey, 1956; Friedman, 1969; İmrohoroğlu, 1992; Lucas, 2000); "menu costs" from changing prices and the associated price distortions (e.g. Burstein and Hellwig, 2008; Nakamura, Steinsson, Sun, and Villar, 2018; Alvarez, Beraja, Gonzalez-Rozada, and Neumeyer, 2019); tax distortions (e.g. Feldstein, Green, and Sheshinski, 1978; Altig, Auerbach, Eidschun, Kotlikoff, and Ye, Forthcoming); uncertainty due to volatile inflation (Friedman, 1977); cognitive costs due to complexity and difficulty in budgeting (Shiller 1997; Stantcheva 2024); and broader social and economic costs such as declining trust in government. Fischer and Modigliani (1978) review many of these costs in a unified framework. Binetti, Nuzzi, and Stantcheva (2024) present survey evidence about which of these costs are perceived to be most important, and find that cognitive costs are key. Besides these other costs, we argue for significant "conflict costs" of inflation via the labor market.

A range of papers study how inflation leads to welfare costs in the labor market by lowering real wages. Surveys from Shiller (1997), Stantcheva (2024) and Afrouzi et al. (2024b) show that people dislike inflation in large part because they believe high inflation lowers real wages. Our mechanism suggests a reason for this view. People know that if prices have risen faster than the default nominal wage offered by their employer, they must engage in painful conflict with their employer to rectify the situation. Del Canto, Grigsby, Qian, and Walsh (2023) operationalize a general sufficient-statistic approach in order to estimate the effect of inflationary shocks on welfare, taking into account, amongst other channels, the effect of inflation on real wages.[5] We believe that the behavior of real wages is an important but incomplete account of the costs of inflation that operate in the labor market. Rather, having nominal wages keep up with prices entails significant additional welfare costs due to conflict.

In arguing that inflation leads workers to take costly actions, our paper relates to some previous evidence. Stantcheva (2024) provides key survey evidence about how inflation affects workers' behavior. The survey shows that workers believe firms have discretion over whether to grant higher nominal pay growth during times of inflation; while people react to inflation by taking costly actions such as searching for other jobs or asking for pay increases. Hajdini, Knotek, Leer, Pedemonte, Rich, and Schoenle (2023) show that workers who receive an information treatment about higher infla-

[4]Previous work by Jo (2019), Costain, Nakov, and Petit (2019) and Blanco and Drenik (2023) studies positive implications of state dependence in wage setting.

[5]Ferreira, Leiva, Nuño, Ortiz, Rodrigo, and Vazquez (2023) and Pallotti, Paz-Pardo, Slacalek, Tristani, and Violante (2023) apply a similar sufficient statistic approach. Auclert (2019) develops the sufficient-statistic approach, in order to analyze the positive implications of monetary policy shocks. Doepke and Schneider (2006) also estimate the redistributional effect of inflation via asset markets, as opposed to labor markets.

tion are more likely to search for other jobs. Pilossoph and Ryngaert (2022) and Pilossoph, Ryngaert, and Wedewer (2024) show that workers with higher inflation expectations are more likely to search for new jobs in order to secure nominal pay increases, which is costly. Besides providing additional survey evidence consistent with these papers, we model the welfare effects of inflation due to these costly actions, and quantify the costs with our survey and model. In this way, our paper contributes to a broader agenda that fields surveys to generate qualitative and quantitative insights about macroeconomic phenomena (Stantcheva, 2023).

In contemporaneous work, Afrouzi, Blanco, Drenik, and Hurst (2024a) explain how job search affects wage dynamics and welfare during inflationary episodes. They implement a state-of-the-art quantitative labor-search model with nominal rigidity, disciplined with information on labor market flows. We instead model a wide range of costly actions via a reduced form "conflict cost," within a menu-cost style model disciplined by survey evidence. Despite these differences, the two quite different approaches reach a similar conclusion: costly actions to secure wage increases are a key feature of inflationary episodes.

There is an empirical literature studying whether nominal wages keep up with inflation. An older literature found that aggregate nominal wages tended to keep up with inflation (Kessel and Alchian, 1960; Bach and Stephenson, 1974). Modern work such Blanco, Drenik, and Zaratiegui (2024) emphasizes that wage dynamics during inflationary episodes depend on factors such as the nature of the inflationary shock and especially workers' position in the wage distribution. Consistent with this view, poorer workers experienced stronger real wage growth during the post pandemic inflation (Autor, Dube, and McGrew, 2023). A common finding is that wages at least partly keep up with inflation for most workers, motivating us to study the associated costs.

Finally, Lorenzoni and Werning (2023a,b) study related themes about inflation and conflict. The aspect of conflict studied in these papers is disagreement between workers and firms over relative prices. In this way, conflict is a proximate cause of inflation dynamics. We study a related but different aspect of conflict: how inflation makes workers seek conflict with their employers to raise wages. Rather than investigate the cause of inflation, we ask how conflict affects the costs of inflation to workers.

Outline. Section 2 discusses the design of the survey. Section 3 presents motivating evidence about wages, inflation and conflict. Section 4 contains our conflict-cost model and our main analytical result. Section 5 describes how we elicit information about conflict costs. Section 6 quantifies how conflict affects the cost of inflation, using the model and our measure of conflict costs.

2 Survey Design

Our main empirical results about conflict costs come from a survey that we ran between February and March 2024. We used Prolific, a survey marketplace that recruits respondents for research studies. We designed the survey to achieve three objectives. First, we elicited qualitative information on the way that wages were determined in 2023. Second, we used hypotheticals to test the key prediction of our framework, namely that conflict rises with inflation. Third, we designed questions to quantify conflict costs and the extent to which employers' default wage offers are indexed to inflation.

We collected a total of 3,000 responses, with participation limited to individuals aged 22 to 60, employed either full-time or part-time, and not self-employed. We used an attention check to filter out careless participants.[6] We further imposed quotas, requiring a certain number of respondents within groups by gender, education and political affiliation. The quotas for gender and education targeted population shares from Current Population Survey (CPS) data for March 2023. The quota for political affiliation targeted data from Gallup 2024. Respondents were rewarded at an average rate of $1.40 for completing the survey, equivalent to $12 per hour.

Table B.1 compares our sample characteristics to the US population. Our sample broadly matches the demographic distribution of the US population, albeit with a higher representation of individuals in their thirties and a smaller proportion of respondents in their fifties. Additionally, our sample includes a lower share of white individuals and a higher share of mixed race individuals than the population.

The survey consisted mostly of closed-ended questions. However, following best practices for "hybrid" open- and close-ended questions, we include an "Other" option in several questions throughout our survey (Stantcheva, 2023). This option allowed participants to express their thoughts in an open-ended fashion, enabling us to avoid imposing our preconceptions. Participants took an average of 7 minutes and 15 seconds to complete our survey. The full questionnaire is in Appendix D.

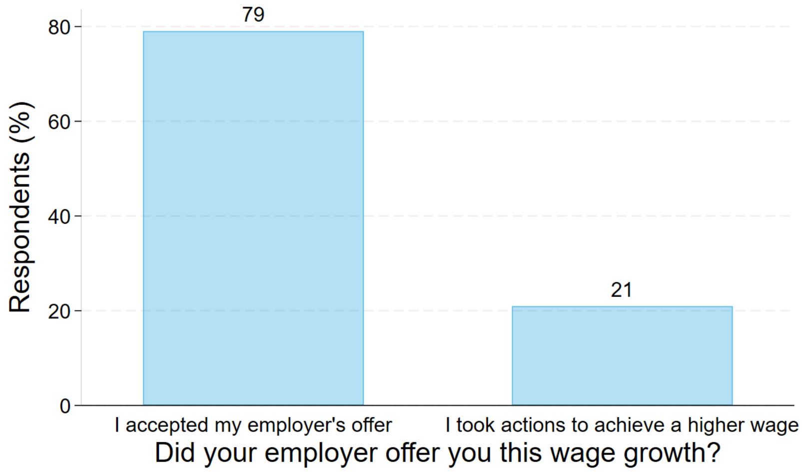
In the survey, we ask questions about "pay growth" and not "wage growth". In preliminary tests, we discovered that survey respondents found the "pay growth" language easier to understand. However, for consistency with the rest of the paper, we refer to "wage growth" as we describe our results.

3 Motivating Evidence: Wages, Inflation and Conflict

This section presents four findings relating conflict, wage growth, and inflation. Our first three findings establish the importance of conflict for wage setting. Our fourth finding investigates when work-

[6] Participants who failed the attention check were compensated for their participation and asked to return their submissions, allowing other respondents to take their place.

Figure 1: Default Wage Growth and Costly Actions



Notes: the figure illustrates the percentage of survey participants who either accepted their employers' default wage offer or took action, either individually or through their unions, to achieve a higher wage during 2023.

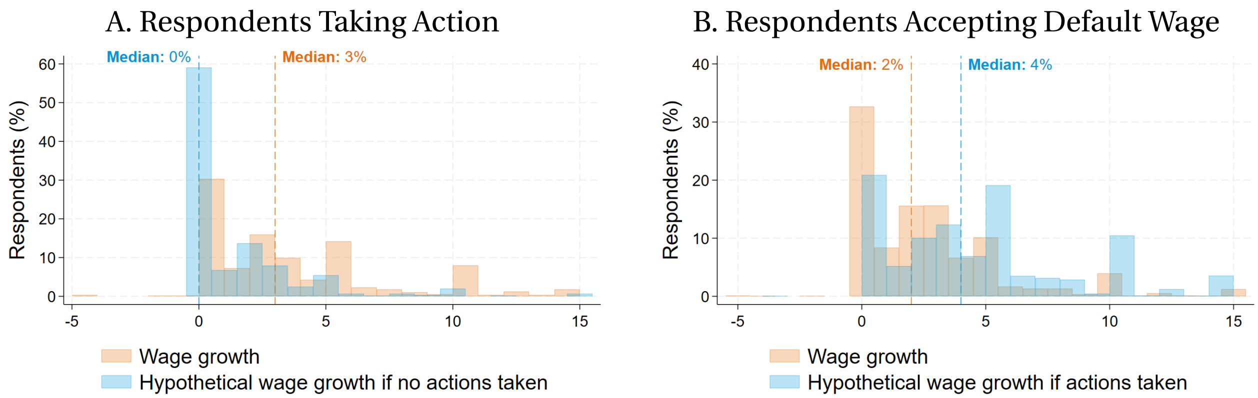
ers engage in conflict and shows that conflict rises with inflation.

Finding 1: Workers choose between accepting their employer's "default wage" and engaging in conflict. Our survey shows that the employer's default wage offer is key for determining wage growth. After eliciting the respondent's wage growth in the previous year, we asked respondents whether they accepted the wage offered to them by their employers, or whether they took costly actions in order to secure this wage growth. Figure 1 shows that 79% of workers accepted the wage offer made by their employer, while 21% of workers took actions to secure their wage growth. Appendix Figures B.1 and B.2 shows how the prevalence of conflict varies with observable characteristics of the worker. We find modest heterogeneity, with those who are younger, have higher incomes, or work in the government being slightly more likely to accept the default wage offers. The only group that was much less likely to have accepted the default wage offer were those in unionized sectors.

We then investigated which actions respondents took in order to increase their pay. Workers took a diverse set of actions, such as having difficult conversations with their employer, securing an offer from another employer to raise pay with their current employer, or having a union negotiate on their behalf (see Appendix Figure B.3). This wide range of actions will motivate us to model conflict as a reduced from cost paid by the worker to secure a pay rise.

Finding 2: Conflict raises wages. Workers who engage in conflict believe these actions increase their wage growth. In orange in the left panel of Figure 2, we plot the wage growth that these action takers report having received over the past year. We also asked respondents what wage growth they believe they would have received without taking actions, and plot this wage growth in blue. The distribution of hypothetical wage growth without actions is generally to the left of actual wage growth, with

Figure 2: The Effectiveness of Conflict



Note: Panel A and B depict the distribution of reported wage growth during 2023 and the hypothetical wage growth respondents reported they would have received if no actions had been taken or if actions had been taken to achieve a higher pay, respectively. The medians of both distributions are highlighted in each subfigure. The data range has been truncated, with values ranging from a minimum of -5% to a maximum of 15%. Panel A restricts to respondents who took actions to achieve a higher pay during 2023, asking the question "Above, you indicated that you got a pay raise by either initiating a difficult conversation with your employer about your pay, searching for a higher paying job with other employers or switching employers in order to get a raise." Panel B restricts to respondents who accepted their employers' default wage during 2023, asking the question "[w]hat pay growth do you think you could have attained this past year if you had taken actions such as initiating a difficult conversation with your employer to ask for a raise, searching for higher paying jobs with other employers, or switching employers in order to get a raise?".

a median wage growth of 0% compared to a median wage growth with these actions of 3 percentage points.[7]

There is a similar pattern, both quantitatively and qualitatively, from directly comparing the wage growth for those workers in our survey who engaged in conflict in 2023 to those who did not. Those who engaged in conflict experienced wage growth of 5.1% in 2023, compared to wage growth of 3.1% for those who accepted their employer's offer.

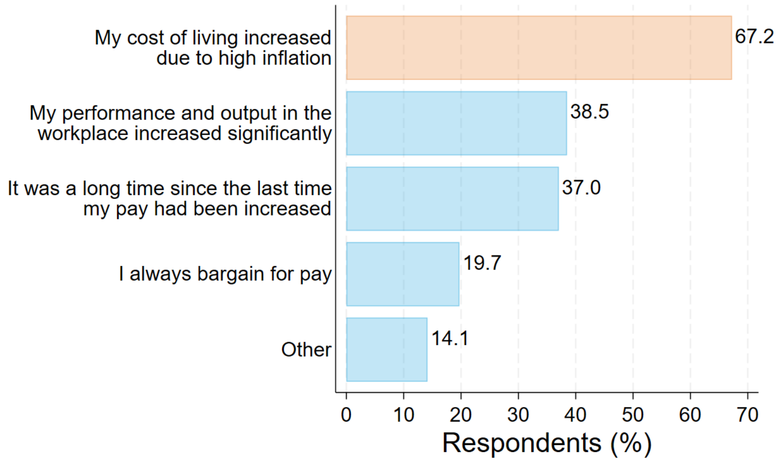
Finding 3: Workers who do not engage in conflict believe it would have raised their wages. We have seen that workers who engage in conflict believe it raises their wages. What about the workers who do not engage in conflict? One possibility is that workers do not engage in conflict because they believe conflict does not raise wages. Another possibility is that these workers dislike conflict, even though it might raise wages. The evidence suggests the latter. In the right panel of Figure 2, we plot the wage growth of people who did not take actions, as well as the wage growth they believe they would have received if they had taken actions. These workers believe that median pay would have been 2 percentage points higher if they had taken actions.[8] Evidently, workers perceive substantial costs associated with conflict, as they are willing to sacrifice significant wage growth to avoid taking action.[9]

[7] The left panel of Appendix Figure B.4 plots the difference in wage growth, with or without action, for each worker who takes actions to increase their pay. The average worker reported that actions raised their wage by 2%.

[8] The right panel of Appendix Figure B.4 plots the difference in wage growth, with or without action, for each worker who did not take actions to increase their pay. The average worker who did not take actions believes they sacrificed 1.8 percent of wages by accepting the employer's offer.

[9] The qualitative responses explaining why workers chose to accept their employer's default wage offer also suggest that

Figure 3: Motivation for Costly Actions in 2023



Note: The figure shows the percentage of survey participants who stated their motivations to take costly actions to achieve a higher pay during 2023, answering the question "[w]hat was your, or your union's, motivation for taking actions in order to secure a pay increase in 2023?" Each bar in the figure represents the following answer choices in order: "My cost of living increased due to high inflation, therefore I needed more money to fund my spending and saving plans"; "My performance and output in the workplace increased significantly"; "It was a long time since the last time my pay had been increased"; "I always bargain for pay"; and "Other, please add additional comments below". The data includes only respondents who indicated that they, either individually or through their unions, took actions to achieve higher pay during 2023.

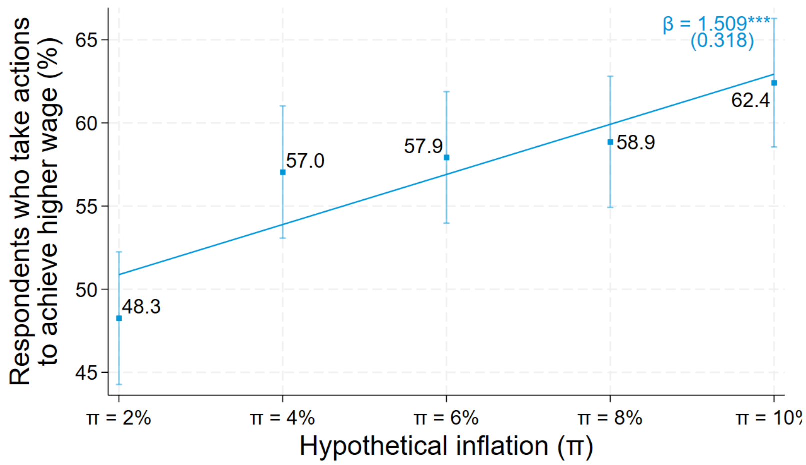
Finding 4: Inflation leads to conflict. Our final finding considers when workers choose to engage in conflict. We present several pieces of evidence that suggest that inflation leads to conflict. First, we asked workers taking costly actions to report why they chose to take these actions in 2023.[10] The answers, in Figure 3, show that rising inflation was their main motivation, with 67% of the action takers reporting that they needed to combat a high cost of living. The next most important reason, that people deserved higher pay due to their performance, mattered for only 38% of respondents. Reassuringly, only 14% of respondents selected the "other" option. This result echoes a finding by Stantcheva (2024), who previously showed that workers take costly actions in order to raise wages after an inflation shock.

Second, we used a hypothetical question to explore whether workers are more likely to engage in conflict when inflation is high. We randomly assigned participants into five equally sized groups, each of which were offered a hypothetical scenario in which inflation was expected to be 2%, 4%, 6%, 8% or 10% over the next 12 months. We stipulated that other aspects of employment such as hours and firm would remain the same. We first asked respondents what wage they thought their employer would

conflict is costly. Appendix Figure B.5 explores the reasons that people who accepted the default wage offer. The most common reason to accept the offer is a lack of alternative job options, suggesting high costs to searching for another job in order to raise wages at the current job. The second most common reason is that negotiations are not allowed by the company. Overcoming a norm that wages cannot be negotiated is difficult, implying high conflict costs for this group.

[10] To do so, we followed a procedure to avoid imposing preconceptions. We asked our pilot of 100 respondents to discuss in open-ended form why they took costly actions, and grouped their reasons into a set of categories that we presented to the full survey. Again, we allow respondents to select an "other" option, and randomized the order in which the categories were presented.

Figure 4: Inflation and the Probability of Conflict



Note: This scatterplot displays the relationship between the indicator of whether respondents would take actions to secure a wages higher than their employer's default offer under a hypothetical inflation scenario, and the hypothetical inflation rate. The indicator is equal to one if respondents would take actions to secure a higher wage; otherwise zero. Standard errors are in brackets. The stars indicate levels of statistical significance: 1% (***), 5% (**), and 10% (*). The sample is all respondents. Respondents answered the following question. "Consider a hypothetical situation in which inflation is expected to be x% in the next 12 months. Suppose that you are working at the same job at the same place you currently work, and working the same number of hours. Would you accept your employer's offer without taking any actions to increase your pay or would you do your best to increase your pay using any strategies at your disposal?" In the question, x was 2%, 4%, 6%, 8% or 10%.

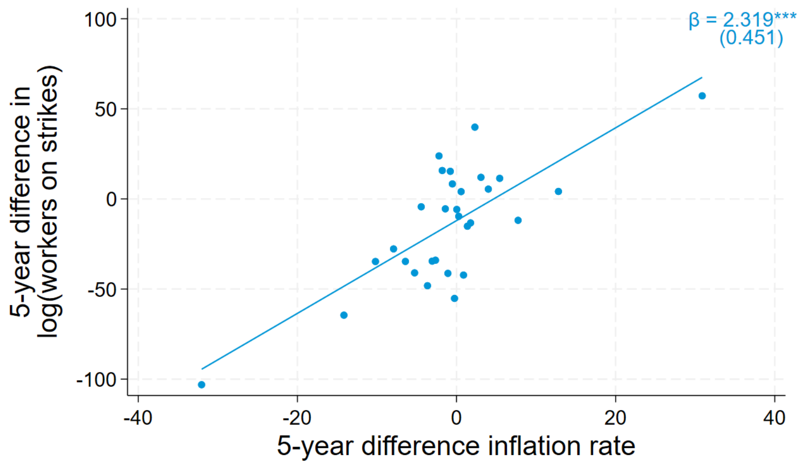
offer them in that scenario. We then asked whether respondents would choose to take costly actions to achieve higher wages. Figure 4 shows the results. The y-axis shows the fraction of respondents who, when given a particular hypothetical scenario, say they would engage in conflict with their employer to achieve higher wages. The x-axis is hypothetical inflation under each scenario. When hypothetical inflation is 2%, less than half of respondents say they would take costly actions to achieve higher wage growth. However, when inflation is hypothetically 10%, more than 60% of respondents would take action. The regression line indicates that for every percentage point increase in inflation, people believe they would be 1.5 percentage points more likely to take actions that put them in conflict with their employer.

Third, we find similar patterns in observational data. Systematic data on conflict between workers and firms is typically hard to collect. One exception is unions, who publicly report when they choose to conflict with employers by going on strike. Consistent with our survey result, strikes rise with inflation. Specifically, we estimate

$$\Delta \log\left(\text{Strike}_{c,t}\right) = \beta \Delta \pi_{c,t} + \gamma_c + \gamma_t + \epsilon_{c,t} \tag{1}$$

where $\text{Strike}_{c,t}$ is the number of workers on strike in country c in year t, sourced from the International Labour Organization, and $\Delta\pi_{c,t}$ is the 5-year change in the rate of inflation in country c. γ_c and γ_t are

Figure 5: Cross-Country Relationship Between Inflation and Union Strikes



Notes: This binned scatterplot illustrates the relationship between labor market strikes and inflation. The y variable is the 5-year log difference of "Workers involved in strikes and lockouts," sourced from the International Labour Organization, multiplied by 100 for ease of interpretation. The x variable is the five year difference of headline inflation, sourced by the World Bank, with the 2.5% most extreme observations trimmed in each tail. Both variables are residualized against country and time fixed effects. Observations are unweighted, and standard errors are clustered at the country level. The analysis includes 78 countries spanning from 1969 to 2022. Data availability varies by year and country. The coefficient of this relationship is displayed, with the standard errors enclosed in brackets. Stars denote levels of statistical significance: 1% (***), 5% (**), and 10% (*).

country and year fixed effects, respectively. We include data on 78 countries from 1974-2022. We are interested in β, which captures the relationship between the 5-year growth rate of the number of workers on strike in a given country and the change in inflation in that country over the corresponding 5-year period. Figure 5 shows the binned scatterplot underlying the estimate of β in Equation (1), after controlling for fixed effects. There is a clear positive relationship – when inflation in a country rises by 10 percentage points over a 5-year period, the number of workers on strike increases by 29 percent. Appendix Table B.2 shows that this cross-sectional correlation is robust to various choices such as the time difference, measure of inflation or sample period. While this relationship does not identify the causal effect of inflation on conflict, it is consistent with the premise that higher inflation leads to more conflict between workers and firms.

4 A Conflict-Cost Model

Building on the qualitative evidence in the previous section, we develop a "conflict-cost model" to investigate how accounting for the role that conflict plays in wage growth affects the welfare costs of inflation. In the model, which is in partial equilibrium, workers receive a nominal default wage offer from their employer that may not be fully indexed to inflation. Workers optimally choose whether to engage in costly conflict with employers in order to secure wage increases that catch up with inflation. We show that, following inflation, wage catch-up resulting from more frequent conflict does not raise welfare. Worker optimality implies that the costs of more frequent conflict cancels out the benefit of wage catch-up. The impact of inflation on workers' welfare is solely determined by the negative effect of wage erosion—how inflation would lower real wages if workers' conflict decisions did not respond to inflation. The behavior of real wages misses an important component of workers' welfare, namely the conflict costs that are required for wages to catch up with inflation.

4.1 The Worker's Problem

Time is discrete and indexed by $t \in \{0, 1, \cdots\}$. The economy is populated by a continuum of workers $i \in [0, 1]$. Each worker's preference is given by

$$\mathbb{E}\left[\sum_{t=0}^{\infty} \beta^t \left(\log c_{i,t} - \kappa_{i,t} \mathscr{I}_{i,t}\right)\right], \tag{2}$$

where $c_{i,t}$ is worker's consumption, over which they have logarithmic utility.[11] $\mathscr{I}_{i,t}$ is an indicator function, which takes a value of one if the worker chooses to take costly actions that place them in conflict with their employer in order to increase pay. $\kappa_{i,t}$ is the "conflict cost", i.e., the utility cost to worker i of taking the costly action at time t. The conflict cost takes the "Calvo-plus" form of Nakamura and Steinsson (2010) and Auclert et al. (2024a).[12] That is, with probability λ, conflict is not costly to the worker. With probably $1 - \lambda$, the worker must exert a utility cost $\kappa > 0$ to increase pay

$$\kappa_{i,t} = \begin{cases} \kappa & \text{with probability } 1 - \lambda, \\ 0 & \text{with probability } \lambda. \end{cases} \tag{3}$$

The cost $\kappa_{i,t}$ is i.i.d. over time and across workers.

Each worker i receives a real wage $w_{i,t} = W_{i,t}/P_t$, where $W_{i,t}$ is the nominal wage and P_t is the price level. If the worker does not take actions to increase pay $\left(\mathscr{I}_{i,t} = 0\right)$, they earn a default wage, which is $W^{\mathrm{d}}_{i,t} = W_{i,t-1} e^{\alpha + \gamma \pi_t}$ in nominal terms, or $w^{\mathrm{d}}_{i,t} = w_{i,t-1} e^{\alpha - (1-\gamma)\pi_t}$ in real terms. Here, α denotes the growth rate of the default nominal wage under zero inflation, $\gamma \in [0, 1]$ is the degree of indexation to inflation shocks ($\gamma = 0$ is no indexation and $\gamma = 1$ is full indexation), and $\pi_t = \log(P_t/P_{t-1})$ is the

[11]The log utility case provides a clean benchmark because, in this case, conflict decisions are independent of the level of wages that a worker has.

[12]We adopt "Calvo-plus" costs for simplicity, however our main results hold with more a general distribution of costs as in Alvarez, Lippi, and Oskolkov (2022). See Section 4.3 for details.

inflation rate.[13] If the worker takes actions to increase their pay $\left(\mathscr{I}_{i,t}=1\right)$, they can raise it to a conflict-induced (real) wage $w_{i,t}^{*}$ that keeps up with inflation and productivity. That is, the worker $i's$ real wage is given by:

$$w_{i,t}=\begin{cases} w_{i,t-1}e^{\alpha-(1-\gamma)\pi_t} & \text{if } \mathscr{I}_{i,t}=0, \\ w_{i,t}^{*} & \text{if } \mathscr{I}_{i,t}=1. \end{cases} \tag{4}$$

The conflict-induced real wage $w_{i,t}^{*}$ is exogenous and grows in line with productivity, meaning the conflict-induced nominal wage keeps up with inflation:

$$\log w_{i,t}^{*}=\log w_{i,t-1}^{*}+g+z_{i,t}, \tag{5}$$

where $z_{i,t}$ represents idiosyncratic productivity shocks and g represents trend productivity growth. The idiosyncratic shock has a mean of $\mathbb{E}\left[z_{i,t}\right]=0$, is i.i.d. across workers and time, and is independent of $\kappa_{i,t}$. In sum, workers receive wage increases without costly conflict in two ways. First, workers receive wage growth via the firm's default wage offer, governed by parameters α and γ. Second, a fraction λ of workers receive a "free" catch-up opportunity in each period that ensures wages keep up with inflation. Such a free wage increase might come from workers having a low cost of conflict for idiosyncratic reasons.

In the main analysis, we study the case where the worker is hand-to-mouth and $c_{i,t}=w_{i,t}$. In extensions below, we also study the case that the worker faces a standard borrowing constraint and verify that our main conclusion stands.

To summarize the worker's problem conveniently, we introduce a "wage gap", defined as the difference between the actual wage and the conflict-induced wage, $x_{i,t}\equiv\log w_{i,t}-\log w_{i,t}^{*}$. Based on equation (4), the dynamics of the wage gap is given by

$$x_{i,t}=\begin{cases} x_{i,t-1}-\left(\mu+z_{i,t}\right)-\left(1-\gamma\right)\left(\pi_t-\pi^{ss}\right) & \text{if } \mathscr{I}_{i,t}=0 \\ 0 & \text{if } \mathscr{I}_{i,t}=1 \end{cases}, \tag{6}$$

where $\mu\equiv g-\alpha+\left(1-\gamma\right)\pi^{ss}\geq 0$ parametrizes the drift of the wage gap in steady state.

We make some auxiliary assumptions about the distribution of the idiosyncratic shock: $z_{i,t}$ is continuously distributed over a support $[\underline{z},\infty)$, where $\mu+\underline{z}\geq 0$. We use $f\left(z_{i,t}\right)$ to denote its probability density function, which has a mean of $\mathbb{E}\left[z_{i,t}\right]=0$. The continuity of the distribution of $z_{i,t}$ guarantees that the steady-state distribution of wage gaps has no mass point, facilitating our main envelope theorem result in Theorem 1. The lower bound $\underline{z}$ in the support of $z_{i,t}$ guarantees that the steady-state

[13] At steady-state inflation π^{ss}, the default nominal wage grows at a rate of $\alpha+\gamma\pi^{ss}$. Therefore our model accommodates different indexation to inflation shocks (parameterized by γ) and steady-state inflation (parameterized jointly by α and γ).

distribution of wage gaps has a non-positive support, so, for all i and t, $w_{i,t} \leq w^*_{i,t}$ at steady-state inflation. That is, the worker's productivity shock realization is never so negative that their default wage $w^{\mathrm{d}}_{i,t}$ is higher than the conflict-induced wage $w^*_{i,t}$.

Our model captures features of wage setting from the survey evidence of Section 2. Workers choose between accepting a default wage offered to them by the employer, or instead increasing pay by taking costly actions that place them in conflict with their employers. The actions could include initiating a difficult conversation with the employer, searching for higher-paying jobs to negotiate higher pay at the current job, switching to a higher paid job, or partaking in industrial action, among others. Since there is a diverse range of actions, we model their costs with a single reduced form parameter κ, representing time and monetary costs, as well as psychological costs from dispute with employers. The actions ensure a wage $w^*_{i,t}$ that keeps up with both inflation and productivity growth. In the absence of these actions, workers receive a default wage offered by the employer that may not be fully indexed to inflation shocks $(\gamma < 1)$. In other words, the default contract between workers and employers is potentially incomplete with respect to inflation shocks (Grossman and Hart, 1986; Hart and Moore, 1990). The degree of incompleteness is indexed by a parameter γ, which we will later discipline with data.

Alternative, more sophisticated, wage setting policies could have firms setting wages to prevent conflict entirely, in order to avoid paying higher conflict-induced wages ($w^*_{i,t}$) after worker conflict. For instance, firms could always offer wages that are just high enough that workers choose not to engage in conflict, in essence marking wages down by exactly the worker's conflict cost. However, this more sophisticated wage setting is not consistent with several features of our survey. First, this more sophisticated policy means that default wage offers are fully indexed to inflation, as the firm must continue to keep workers exactly indifferent to conflict when inflation rises. Second, with the sophisticated policy, we would not observe conflict in equilibrium. Neither prediction is supported by our survey. Firms might not engage in such sophisticated wage-setting policies if workers have private information about their conflict costs, or if firms face costs to adjusting wages away from the default wage offer. These costs could, for instance, include the managerial costs of rearranging pre-existing contracts. We therefore summarize the firm's behavior by their default wage offer in equation (4) and directly calibrate the key parameters of the wage rule using data.

We set our model in partial equilibrium, which allows us to focus on the worker's problem. As such, the conflict-induced real wage, $w^*_{i,t}$, is exogenous. Moreover, workers are always employed in our setup regardless of their wage (we have assumed that the distribution of wage gaps has non-positive support, meaning firms also have no incentives to fire the worker). These assumptions will be relaxed in the general-equilibrium model of Section 6, which incorporates an employment margin and endogenizes the conflict-induced real wage. By studying the partial equilibrium problem, we can isolate the effects of inflation shocks on worker welfare, regardless of the underlying source of the inflation movements (e.g., whether it is driven by aggregate demand shocks or aggregate supply shocks).

Our model is similar to the standard menu-cost model of price setting (e.g., Alvarez et al., 2016). However, we apply the model to wage setting and in doing so, impose three important differences. First, in the menu-cost model, the firm's objective depends on a quadratic loss based on the gap between the current price and the optimal reset price, while in our model, the worker's objective depends on a linear loss based on the gap between the current wage and the conflict-induced wage. Second, the adjustments in our model are one-sided—workers take actions to raise their wage but not to cut it. In standard menu-cost models, adjustment is two-sided, as firms pay menu costs to either raise or lower prices. Third, in our model, all workers periodically receive wage increases, even without costly conflict and even if they do not receive a free wage catch-up opportunity, due to the default wage increases governed by α and γ. In the standard menu cost model, prices instead remain unchanged if the firm does not pay a menu cost or receive an exogenous free opportunity to change their price.

4.2 The Impact of Inflation Shocks on Worker Welfare and Wages

The economy starts from a steady state with inflation $\pi^{ss} \geq 0$. An unexpected aggregate shock to the path of inflation $\{\hat{\pi}_t \equiv \pi_t - \pi^{ss}\}_{t=0}^{+\infty}$ is realized at the beginning of period 0. The economy does not face other aggregate shocks. We are interested in characterizing how the inflation shock affects workers' welfare and (real) wages. Specifically, workers' aggregate welfare and (real) wages are defined as

$$\mathscr{W} \equiv \int_0^1 \mathbb{E}\left[\sum_{t=0}^{\infty} \beta^t \left\{\log\left(c_{i,t}\right) - \kappa_{i,t}\mathscr{I}_{i,t}\right\}\right] di \quad \text{and} \quad \log w_t \equiv \int_0^1 \log\left(w_{i,t}\right) di, \tag{7}$$

where $\mathbb{E}[\cdot]$ averages over the realization of idiosyncratic shocks (after the realization of the aggregate shock). The impact of the inflation shocks on workers' welfare and wages is denoted by $\hat{\mathscr{W}} \equiv \mathscr{W} - \mathscr{W}^{ss}$ and $\{\hat{w}_t\}_{t=0}^{\infty} \equiv \left\{\log w_t - \log w^{ss}\right\}_{t=0}^{\infty}$.

To characterize the responses, we first derive the rule characterizing the worker's optimal choice over whether to engage in conflict with their employer. Specifically, we can rewrite the utility of worker i in equation (2) as a function of wage gaps, conflict decisions, and an exogenous constant that is invariant to conflict decisions and the path of inflation:

$$\mathbb{E}\left[\sum_{t=0}^{\infty} \beta^t \left\{\log\left(w_{i,t}^* e^{x_{i,t}}\right) - \kappa_{i,t}\mathscr{I}_{i,t}\right\}\right] = \mathbb{E}\left[\sum_{t=0}^{\infty} \beta^t \left(x_{i,t} - \kappa_{i,t}\mathscr{I}_{i,t}\right)\right] + \underbrace{\mathbb{E}\left[\sum_{t=0}^{\infty} \beta^t \log\left(w_{i,t}^*\right)\right]}_{\text{Exogenous}}. \tag{8}$$

Worker i's problem can then be summarized by:

$$\max_{\{\mathscr{I}_{i,t}\}_{t=0}^{\infty}} \mathbb{E}\left[\sum_{t=0}^{\infty} \beta^t \left(x_{i,t} - \kappa_{i,t}\mathscr{I}_{i,t}\right)\right] \quad \text{s.t.} \quad (6). \tag{9}$$

In each period t, a worker faces two options. First, the worker can choose to conflict with the employer ($\mathscr{I}_{i,t} = 1$), increasing pay and eliminating the wage gap ($x_{i,t} = 0$). Second, the worker can refrain from conflict $\left(\mathscr{I}_{i,t} = 0\right)$ and allow the wage to adjust according the employer's default wage offer, $x_{i,t} = x_{i,t}^d \equiv x_{i,t-1} - \left(\mu + z_{i,t}\right) - \left(1-\gamma\right)\hat{\pi}_t$, where $x_{i,t}^d$ captures the wage gap implied by the employer's default wage offer. When conflict is costly ($\kappa_{i,t} = \kappa$), the worker's optimal conflict choice can be characterized by a threshold rule: there exist thresholds $\{\underline{x}_t\}_{t=0}^{+\infty}$ such that the worker engages in conflict ($\mathscr{I}_{i,t} = 1$) if $x_{i,t}^d \leq \underline{x}_t$ and does not $\mathscr{I}_{i,t} = 0$ if $x_{i,t}^d > \underline{x}_t$. We use $\underline{x}^{ss}$ to denote the steady-state conflict threshold, i.e., the value of x at which the worker is indifferent between conflict with employers and accepting the default wage at steady-state inflation π^{ss}.

In the model, there is conflict at steady state, even without shocks to inflation. At π^{ss}, from the dynamics of wage gap in (6), there are two reasons why a worker's wage gap can be pushed below the conflict threshold $\underline{x}^{ss}$ and induce conflict: first, a positive average drift of the wage gap in steady state $\mu > 0$; and second, a large positive idiosyncratic shock $z_{i,t}$.

We now turn to characterizing the impact of inflation shocks. We first show that inflation increases the fraction of workers engaging in conflict, consistent with the survey and observational evidence in Finding 4 above. We define $\text{frac}_t \equiv \int_0^1 \mathscr{I}_{i,t} di$ as the share of workers who conflict with the employer at each time t.

Proposition 1. *If $\gamma < 1$, then an increase in inflation at $t = 0$ leads to a larger fraction of workers engaging in conflict at $t = 0$, so that* $\left.\frac{\partial frac_0}{\partial \pi_0}\right|_{\{\pi_t = \pi^{ss}\}_{t=0}^{\infty}} > 0$.

The intuition for this result is straightforward. Suppose that inflation increases. As long as default wages are not fully indexed to inflation shock ($\gamma < 1$), workers real wages fall absent conflict. As workers' nominal wages fall further behind prices, more workers are pushed over their conflict threshold and choose to incur conflict costs in exchange for higher wages. On the other hand, if default wage offers are fully indexed to inflation shocks ($\gamma = 1$), then real wages do not move with inflation, meaning that workers' conflict decisions do not change as inflation rises. This result occurs because wage setting is state dependent in the model. Alternatively, if wage setting were time dependent—a special case of our model with $\kappa \to \infty$ and $\lambda > 0$— conflict $\left\{\mathscr{I}_{i,t}\right\}_{t=0}^{+\infty}$ would not change with inflation.[14]

[14] One may wonder how our model differs from the time-dependent model in Erceg et al. (2000). Note that Erceg et al. (2000) focus exclusively on the intensive margin of labor supply adjustment, meaning workers have to accept a lower wage to increase earnings (because the elasticity of labor demand is greater than 1). We instead focus on the extensive margin of labor supply adjustment, meaning workers ask for a higher wage to increase earnings.

We now study the impact of inflation shocks on aggregate worker welfare and how it connects with the responses of aggregate wages. We first decompose the response of aggregate (real) wages to inflation shocks into two terms:

$$\hat{w}_t = \hat{w}_t^{\text{erosion}} + \hat{w}_t^{\text{catch-up}}.$$

The first term, which we call *wage erosion*, is the impact of inflation shocks on real wages while holding each worker's conflict decision $\{\mathscr{I}_{i,t}\}_{t=0}^{+\infty}$ as if the inflation were fixed at the steady state level. The second term, which we call *wage catch-up*, captures wage adjustment to inflation shocks arising from the impact of inflation on each worker's conflict decision.

Formally, let $\omega_t\left(\boldsymbol{\pi}_t, \mathscr{I}_{\boldsymbol{i,t}}, h_{i,t}\right)$ denote worker i's real wage at time t for a given path of inflation $\boldsymbol{\pi}_t = \{\pi_\tau\}_{\tau=0}^{t}$, conflict choices $\mathscr{I}_{\boldsymbol{i,t}} = \left\{\mathscr{I}_{i,\tau}\right\}_{\tau=0}^{t}$, and history of idiosyncratic conditions

$$h_{i,t} \equiv \left(\left\{z_{i,\tau}, \kappa_{i,\tau}\right\}_{\tau=0}^{t}, w_{i,-1}, w_{i,-1}^{*}\right).$$

Wage erosion measures how aggregate real wages would change in response to inflation shocks, holding conflict decisions fixed at their steady state value:

$$\hat{w}_t^{\text{erosion}} \equiv \int_0^1 \log\left(\omega_t\left(\boldsymbol{\pi}_t, \mathscr{I}_{\boldsymbol{i,t}}^{\boldsymbol{ss}}, h_{i,t}\right)\right) di - \int_0^1 \log\left(\omega_t\left(\boldsymbol{\pi}^{\boldsymbol{ss}}, \mathscr{I}_{\boldsymbol{i,t}}^{\boldsymbol{ss}}, h_{i,t}\right)\right) di. \tag{10}$$

Here, $\mathscr{I}_{i,t}^{ss}$ is what conflict decisions would have been, given steady-state inflation, as well as the same history of idiosyncratic shocks. Wage catch-up is the component of wage adjustment that results from changes in conflict choices due to inflation shocks:

$$\hat{w}_t^{\text{catch-up}} \equiv \int_0^1 \log\left(\omega_t\left(\boldsymbol{\pi}_t, \mathscr{I}_{\boldsymbol{i,t}}, h_{i,t}\right)\right) di - \int_0^1 \log\left(\omega_t\left(\boldsymbol{\pi}_t, \mathscr{I}_{\boldsymbol{i,t}}^{\boldsymbol{ss}}, h_{i,t}\right)\right) di. \tag{11}$$

We can now examine the impact of inflation on aggregate worker welfare. From (7), we can decompose this impact into two components:

$$\hat{\mathscr{W}} = \underbrace{\sum_{t=0}^{\infty} \beta^t \hat{w}_t}_{\text{aggregate wage response}} - \underbrace{\hat{\varkappa}}_{\substack{\text{aggregate costs of} \\ \text{inflation due to conflict}}}, \tag{12}$$

where the first term captures the effect of inflation on the present value of aggregate wages, and the second term, the aggregate costs of inflation due to conflict, is given by

$$\hat{\varkappa} \equiv \int_0^1 \mathbb{E}\left[\sum_{t=0}^{\infty} \beta^t \kappa_{i,t}\left(\mathscr{I}_{i,t} - \mathscr{I}_{i,t}^{ss}\right)\right] di = \kappa \sum_{t=0}^{\infty} \beta^t \left(\text{frac}_t - \text{frac}^{ss}\right) \tag{13}$$

and captures how the inflation shock changes the total conflict costs borne by workers. This term is equal to the utility cost per conflict action multiplied by how inflation changes the present value of the fraction of workers who engage in conflict. We now connect the two components of the welfare change to the two components of wage adjustment, and in doing so, present the main analytical result of the paper.

Theorem 1. *The first order impact of inflation shocks $\{\hat{\pi}_t\}_{t=0}^{\infty}$ on aggregate worker welfare is given solely by wage erosion, whereby*

$$\hat{\mathscr{W}} \approx \sum_{t=0}^{\infty} \beta^t \hat{w}_t^{erosion} = \underbrace{\sum_{t=0}^{\infty} \beta^t \hat{w}_t}_{\text{real wage responses}} - \underbrace{\sum_{t=0}^{+\infty} \beta^t \hat{w}_t^{catch\text{-}up}}_{\text{wage catch-up}}, \tag{14}$$

because the welfare gains from wage catch-ups in response to inflation shocks are offset by the associated conflict costs:

$$\hat{\varkappa} \approx \sum_{t=0}^{\infty} \beta^t \hat{w}_t^{catch\text{-}up}. \tag{15}$$

Equation (14) shows that the response of workers' welfare to inflation shocks depends only on wage erosion. The benefits of wage catch-up equal the conflict costs associated with the wage catch-up, meaning catch-up achieved through costly conflict is irrelevant for worker welfare. The result follows from the envelope theorem of Milgrom and Segal (2002), which applies to discrete choices, i.e., workers' optimal choices of whether to engage in conflict with employers $\{\mathscr{I}_{i,t}\}_{t=0}^{\infty}$.

To illustrate the intuition behind this theorem, consider a sequence of positive inflation shocks $\hat{\pi}_t \geq 0$ for all t. First, consider the infra-marginal workers whose conflict decisions are unaffected by inflation shocks (i.e., those workers' wage gaps are above the conflict threshold $\underline{x}^{ss}$). Inflation shocks erode their real wages, and there is no wage catch-up since their conflict decisions do not change with inflation shocks. The impact of inflation shocks on their welfare is hence captured by the wage erosion term, which equals the impact of inflation shocks on their observed real wages.

Second, consider the marginal workers who switch from not engaging in conflict to engaging in conflict due to inflation shocks. These workers are pushed over the conflict threshold as the inflation shocks erode their real wages. Due to worker optimality, before the (small) inflation shock, these marginal workers were near the conflict threshold and were approximately indifferent between engaging in conflict and accepting the employer's offer. As a result, even though these workers experience positive wage catch-up due to conflict, their benefits from wage catch-up are equal to the conflict costs to a first order. Consequently, the impact of inflation shocks on welfare is still captured by the wage erosion term for these marginal workers.

One consequence of Theorem 1 is that the impact of inflation shocks on worker welfare, and the impact of shocks on the real wage can be quite different. Welfare depends solely on wage erosion, while changes in the real wage also reflect wage catch-up achieved through changes in conflict decisions. Even if the aggregate wage keeps up with inflation, meaning that the impact of inflation shocks on the aggregate real wage $\sum_{t=0}^{\infty} \beta^t \hat{w}_t$ is close to zero, inflation could still harm worker welfare. Benefits of wage catch-up resulting from more frequent conflict are offset by the costs associated with conflict. As a result, measuring worker welfare using observed wage growth understates the costs of inflation.

It is worth contrasting our model with time-dependent models of wage setting. The time dependent case is nested in our model with $\lambda > 0$ and $\kappa \to \infty$. Theorem 1 still holds. In that case, after a sequence of positive inflation shocks, conflict $\mathscr{I}_{i,t} = 1$ if and only if the exogenous Calvo adjustment opportunities arrives. As a result, conflict decisions $\{\mathscr{I}_{i,t}\}_{t=0}^{+\infty}$ are invariant to the inflation shocks. Aggregate costs of conflict $\hat{\varkappa}$ are always zero, and the wage catch up term $\hat{w}_t^{\text{catch-up}}$ in (11) also equals zero. As a result, the impact of inflation shocks on the aggregate real wage $\sum_{t=0}^{\infty} \beta^t \hat{w}_t$ is sufficient to capture the impact of inflation on worker welfare.

What determines the magnitude of wage erosion, and as such the impact of inflation shocks on worker welfare? The following proposition links wage erosion to two factors: first, the indexation of the default wage; and second, the frequency of conflict at steady-state inflation. Welfare costs are higher if there is less conflict at steady-state inflation or less indexation.

We capture the frequency of conflict at steady-state inflation by the fraction of workers who, at steady state, do not engage in conflict for k periods, $\Phi_k^{ss} \equiv \int_0^1 \left(\Pi_{s=0}^k \left(1 - \mathscr{I}_{i,t+s}^{ss}\right)\right) di$—that is, the probability that the employer's default wage offer "survives" without conflict for k periods. When conflict is frequent, the survival probability is low. We now state our proposition.

Proposition 2. *To a first order, wage erosion and the impact of inflation shocks on worker welfare is given by*

$$\hat{w}_t^{erosion} \approx -\left(1-\gamma\right) \sum_{s=0}^{t} \Phi_{t-s}^{ss} \hat{\pi}_s \quad \forall t \geq 0 \quad \textit{and} \quad \hat{\mathscr{W}} \approx -\left(1-\gamma\right) \sum_{s=0}^{\infty} \beta^s \left(\sum_{k=0}^{\infty} \beta^k \Phi_k^{ss}\right) \hat{\pi}_s, \tag{16}$$

The proposition shows that given an inflation shock $\hat{\pi}_s$, wage erosion is a function only of γ, the indexation of the default wage; and the frequency of conflict in steady state as measured by the survival probability Φ_{t-s}^{ss}. Welfare, being the present value of wage erosion, depends on the same two factors. Welfare losses are smaller when indexation is high—in the extreme case of full indexation ($\gamma = 1$), inflation shocks do not lead to any wage erosion. Welfare losses are also smaller when conflict is more frequent at steady-state inflation, meaning survival probabilities Φ_{t-s}^{ss} are low.

Intuitively, imagine a worker who did not engage in conflict between periods s and t. For such a worker, the inflation shock $\hat{\pi}_s$ lowers their real wage at t by $\left(1-\gamma\right)\hat{\pi}_s$. The term $1-\gamma$ captures the fact that the inflation shock may not lower real wages one-for-one even without conflict because of indexation—and with full indexation, the inflation shock does not lower real wages at all. Suppose instead that the worker has engaged in conflict between periods s and t. Then, $\hat{\pi}_s$ will not erode their real wage at t, because conflict results in nominal wages that fully catch up with inflation. Summing across workers, $\hat{\pi}_s$ erodes the aggregate real wage at t by $-\left(1-\gamma\right)\Phi^{ss}_{t-s}\hat{\pi}_s$. Summing over inflation shocks in all periods, we arrive at the expression for wage erosion in (16). The impact of inflation shocks on worker welfare then follows from equation (14).

The main value of Proposition 2 is clarifying how key parameters of the model impact the welfare costs of inflation. First, a higher conflict cost κ means that workers engage in conflict less frequently at steady state, which raises the survival probabilities of the employer's default wage offer $\left\{\Phi^{ss}_t\right\}$. Therefore, higher conflict costs increase the magnitude of wage erosion and raise the welfare costs of inflation. Similarly, a lower probability of free wage catch-up λ also raises the survival probabilities $\left\{\Phi^{ss}_t\right\}$ and with it, the magnitude of wage erosion and the welfare costs of inflation. Finally, higher indexation γ increases the employer's default wage offer after an inflation shock, which lowers the magnitude of wage erosion and the welfare costs of inflation. Guided by the proposition, we will provide direct empirical evidence about these parameters in Section 5.

4.3 Extensions

We now consider various extensions of the baseline model. The core result—that the impact of inflation shocks on workers' welfare is determined by wage erosion and not by real wage growth—continues to apply.

More general distribution of conflict costs. Our main result, Theorem 1, does not depend on the "Calvo-plus" form and holds for a more general distribution of conflict costs with non-negative supports. As further elaborated in Appendix C, the application of the envelope theorem in Milgrom and Segal (2002) does not require specific restrictions on the distribution of conflict costs.

Conflict-induced real wages affected by inflation shocks. In our main analysis, if the worker takes actions to increase their pay, their wages exactly keep up with inflation. In other words, the conflict-induced (real) wage $w^*_{i,t}$ is invariant to inflation shocks. Our main result, Theorem 1, can be extended to the case where $w^*_{i,t}$ is affected by inflation shocks. This could occur because conflict-induced wages depend on labor market tightness (as in Section C.2) or are determined by sophisticated bargaining protocols. In this case, the impact of inflation shocks on aggregate worker welfare is still given by $\hat{\mathscr{W}} \approx \sum_{t=0}^{\infty}\beta^t\,\hat{w}^{\text{erosion}}_t$, where wage erosion—how aggregate shocks would impact the workers' real wages if their conflict decisions did not respond to aggregate shocks—is given by:

$$\hat{w}_t^{\text{erosion}} \approx -\left(1-\gamma\right)\sum_{s=0}^{t}\Phi_{t-s}^{ss}\hat{\pi}_s + \sum_{s=0}^{t}\left(1-\Phi_{t-s}^{ss}\right)\hat{g}_{w,s}, \tag{17}$$

where $g_{w,s} \equiv \log\left(w_s^*/w_{s-1}^*\right)$ is the growth rate of aggregate conflict-induced (real) wages $\log w_s^* \equiv \int_0^1 \log\left(w_{i,s}^*\right) di$ and deviations from their steady-state values are still denoted by hats. The first term is exactly the same as in (16), and the second term captures the impact from changes in the growth of conflict-induced real wages if workers' conflict decisions are fixed at steady-state value. Intuitively, the growth $\hat{g}_{w,s}$ increases the real wage at t only if workers engage in conflict between periods s and t, with the probability $1-\Phi_{t-s}^{ss}$, i.e., the probability that the employer's default wage offer does not "survive" for $t-s$ periods. Similar to the main analysis, wage changes arising from changes in conflict decisions due to inflation shocks still do not impact worker welfare.

Allowing other aggregate shocks. In the main analysis, we study the case in which the only aggregate shocks are inflation shocks. Our main result, Theorem 1, can be extended to the case with other aggregate shocks (e.g., TFP shocks from changing aggregate productivity growth $\hat{g}_t \equiv g_t - g^{ss}$). This case is analogous to the previous case in (17), where the first-order impact of TFP shocks on aggregate worker welfare is still given by wage erosion, which depend both on how TFP shocks impact inflation and how they impact aggregate conflict-induced (real) wages. Appendix C provides details.

This extension clarifies two things. First, the impact of inflation on worker welfare does not depend on the underlying source of inflation. Regardless of whether inflation is caused by TFP shocks $\{\hat{g}_s\}$ or other shocks independent of $\{\hat{g}_s\}$, the extent to which inflation leads to wage erosion and its impact on worker welfare remains the same. Second, when workers need to engage in costly conflict to achieve wage gains, "conflict costs" are relevant for the welfare costs of any other aggregate shocks to which workers' default wages are not fully indexed.

Allowing conflict costs to scale with wage gains from conflict. In our baseline analysis, conflict costs are fixed and do not depend on the wage gains from conflict (the gap between conflict-induced wage $w_{i,t}^*$ and the default wage $w_{i,t}^d$). Moreover the worker does not choose the conflict-induced wage $w_{i,t}^*$. We can consider an alternative setup in which workers choose the conflict-induced wage, and conflict costs increase with wage gains—akin to Rotemberg costs in price setting. Specifically, the worker chooses their wage $w_{i,t}$ but incurs a period-t utility cost of $\frac{\kappa}{2}\left(\log w_{i,t} - \log w_{i,t}^{\mathrm{d}}\right)^2$ when they engage in conflict with employers to raise their wages beyond their default offer. In this case, our main result remains true: the impact of inflation shocks on aggregate worker welfare is still given by $\hat{\mathscr{W}} \approx \sum_{t=0}^{\infty}\beta^t \hat{w}_t^{\text{erosion}}$. Wage erosion is still defined as how inflation shocks would impact workers' real wages if their conflict decisions (defined now in terms of the intensity of the conflict $\log w_{i,t} - \log w_{i,t}^{\mathrm{d}}$) were held at steady-state level. Moreover, the impact of inflation shocks on worker welfare is even more simply given by $\hat{\mathscr{W}} \approx -\left(1-\gamma\right)\sum_{s=0}^{\infty}\beta^{s}\sum_{k=0}^{\infty}\beta^{k}\hat{\pi}_{s}$, which is as if $\Phi_{k}^{ss}=1$ for all k in (16). The result follows because the inflation shock $\hat{\pi}_s$ would lower workers' real wage at $t \geq s$ by $\left(1-\gamma\right)\hat{\pi}_s$ if the intensity of their conflict decisions were held at steady-state level (see Appendix C). Therefore a given inflation shock lowers worker welfare by more in the extension than in the baseline model.

Beyond hand-to-mouth consumers. In the main analysis, we study the case in which the worker has log utility and is hand-to-mouth. Our main result, Theorem 1, can be extended to the case in which the worker faces a standard borrowing constraint and/or does not have log utility. As elaborated in Appendix C, the impact of inflation $\{\hat{\pi}_t\}_{t=0}^{+\infty}$ on aggregate worker welfare is now given by

$$\hat{\mathscr{W}} \approx \sum_{t=0}^{\infty}\beta^{t}\left[\int_{0}^{1}u'\left(c_{i,t}^{ss}\right)w_{i,t}^{ss}di\right]\int_{0}^{1}\frac{u'\left(c_{i,t}^{ss}\right)w_{i,t}^{ss}}{\int_{0}^{1}u'\left(c_{i,t}^{ss}\right)w_{i,t}^{ss}di}\hat{w}_{i,t}^{\text{erosion}}di, \tag{18}$$

where $\hat{w}_{i,t}^{\text{erosion}} \equiv \log\left(\omega_t\left(\boldsymbol{\pi}_t,\mathscr{I}_{i,t}^{ss},h_{i,t}\right)\right)-\log\left(\omega_t\left(\boldsymbol{\pi}^{ss},\mathscr{I}_{i,t}^{ss},h_{i,t}\right)\right)$. Compared to (14), there are two differences. First, different workers' wage erosion may receive different weights $\frac{u'\left(c_{i,t}^{ss}\right)w_{i,t}^{ss}}{\int_{0}^{1}u'\left(c_{i,t}^{ss}\right)w_{i,t}^{ss}di}$: workers with lower levels of consumption have a higher marginal utility of consumption, so they receive a relatively higher weight conditional on their wage. Second, the overall welfare consequences of wage erosion are smaller when workers have more ability to smooth temporary wage fluctuations. However, the envelope theorem logic, where the benefits of wage catch-up to inflation shocks on worker welfare are offset by the costs from more frequent conflict, remains true.

Nonlinear effects. This paper focuses on the first-order impact of inflation shocks on worker welfare. With non-linear effects and when inflation shocks are large, some workers would strictly prefer to engage in conflict, as the shock pushes them over the conflict threshold. Wage erosion defined in (10) is no longer a sufficient statistic for worker welfare. However the general lesson remains the same. Workers have to engage in costly conflict to achieve wage gains. Therefore, the impact of inflation shocks on worker welfare differs from the effect of inflation on real wages, and the aggregate cost of inflation due to conflict can be significant. This lesson can be seen from the decomposition of the inflation shock's impact on worker welfare (12), which does not rely on a first-order approximation. In fact, if the inflation shock becomes very large, the aggregate costs of inflation due to conflict are the primary component of the overall costs of inflation – eventually, everyone engages in conflict, leading to relatively large aggregate costs of inflation due to conflict and relatively small aggregate real wage falls after an inflation shock.

5 Eliciting Conflict Costs with the Survey

As we have discussed, several factors determine how much conflict affects the costs of inflation: how much workers dislike taking actions to get higher pay (i.e., the utility cost to each worker of engaging in conflict κ); the probability of free wage catch-up λ; and the degree of indexation of employers' default wage offers γ. This section uses our survey to directly measure the factors. These survey estimates can then be directly used to discipline key parameters of the model, which will allow us to quantify how conflict affects the costs of inflation in the next section.

5.1 Eliciting Conflict Costs

We first measure what fraction of their wages workers would sacrifice to avoid conflict with their employers. We do so in two steps. First, we elicit the wage growth workers believe they could secure from their employer if they took costly actions to increase pay. Second, we elicit the default wage growth that makes workers indifferent between accepting the employers' default wage offer versus choosing conflict. The difference between these two wages measures the fraction of wages that workers would give up to avoid conflict with employers.

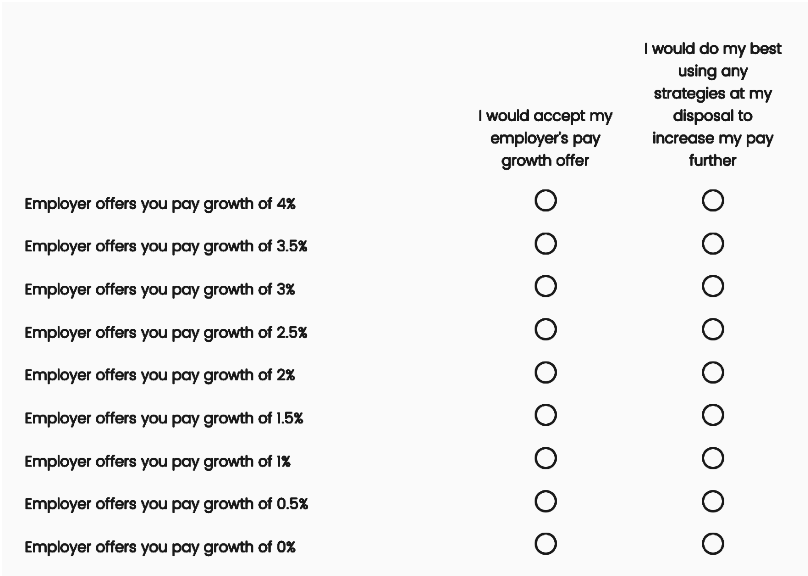
To elicit wage growth induced by conflict, we ask respondents to think ahead 12 months, while holding fixed their current work place, employer, job and working hours. We ask the worker what nominal wage growth they think they could achieve if they were to use any strategies at their disposal, $\Delta W^{\text{conflict}}$.

We then elicit the default nominal wage growth at which workers are indifferent between accepting their employer's offer versus choosing to take costly action, ΔW^{indiff}. The fraction of the wage that workers would sacrifice to avoid conflict is then $x^{\text{conflict}} = \Delta W^{\text{conflict}} - \Delta W^{\text{indiff}}$.[15] As we will discuss shortly, this object directly maps to the conflict threshold $\underline{x}^{ss} = -x^{\text{conflict}}$, which is tightly linked to the conflict cost κ.

To elicit ΔW^{indiff}, we adapt the standard "multiple price lists for willingness to pay elicitation" used in experimental economics (e.g., Jack, McDermott, and Sautmann, 2022). Based on the reported conflict-induced nominal wage growth $\Delta W^{\text{conflict}}$, we constructed a menu of nominal wage growth options where the maximum nominal wage growth is $\Delta W^{\text{conflict}}$ and the minimum is $\Delta W^{\text{conflict}}$ minus 4 percentage points, with a gradient of 0.5 percentage points. Figure 6 shows this menu, for an example in which the respondent reported conflict-induced wage growth $\Delta W^{\text{conflict}} = 4\%$. For each hypothetical wage growth in the menu, we asked participants whether they would accept the offer

[15] Figure 2 reports related information on the wage increase that workers, who did not conflict in 2023, would hypothetically receive with conflict. This information bounds, but does not point identify, each worker's conflict cost.

Figure 6: Survey Question to Elicit Indifference Wage



	I would accept my employer's pay growth offer	I would do my best using any strategies at my disposal to increase my pay further
Employer offers you pay growth of 4%	○	○
Employer offers you pay growth of 3.5%	○	○
Employer offers you pay growth of 3%	○	○
Employer offers you pay growth of 2.5%	○	○
Employer offers you pay growth of 2%	○	○
Employer offers you pay growth of 1.5%	○	○
Employer offers you pay growth of 1%	○	○
Employer offers you pay growth of 0.5%	○	○
Employer offers you pay growth of 0%	○	○

Notes: this figure contains the question from the survey eliciting the indifference wage. For each hypothetical pay growth offered by the employer, respondents are required to choose whether they would accept the offer or take costly actions to increase pay. Respondents first answer a question that reveals their conflict induced wage: "[c]ommon strategies to increase pay include initiating a difficult conversation about pay with employers, or searching for higher paid jobs with other employers. Please, think ahead to 12 months from now. Suppose that you are working at the same job at the same place you currently work, and working the same number of hours. What pay growth do you think you would get if you do your best to increase pay using any strategies at your disposal, including the common strategies listed above?". In order to elicit indifference wage growth, respondents then answer the question "[y]our employer increases pay for everyone in your position, including you, by z% (possible values listed below). Would you accept your employer's offer without taking any actions to increase your pay or would you do your best to increase your pay using any strategies at your disposal (such as initiating a difficult conversation about pay with employers, or searching for higher paid jobs with other employers)? Remember that you have said that if you do your best to increase pay using any strategies at your disposal, you would have a pay growth of X%." Here, X is their answer to the previous question.

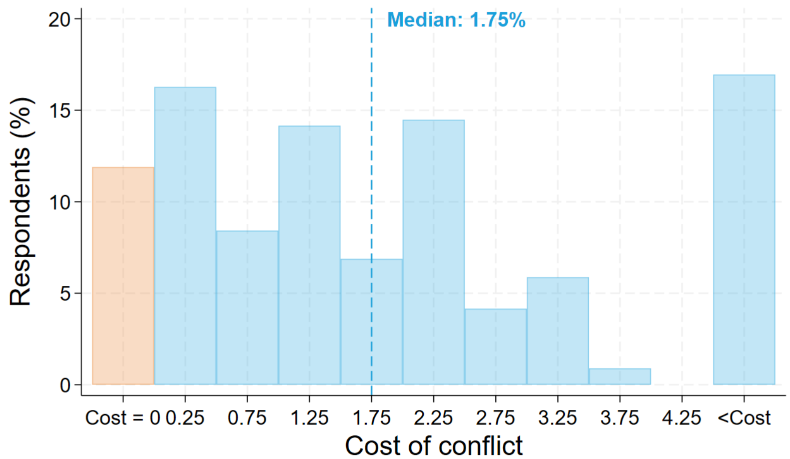
or take actions to achieve higher pay.[16] In the top row, employers offer wage growth equal to the conflict-induced wage. If conflict is costly, workers should always accept this wage. In the bottom row, employers offer far less wage growth than the conflict induced wage, meaning workers should choose conflict unless the costs are prohibitively high. At some intermediate wage growth hypothetically offered by the employer, workers should switch between accepting and engaging in conflict. The switching wage growth bounds the worker's indifference wage growth (ΔW^{indiff}) within a 0.5% interval. Specifically, letting $\Delta W^{\text{accept}} \in \left[\Delta W^{\text{indiff}} - 0.5\%,\ \Delta W^{\text{indiff}}\right]$ denote the lowest nominal wage growth where workers accept the employers' offer, we can find

$$x^{\text{conflict}} \in \left[\Delta W^{\text{conflict}} - \Delta W^{\text{accept}},\ \Delta W^{\text{conflict}} - \Delta W^{\text{accept}} + 0.5\%\right]. \tag{19}$$

We set x^{conflict} at the median of the interval. For those those who would take costly actions at all default wage offers, we assign an x^{conflict} of zero. For those who would never take actions that put

[16]We randomized whether the menu was ascending or descending, and whether accepting or conflicting is ordered first, which means that the average results are unaffected by any anchoring due to page location. Fortunately, we find that the cost of conflict is the same across groups, meaning order is not important.

Figure 7: Distribution of Conflict Thresholds Elicited from Survey



Note: this figure illustrates the distribution of conflict thresholds (x^{conflict}), showing the percentage of participants with each discrete value. x^{conflict} is defined as the difference between the wage growth participants would receive if they take actions to increase their pay ($\Delta W^{\text{conflict}}$) and their indifference wage (ΔW^{indiff}), the default wage growth at which workers are indifferent between accepting their employer's offer versus choosing to take costly action. Specifically, we set x^{conflict} at the median of the interval in (19). The data excludes respondents who give non-monotonic responses. The median conflict threshold, considering all individuals except participants who always bargain and thus have a cost of zero, is highlighted in the figure.

them in conflict with their employer, we assume that x^{conflict} is higher than 4%.[17]

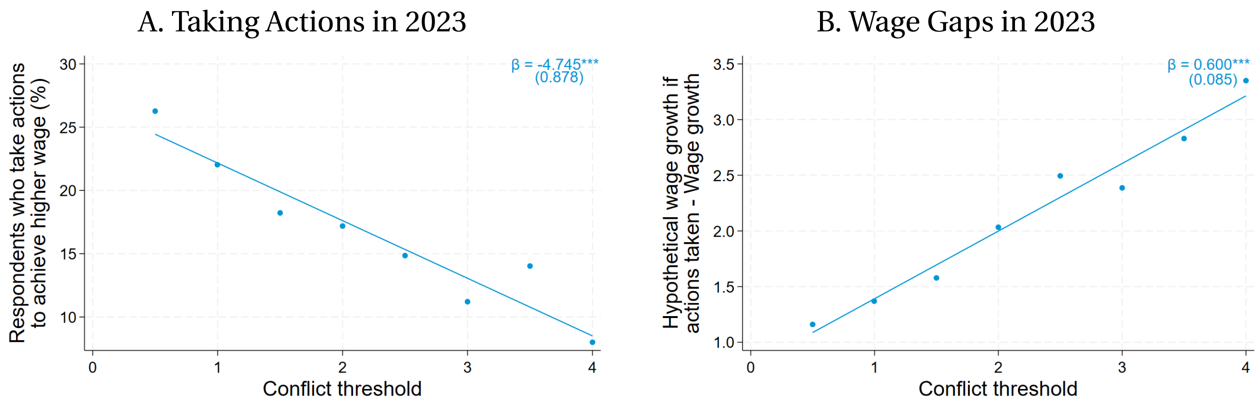
Figure 7 illustrates the full distribution of conflict thresholds x^{conflict} in our sample. The conflict thresholds are large and heterogeneous. The median worker would sacrifice 1.75% of their wages in order to avoid taking costly actions that put them in conflict with their employer. There is large dispersion around this median value of x^{conflict}, with more than 15% of the sample being willing to sacrifice at least 4 percent of their wages to avoid conflict. While there is substantial dispersion in what workers are willing to sacrifice to avoid conflict, we do not find much systematic heterogeneity across worker demographics or income. As a result, the values for x^{conflict} that are residualized for worker observable characteristics are very similar to the raw distribution (See Appendix Figures B.1 and B.6).[18]

Our measure of x^{conflict} is derived from hypotheticals, but reassuringly, the cross sectional variation is consistent with respondents' self reported actions in 2023. First, we show that respondents who are willing to sacrifice more to avoid conflict were indeed less likely to engage in conflict. We see this in the left panel of Figure 8, where there is a strong negative relationship between the probability

[17]The only group of respondents that we exclude from Figure 7 are those who give non-monotone responses, which fortunately is less than 7% of the sample.

[18]To assess magnitudes, one useful comparison is union dues, which approximate how much workers pay to avoid direct conflict with employers. Union dues are generally between 1-2% of wages per year. For example, dues for the Service Employees International Union (health care, 1.9 million members) were 1.7%, and United Auto Workers (auto manufacturing, 1 million members) were approximately 1.1%.

Figure 8: Validating Elicited Conflict Thresholds



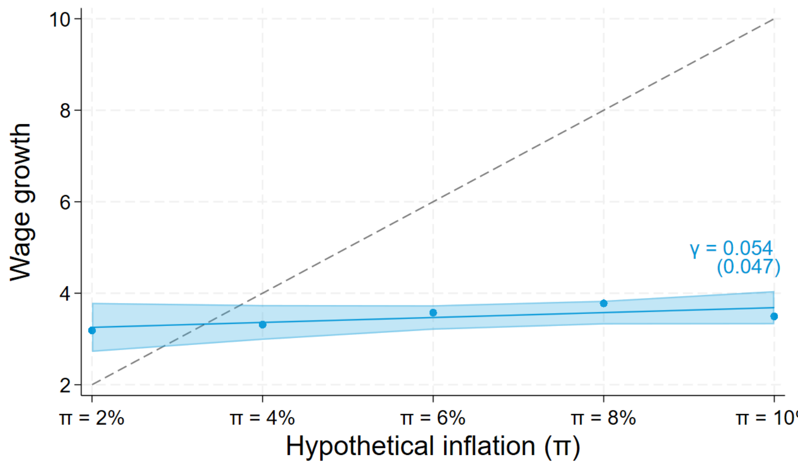
Note: Panel A of this figure shows the relationship between the conflict threshold (x^{conflict}) and an indicator for whether the respondent took actions to achieve wage growth in 2023. x^{conflict} is defined as the difference between the wage growth participants would receive if they take actions to increase their pay ($\Delta W^{\text{conflict}}$) and their indifference wage (ΔW^{indiff}), which is defined as the minimum wage growth participants would be willing to accept if offered by their employers. The data is limited to respondents who bargain first and then accept the offer. The coefficient of this relationship is displayed, with the standard errors enclosed in brackets. Stars denote levels of statistical significance: 1% (***), 5% (**), and 10% (*). The binned scatterplot in Panel B shows the the relationship between the cost of conflict (x^{conflict}) and the difference between the wage respondents think they could have gotten if they had taken action and the wage growth they received in 2023. The sample is restricted to respondents who accepted their employers' default wage during 2023.

that the respondent took actions in 2023 on the y-axis and their elicited x^{conflict} on the x-axis. Second, we further find a tight link between the wages workers are willing to sacrifice to avoid conflict and the size of workers' perceived wage gains from conflict in 2023. Specifically, the right panel of Figure 8 restricts to those workers who did not engage in conflict in 2023 and relates the wages they were willing to give up to avoid conflict (x^{conflict}) to the wage gain that those workers think they could have achieved if they had taken action (i.e. the data displayed in the right panel of Figure 2). The positive relationship is exactly what we expect – the workers who did not take action in 2023 even when those actions would have resulted in large wage gains are precisely those who had large costs. Conversely, the workers who did not choose to take actions despite low conflict thresholds are precisely those who did not stand to gain as much from those actions. Together, these cross-sectional patterns show consistent answers across sections of the survey and increase our confidence that the elicited conflict costs predict worker behavior.

5.2 Default Nominal Wage Growth and Inflation

The framework in Section 4 shows that the aggregate costs of inflation due to conflict depend on whether the default wage adjusts with inflation. This object is hard to measure in observational data, since one cannot easily distinguish between conflict-induced wage growth and default wage growth offered by an employer. Instead, we elicit the degree of indexation of default wage offers to inflation shocks using survey hypotheticals. Similar to Section 3, we randomly assign participants into a hypothetical scenario in which inflation is expected to be 2%, 4%, 6%, 8% or 10% over the next 12 months.

Figure 9: Default Nominal Wage Growth and Inflation



Note: This binned scatterplot depicts the relationship between the default wage growth respondents reported they would receive under a hypothetical inflation scenario and the hypothetical inflation rate, along with the 95% confidence interval of the predicted relationship . The gray dashed line serves as a reference 45-degree line. The coefficient of this relationship is displayed, with the standard errors enclosed in brackets. The stars indicate levels of statistical significance: 1% (***), 5% (**), and 10% (*). The sample is all respondents. Respondents answered the following question. "Consider a hypothetical situation in which inflation is expected to be x% in the next 12 months. Suppose that you are working at the same job at the same place you currently work, and working the same number of hours. What pay growth do you think you would get by default if you do not take any strategies at your disposal to increase your pay (such as initiating a difficult conversation about pay with employers, or searching for higher paid jobs with other employers)?" We hypothetically offer inflation of $x = 2\%, 4\%, 6\%, 8\%$ and 10%.

We then asked survey respondents what nominal wage growth employers would offer them in that setting (i.e. the "default" nominal wage growth).

Figure 9 shows that workers perceive that employers would offer almost the same default nominal wage growth at all levels of inflation. The y-axis is default wage growth that workers expect their employer to offer in the absence of any actions on their part. The x-axis is hypothetical inflation proposed to the respondent. For reference, we also plot the 45 degree line, which would reflect fully indexed wages. The blue circles plot the mean default wage growth expected by the respondents in the scenario that was posed to them. The regression line, with shaded 95% confidence intervals, has a slope of 0.054, but is not statistically different from zero. Therefore, workers believe that a 1 percentage point increase in inflation leads to a 0.054 percentage point increase in employers' default wage offers, absent conflict.[19]

5.3 Mapping Survey Evidence to Model

We now use the survey estimates to calibrate the key parameters of the model governing the aggregate costs of inflation due to conflict. To identify conflict costs κ, we follow two steps. First, as discussed

[19]We find similar results when relating the default wage offer that workers think their employer will offer them next year to what they expect inflation will be next year (Appendix Figure B.7).

in Section 4, with a wage gap of $\underline{x}^{ss} < 0$ at the conflict threshold, the worker is indifferent between engaging in conflict and accepting the default wage offer. In other words, $-\underline{x}^{ss}$ captures the percent of wages that workers would sacrifice to avoid conflict in the model, exactly mapping to $-\underline{x}^{ss} = x^{\text{conflict}}$ in the survey. Therefore we set $\underline{x}^{\text{ss}} = -1.75\%$ in the model. In the second step, we then further use $\underline{x}^{ss}$ to pin down the conflict cost parameter κ.[20]

Furthermore, 11% of workers report that they would always engage in conflict over the next year, irrespective of the employer's offer (the leftmost orange bar in Figure 7). These workers perceive that conflict is costless, which maps to the probability of a free wage catch-up in our model λ. In our quarterly calibration, we translate this yearly share into a quarterly free wage catch-up opportunity with probability $\lambda = 1-(1-0.11)^{1/4} = 0.029$. We calibrate γ, the extent to which default wage growth indexes to inflation, to $\gamma = 0.05$ based on the slope of the regression line in Figure 9, i.e., a small degree of indexation of the default wage. This regression captures the extent of perceived default wage indexation, which could be lower than actual default wage indexation. Therefore our numerical results will explore robustness to higher levels of γ.

A last important parameter is α, the growth rate of the default nominal wage at zero inflation. We also calibrate α from our survey based on hypothetical inflationary scenarios. Specifically, the intercept of Figure 9 reveals the annual growth rate of default wages at zero inflation, which implies a quarterly value of $\alpha = 0.788\%$. α and γ together determine the quarterly growth rate of the default nominal wage at steady-state inflation ($\pi^{ss} = 0.5\%$), $\alpha + \gamma\pi^{ss} = 0.813\%$. This calibration implies workers receive periodic default wage increases at steady-state inflation absent conflict.

Our survey measure elicits conflict costs directly. One could instead infer these conflict costs indirectly, by calibrating a model to match moments of the wage growth distribution as in the menu cost literature (e.g., Alvarez et al., 2016). In our model, wage changes can arise both with and without conflict—for instance, from growth in the default wage offered by employers. Without hard-to-verify assumptions, one cannot differentiate conflict-induced wage changes from default wage changes in the wage data, nor map the distribution of wage changes to conflict costs.

6 Quantifying How Conflict Affects the Costs of Inflation

In this section, we analyze the quantitative implications of the model developed in Section 4 and calibrated in Section 5. The aim is to quantitatively assess the importance of conflict for the costs of inflation to workers. We find that the costs of inflation, including conflict, are significantly larger than

[20] Specifically, let $v^{ss}(x)$ denote the worker's value given its end-of-period wage gap in (9) at steady state. That is, $v^{ss}(x) \equiv x + \max_{\{\mathscr{I}_{i,t}\}_{k=1}^{\infty}} \mathbb{E}_t \left[\sum_{k\geq 0} \beta^{t+k} \left(x_{i,t+k} - \kappa_{i,t+k}\mathscr{I}_{i,t+k}\right)\right]$, subject to (6) and $\pi_t = \pi^{ss}$ for all t. One can then use $\underline{x}^{ss}$ to pin down the conflict cost parameter κ : $v^{ss}(0) - \kappa = v^{ss}\left(\underline{x}^{ss}\right)$.

Table 1: Main Analysis—Calibration

	Description	***Value***	***Target***
β	Discount factor	0.99	Standard
κ	Conflict cost	8.14%	Own survey
			such that $\underline{x}^{ss} = -1.75\%$
λ	Probability of free catch-up	0.0287	Own survey
g	Trend real wage growth	0.755%	ASEC-CPS
			3.02% annual real wage growth
α	Default nom. wage growth, zero inflation	0.788%	Own survey
γ	Indexation of default nominal wage	0.05	Own survey
π^{ss}	Steady state inflation	0.5%	2% annual inflation
$z_{i,t}$	Idios. shocks $z_{i,t} + \mu \sim \text{Gamma}(a, b)$	$(0.1370, 0.0323)$	$\mathbb{E}\left[z_{i,t}\right] = 0$
			48% yearly share of conflict

the costs of inflation via falling real wages alone.

6.1 Calibration

We calibrate the model from Section 4 at a quarterly frequency and summarize the parameters in Table 1. As we discussed above, we use our survey to measure the costs of conflicts ($\lambda = 0.029$ and $\kappa = 8.14\%$ such that $\underline{x}^{ss} = -1.75\%$), the degree of indexation of the default wage to inflation shocks ($\gamma = 0.05$), and the growth rate of the default nominal wage at zero inflation ($\alpha = 0.788\%$). Furthermore, for the quarterly calibration, we set the discount factor to a standard value $\beta = 0.99$. The trend productivity growth rate $g = 0.755\%$ is chosen to map a steady-state average annual growth rate of real wages of 3.02% in the ASEC-CPS survey.[21] We assume $\pi^{ss} = 0.5\%$, implying a steady-state annual inflation of 2%, again a standard value.

We assume that the idiosyncratic productivity shock is such that $z_{i,t} + \mu$ follows a $\text{Gamma}(a, b)$ distribution, a flexible continuous distribution with support $[0, \infty)$. From Equation (4), having the lower bound of the idiosyncratic productivity shock $\underline{z} = -\mu$ ensures that the steady-state distribution of wage gaps has a non-positive support. We calibrate the shape and scale parameters of the Gamma distribution $(a, b) = (0.1370, 0.0323)$ such that idiosyncratic shocks have a mean of zero, $\mathbb{E}\left[z_{i,t}\right] = 0$, and the yearly share of workers engaging in conflict at steady-state inflation is equal to 48%, as in Figure 4. As in standard menu cost models, the distribution of idiosyncratic shocks impacts how workers' wage gaps move and thus the frequency of conflict. As a result, the share of workers engaging in conflict at steady state inflation is informative about the distribution of idiosyncratic productivity shocks, which in turn impacts the costs of inflation shocks through Proposition 2.

[21]We access ASEC-CPS data from the IPUMS CPS database (Flood, King, Rodgers, Ruggles, Warren, Backman, Chen, Cooper, Richards, Schouweiler, and Westberry, 2023).

6.2 Quantifying the Aggregate Costs of Inflation Due to Conflict

We use the calibrated model to quantify the welfare costs of inflationary shocks to workers.We solve the first-order impact of inflation shocks $\{\hat{\pi}_t\}_{t=0}^{+\infty}$ using Sequence-space Jacobian methods, developed in Auclert et al. (2021) and Auclert et al. (2024a). This approach allows us to analyze the welfare consequences of an arbitrary path of inflation.

We start with two simple inflationary scenarios in this subsection, and analyze the post-pandemic inflation of 2021–2023 in the next subsection. The first scenario is a transitory inflation shock (Figure 10, Panel A), in which we set $\hat{\pi}_0 = 1\%$ and $\hat{\pi}_t = 0$ for $t \geq 1$. The second scenario is a persistent inflation shock (Figure 10, Panel B), in which we set $\hat{\pi}_t = \rho^t$ with $\rho = 0.72$, which matches the empirical auto-correlation of inflation in the US time series (specifically, the auto-correlation of quarterly PCE inflation between 2013Q1 and 2024Q1). As in Section 4, an unexpected aggregate inflation shock is realized at $t = 0$,and workers have perfect foresight about the path of inflation afterwards.

The right figure of each corresponding panel shows the dynamic response of real wages and wage erosion under each scenario, with the latter being relevant for welfare. For each scenario, the solid blue line displays the overall real wage response $\{\hat{w}_t\}_{t=0}^{+\infty}$.[22] The dashed orange line displays the resulting wage erosion $\left\{\hat{w}_t^{\text{erosion}}\right\}_{t=0}^{+\infty}$. The shaded region captures the gap between the two, i.e., wage catch-up through more frequent conflict $\left\{\hat{w}_t^{\text{catch-up}}\right\}_{t=0}^{+\infty}$. Its area measures the aggregate costs of inflation due to conflict $\hat{\varkappa}$, defined in (13).

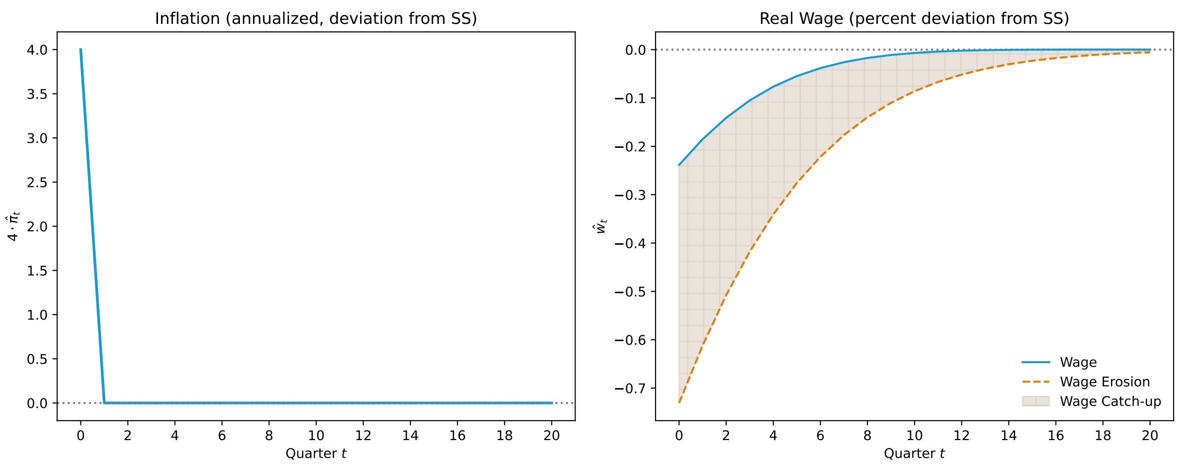
For the purely transitory inflation shock, real wages fall by only around 0.25% on impact. However, the welfare-relevant wage erosion falls by more than 0.7%, meaning that the modest fall in wages is mostly because workers engage in conflict more frequently to raise their wages. For the persistent inflation shock with $\rho = 0.72$, real wages and welfare-relevant wage erosion fall roughly equally on impact. However wage erosion decreases significantly more than real wages in subsequent quarters. Therefore, there is a large but delayed wage catch-up to the inflation shock through more frequent conflicts in later quarters. The delay occurs because workers have incentives to defer conflict until a later period when the inflation shock is persistent. Even if they engage in conflict now and their wages keep up with the initial inflation, persistent inflation shocks still cause their wages to fall behind prices in the absence of future conflict. As a result, workers can economize on conflict costs by delaying conflict until inflation has accumulated. Overall, in both cases, the shaded region between real wages and wage erosion is large, meaning a substantial fraction of the wage growth was achieved through costly conflict.

Table 2 confirms the importance of conflict for the overall welfare costs of inflation. The table

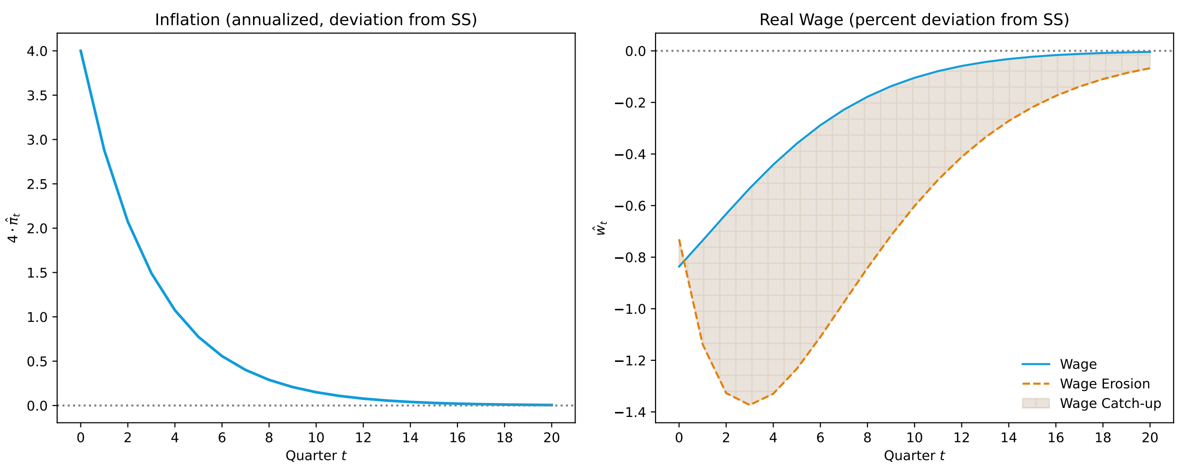
[22]The overall real wage response $\{\hat{w}_t\}_{t=0}^{+\infty}$ can be positive in response to positive inflationary shocks. The reason is that positive inflation shocks lead to more conflict and nominal wage increases, which helps workers' wages catch up not only with inflation shocks but also with steady state inflation.

Figure 10: Real Wage Dynamics and the Aggregate Costs of Inflation due to Conflict

Panel A: Transitory Inflation



Panel B: Persistent Inflation



Notes: each panel plots the response to a given inflation scenario. In Panel A, there is a transitory shock to inflation lasting one quarter. In Panel B, there is a persistent shock, that decays at quarterly rate $\rho = 0.72$. In the left figure of each panel, we plot the path of annualized inflation after subtracting the steady state inflation based on the historical mean. In the right panel, we plot the percent deviation of the real wage from the steady state in the solid blue line. We also plot wage erosion in the dashed orange line, which captures the impact of inflationary shocks on worker welfare. The gap between the two lines, shaded in grey, represents wage catch-up achieved through more frequent conflict.

Table 2: Decomposing the Welfare Impact of Inflation Shocks

	Overall Welfare Change	**Real Wage Response**	**Aggregate Costs of Inflation due to Conflict**
Transitory inflation	−0.95%	−0.22%	−0.73%
Persistent inflation	−3.31%	−1.16%	−2.15%
2021-2023 inflation	−10.91%	−4.21%	−6.70%
2021-2023 inflation with observed expectations	−10.91%	−4.45%	−6.46%

Notes: the first column shows the overall decline in welfare after a transitory inflation shock (row 1), persistent inflation shock (row 2), the 2021-3 inflation with perfect foresight (row 3), or the 2021-3 inflation with observed expectations (row 4), as a percent of annual consumption in the first year. The second column shows the response of present value of real wages in each scenario, again as a percent of annual consumption in the first year. The final column shows the response of the aggregate costs of inflation due to conflict $\hat{\varkappa}$, again as a percent of annual consumption in the first year.

displays the welfare costs of inflation to workers and decomposes them into real wage responses and the aggregate costs of inflation due to conflict, according to equation (14). In the table, welfare units are denoted in terms of percent of annual consumption in the first year. For all inflationary scenarios, we find that the costs of inflation to workers, considering conflict costs, are more than twice the costs that arise from falling real wages alone. For example, for the persistent inflation shock with $\rho = 0.72$, the overall welfare costs of inflation for workers are 3.31%. Aggregate costs of inflation due to conflict are 2.15%, constituting 65% of the total costs.[23] For the transitory shock, aggregate costs of inflation due to conflict constitute 75% of the total costs, an even higher proportion.

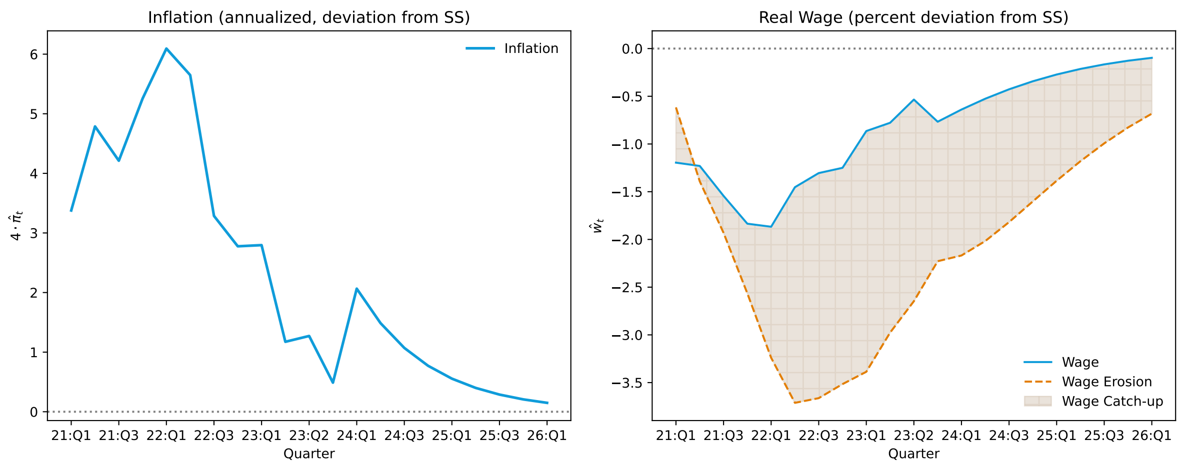
6.3 Conflict and the Costs of the Post Pandemic Inflation of 2021-2023

We now study the costs of the post-pandemic inflation of 2021–2023 and show that the aggregate costs of inflation due to conflict remain a significant component. Specifically, we study inflation shocks (the left figure in Panel A of Figure 11) based on the difference between the headline Personal Consumption Expenditures (PCE) Inflation between January 2021 and December 2023 (quarterly frequency, but annualized), and steady-state inflation 2%. Following December 2023, we assume that inflation converges back to steady state at a rate of $\rho = 0.72$. The key difference between this episode and the previous simpler inflation scenarios, is that inflation peaks several quarters after the initial quarter. Therefore, inflation expectations can meaningfully affect the timing of conflict decisions.

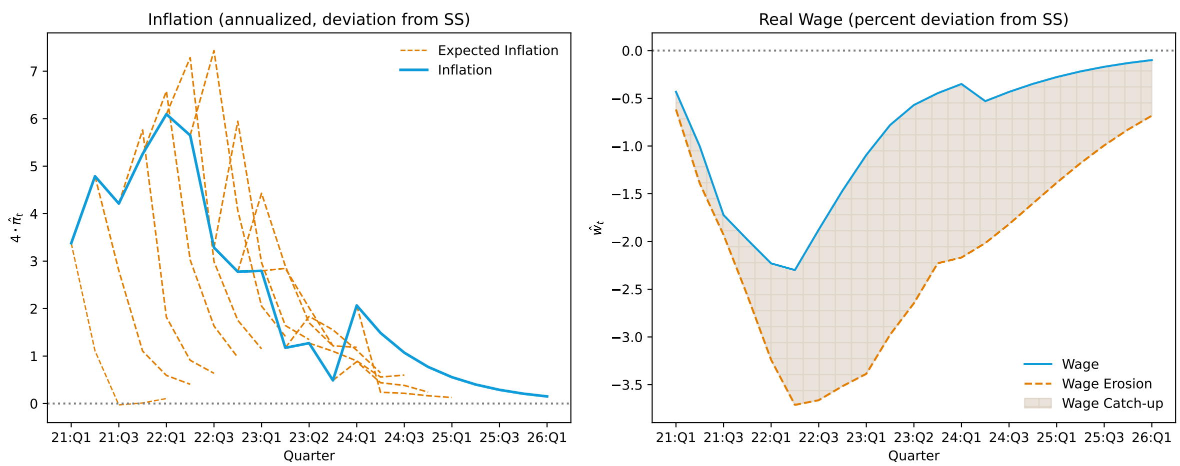
[23]These results are not comparable to quantitative exercises from menu-cost models of price setting, which typically study the welfare costs of steady-state changes in inflation and use permanent decreases in consumption as welfare units (e.g., Nakamura et al., 2018). We instead study the welfare costs of transitory inflation shocks and use decreases in a single year of consumption as welfare units.

Figure 11: The Aggregate Costs of Inflation due to Conflict during the 2021-2023 Inflation

Panel A: Perfect Foresight



Panel B: Observed Inflation Expectations Based on Survey Data



Notes: In the left figure of Panel A, we plot the path of annualized headline PCE inflation over 2021–2023, after subtracting the steady state inflation based on the historical mean inflation. In the left figure of Panel B, we contrast this realized path of inflation with expected inflation for each quarter, where expected inflation is from the Survey of Consumer Expectations and the Survey of Professional Forecasters, as discussed in footnote 25. In the right panel, we plot the percent deviation of the real wage from the steady state in the solid blue line. We also plot wage erosion in the dashed orange line, which captures the impact of inflationary shocks on worker welfare. The gap between the two lines, shaded in grey, represents wage catch-up achieved through more frequent conflict. In Panel A, workers have perfect foresight about the path of inflation shocks. In Panel B, workers' inflation expectations are based on observed expectations.

In Panel A of Figure 11, we consider the case of perfect foresight. That is, as in Section 4 and the previous subsection, an unexpected aggregate inflation shock is realized at $t = 0$ (the first quarter of 2021), and workers have perfect foresight about the path of inflation afterwards. In Panel B of the Figure 11, we consider the case where workers' inflation expectations are based on observed inflation expectations in the survey data, by combining the Survey of Professional Forecasters (SPF) and the New York Federal Reserve's Survey of Consumer Expectations (SCE).[24,25] These inflation expectations are summarized in the right figure in Panel B of Figure 11. In Appendix Figure B.8, we instead assume that workers have no foresight; they expect inflation to be at the steady state in the next period and are surprised by inflation in each period.[26]

The right figure of each corresponding panel in Figure 11 shows the dynamic response of real wages and welfare-relevant wage erosion. Overall, the gap between real wages and wage erosion, which measures the aggregate costs of inflation due to conflict, is large. This is further illustrated in the third and fourth rows in Table 2, which display the welfare costs of inflation to workers and decompose them into real wage responses and the aggregate costs of inflation due to conflict. No matter the assumptions on inflation expectations, the share of conflict remains substantially higher than 50% of the overall welfare losses from inflation (61% under perfect foresight and 59% under observed inflation expectations) for the 2021-23 inflation surge.

Zooming in further, different inflation expectations affect the timing of workers' conflict decisions (different solid blue lines in the right figure of each panel). As the previous section explains, workers postpone conflict when they expect higher future inflation. However, the envelope theorem implies that changes in conflict decisions due to varying inflation expectations do not impact welfare, as the extra conflict costs paid by workers to secure higher wages exactly cancel out the benefits of those higher wages. Consequently, the overall welfare costs of inflation for workers remain 10.91% in both cases, independent of workers' inflation expectations (both cases share the same dashed orange lines, i.e., the same path of welfare-relevant wage erosion in the right panel of each figure).

[24] As shown in Auclert, Rognlie, and Straub (2020), the Sequence-Space Jacobian approach can be easily extended to alternative models of expectations. Here, we follow Bardóczy and Guerreiro (2023) and specify workers' inflation expectations directly based on survey data.

[25] The SCE provides households' expectations for inflation over the coming 12 months, but does not provide quarterly or long term expectations over this period. The SPF does provide quarterly and long term expectations, but arguably professionals' expectations are less relevant than households'. We create an expectation series that rescales the value of the SPF so that mean expectations over the first year are the same as households' expectations from the SCE. We also use a spline to interpolate medium term expectations, which are not reported in the SPF.

[26] In the case without perfect foresight, to maintain comparability with the perfect-foresight case, we base our welfare assessments on the ex-post realized outcomes; i.e., we use the realized path of inflation to evaluate welfare. An alternative would be to consider "ex-ante welfare" based on workers' expectations.

6.3.1 Quantitative Robustness

We now explore the robustness of our findings to the calibration of several key parameters in our model. Our main result—that conflict significantly raises the overall costs of inflation—turns out to be robust across an array of alternative calibrations.

Indexation parameter γ. The degree of inflation indexation of default wages is a particularly important input to our calculations. If default wages were fully indexed, then inflation would never affect real wages or conflict decisions. In the baseline analysis, we calibrate a default wage almost without indexation ($\gamma = 0.05$), based on the estimates of Section 5.2. If we instead allow the default wage to be more highly indexed, then the overall costs of inflation to workers fall.

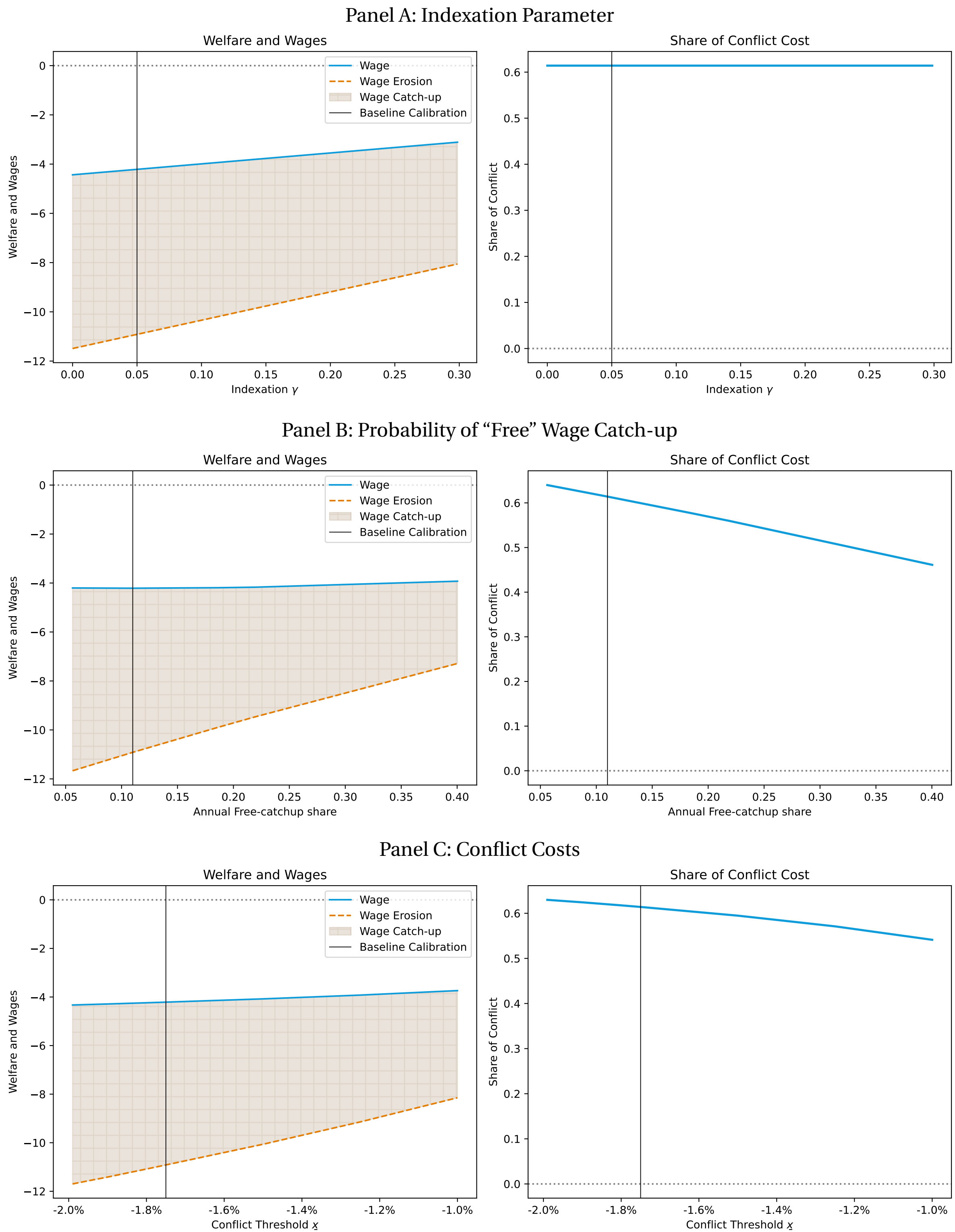
However, while the degree of indexation affects the overall costs of inflation, it does not affect the *relative* importance of conflict. Intuitively, the impact of inflation shocks on worker welfare is proportional to $1-\gamma$, i.e., all that matters for workers' decisions is the component of inflation that is not automatically accounted for through wage indexation, $(1-\gamma)\hat{\pi}_t$. The degree of indexation simply scales up both the overall costs of inflation (see, e.g., equation 16) and aggregate costs of inflation due to conflict, but does not affect the relative importance of conflict. We formalize this intuition in a proposition.

Proposition 3. *The ratio of aggregate costs of inflation due to conflict, to the overall costs of inflation, $\hat{\mathscr{K}}/\hat{\mathscr{W}}$, is invariant to the degree of indexation of default wage $\gamma \in [0,1)$.*

Panel A of Figure 12 quantitatively investigates how the indexation parameter affects the impact of the 2021-2023 inflationary episode. In the left figure of Panel A, we plot the decline in the present value of real wages (blue solid line), and the present value of welfare-relevant wage erosion (dashed orange line), as the degree of indexation γ varies between 0 and 0.3. The shaded area between the two lines measures the aggregate conflict costs of inflation. Even with moderately high indexation of 0.3, aggregate conflict costs of inflation remain substantial. The right figure verifies that the ratio of aggregate conflict costs of inflation to its overall costs remains constant, around 0.6, even as the degree of indexation varies.

Probability of free wage catch-up λ. A second important parameter is λ, the probability that a worker receives a conflict-induced wage catch-up without paying conflict costs. We calibrated $\lambda \approx 0.029$ using the share of workers who reported zero conflict costs in our survey, implying a 11% share of annual free catch-up. This strategy could understate the true value of λ because workers who do not have zero conflict costs might still receive free wage catch-up if their firm decides to increase wages beyond the default amount for idiosyncratic reasons. However, Panel B in Figure 12 shows that our conclusions are similar with higher values of λ than the baseline calibration. As we increase λ and hence the share of annual free catch-up, $1-(1-\lambda)^4$, wage catch-up from more frequent costly

Figure 12: Aggregate Costs of Conflict due to Inflation—as a Function of Key Parameters



Notes: the left panel plots the decline in the present value of real wages (blue solid line), and the present value of welfare-relevant wage erosion (dashed orange line). The right panel plots the ratio of these two terms as the parameter varies. Panel A varies the indexation parameter between 0 and 0.3. Panel B varies probability of free wage catch-up λ such that the annual share of free wage catch-up, $1-(1-\lambda)^4$,is between 0 and 0.40. Panel C varies the conflict cost κ such that the conflict threshold $\underline{x}^{ss}$ varies between -2% and -1%.

conflict indeed plays a smaller role in determining the decline in the present value of real wages. However, the ratio of aggregate costs of inflation due to conflict to its overall costs remains above 40%, even if $\lambda = 0.12$, implying a 40% share of annual free catch-up (i.e., 4 times more than our baseline calibration).[27]

Conflict costs κ. Finally, we assess the quantitative robustness of our results to variations in the conflict cost κ, which map one-to-one with the conflict threshold $\underline{x}^{ss}$ as explain in Section 5. In our baseline calibration, we calibrate $\kappa = 8.14\%$ so that the conflict threshold is $\underline{x}^{ss} = -1.75\%$, following our survey evidence. Panel C in Figure 12 varies the conflicts cost κ such that the conflict threshold $\underline{x}^{ss}$ varies between -2% and -1%. We find that our quantitative results are robust to different parametrizations of conflict costs. Even with $\underline{x}^{ss} = -1\%$, implying a significantly lower conflict cost $\kappa = 3.82\%$, the ratio of aggregate costs of inflation due to conflict to overall costs of inflation remains above 50%.

6.4 General Equilibrium Determination of Employment and Wages

Our baseline model quantifies the aggregate costs of inflation due to conflict in a setting where all workers are employed, and the conflict-induced real wage is exogenous. However, inflation shocks can also increase overall employment in general equilibrium by "greasing the wheels of the labor market" (Blanco and Drenik, 2023). This channel benefits aggregate worker welfare through both higher employment rates themselves and their upward pressure on wages in general equilibrium.

In this section, we extend our model to consider the importance of conflict costs when employment and wages are determined in general equilibrium. We find that, even in this extended setting, aggregate costs of inflation due to conflict remain significant, both in absolute value and as a share of the overall costs of inflation. We outline the extended model here and refer the reader to the Appendix C.2 for details.

Workers. Employed workers face a problem nearly identical to the benchmark model, except that they may become unemployed at the beginning of the period with an exogenous probability s. If they stay employed, they receive a default wage offer from their employer that is not fully indexed to inflation. Given the conflict cost (3), they optimally choose whether to engage in costly conflict with employers. Their real wages are still given by equation (4), where the conflict-induced wage is now given by

$$\log w^*_{i,t} = \log w^*_t + \log \vartheta_{i,t} \quad \text{and} \quad \log \vartheta_{i,t} = \log \vartheta_{i,t-1} + g + z_{i,t}, \tag{20}$$

where $\vartheta_{i,t}$ captures worker productivity subject to idiosyncratic productivity shocks $z_{i,t}$ and satisfies $\int_0^1 z_{i,t} di = 0$ and $\int_0^1 \log \vartheta_{i,-1} di = 0$. The aggregate component of the conflict-induced wage w^*_t is

[27]For each value of λ, we re-calibrate κ so that $\underline{x}^{ss} = -1.75\%$ and fix all other parameters as in Table 1.

further specified below. In the steady state, it grows at the trend worker productivity growth rate g, as in the main analysis.

Unemployed workers randomly match with vacancies created by firms. They find a job with probability $f_t = \theta_t q(\theta_t)$, where θ_t captures labor market tightness, and $q(\theta_t) = \Psi\theta_t^{-\eta}$ captures the probability that a vacancy will be filled.[28] If an unemployed worker finds a job, their initial wage is given by $w^*_{i,t}$ in (5), which keeps up with inflation. If they stay unemployed, they earn $\phi w^*_{i,t}$, where $\phi \in (0,1)$ represents the flow value of unemployment.

Firms. Each firm employs at most one worker. If a firm is currently matched with a worker with productivity $\vartheta_{i,t}$, it produces $\vartheta_{i,t}$ units of final goods. Firms are owned by risk-neutral capitalists with a discount rate β. There is competitive entry to create vacancies (with costs $c_v \int \vartheta_{i,t} di$), which will be filled with probability $q(\theta_t)$. Firms are uncertain about the productivity of the worker they will match with when they post the vacancy. Free entry implies the value of a vacancy is zero.

Determination of wages and employment. We use a simple wage rule similar to Blanchard and Galí (2010), in order to capture how a tighter labor market leads to higher worker wages in general equilibrium. Specifically, we assume that the aggregate component of the conflict-induced wage is given by:

$$\hat{w}^*_t = \psi_E \hat{E}_t, \tag{21}$$

where E_t captures the fraction of workers employed at period t, $\hat{w}^*_t = \log(w^*_t) - \log(w^{*,ss})$, and $\hat{E}_t = E_t - E^{ss}$ capture deviations from their steady state value. Gertler et al. (2020) and Hazell and Taska (2020) show that this process approximates well the behavior of the real wage for newly hired workers, who in our model receive the conflict-induced wage. Christiano, Eichenbaum, and Trabandt (2016) also find that simple wage rules of this sort approximate well the dynamics of more complex bargaining models.

The employment rate E_t follows from the law of motion $E_t = \left[1 - s\left(1 - f_t\right)\right] E_{t-1} + f_t\left(1 - E_{t-1}\right)$.[29] The job finding rate is given by f_t, where the labor market tightness θ_t is determined in general equilibrium, based on the ratio between vacancies implied by free entry and the number of job seekers. The model is closed by goods market clearing.

The impact of inflation shocks on worker welfare. The economy starts from a steady state. As in the main analysis, an unexpected aggregate shock to the path of inflation $\{\hat{\pi}_t \equiv \pi_t - \pi^{ss}\}_{t=0}^{+\infty}$ is realized at the beginning of period 0. We can interpret these inflation shocks as monetary policy shocks when the monetary authority uses the path of nominal interest rates to impact a path for inflation $\{\pi_t\}_{t=0}^{\infty}$.

[28] Market tightness is defined as the number of vacancies divided by the number of job seekers at the beginning of the period, i.e., $\theta_t \equiv v_t / (1 - (1 - s) E_{t-1})$ where v_t denotes the number of vacancies.

[29] The law of motion reflects the timing of our model: aggregate shocks, idiosyncratic productivity shocks, and exogenous separation of existing employment (with probability s) happen at the beginning of the period. Then, firms create vacancies and unemployed workers, both old and new, look for jobs. Finally, matches happen and production takes place.

Our main result, Theorem 1, can be extended to this setting. As elaborated in Appendix C.2, our main insight that wage catch-up achieved through more frequent conflict does not raise worker welfare still holds. Specifically, the impact of inflation shocks on aggregate worker welfare is now

$$\hat{\mathscr{W}} = \sum_{t=0}^{\infty} \beta^t \left[E^{ss} \cdot \hat{w}_t^{\text{erosion}} + \left(1 - E^{ss}\right) \cdot \hat{w}_t^* - \log\left(\phi\right) \cdot \hat{E}_t \right]. \tag{22}$$

The first term captures the impact of inflation shocks on employed workers' welfare, which is still determined by wage erosion—how inflation would affect real wages if workers' conflict decisions are fixed at the steady state.[30] The second term captures the impact of inflation shocks on unemployed workers' welfare through changes in their income while unemployed (recall that an unemployed worker i earns $\phi w_{i,t}^*$). The third term represents the impact of inflation through changing employment rates: because conflict costs prevent nominal wages from immediately catching up with inflation, higher inflation lowers real wages and encourages hiring by firms. Higher employment then raises welfare (the sign of $\log\left(\phi\right)$ is negative). In this sense, inflation can "grease the wheels" of the labor market.

The aggregate costs of inflation due to conflict are still given by the gap between real wages and wage erosion, $\hat{\varkappa} = \sum_{t=0}^{\infty} \beta^t E^{ss} \left(\hat{w}_t - \hat{w}_t^{\text{erosion}}\right)$, as in the main analysis. We now show quantitatively that even when accounting for the general equilibrium determination of employment and wages, the aggregate costs of inflation due to conflict remain significant.

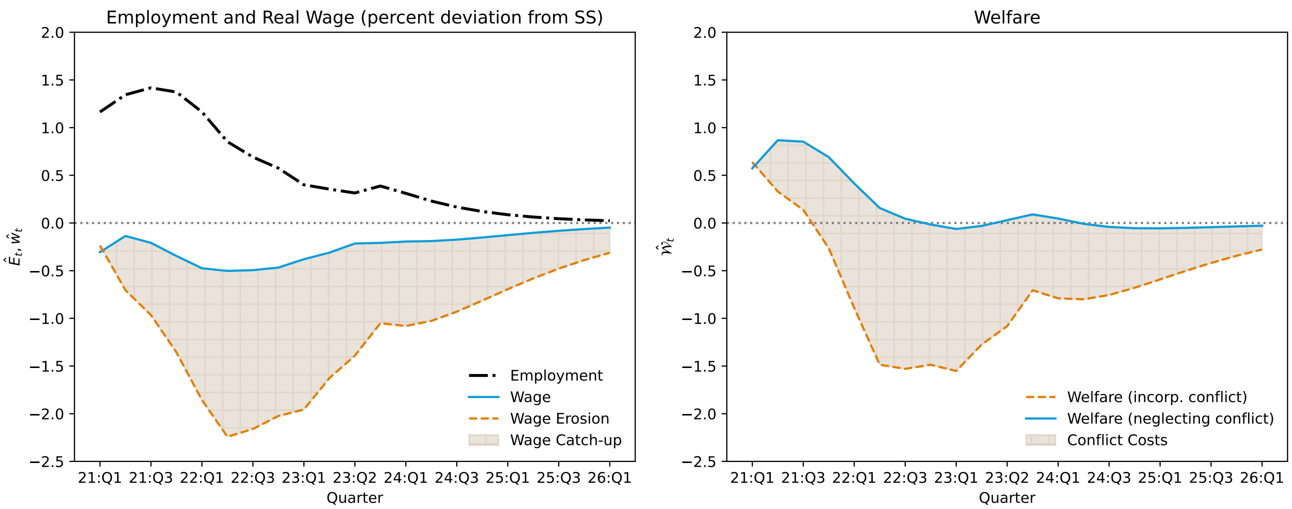
Calibration. We again calibrate the model at a quarterly frequency. For the worker problem, we use the same parameters as in Table 1, except that we re-calibrate the conflict cost $\kappa = 6.76$ so that $\underline{x}^{\text{ss}} = -1.75\%$, as indicted the survey. This adjustment incorporates the fact that workers may be exogenously separated at a quarterly rate $s = 0.1$, a standard value (e.g. Shimer, 2005). We set the flow value of unemployment to $\phi = 0.5$, similar to Chodorow-Reich and Karabarbounis (2016).

For key parameters of the matching function we set the elasticity of the vacancy filling probability with respect to tightness to $\eta = 0.7$, as in Shimer (2005), and calibrate $\Psi = 0.6789$ so that the steady-state unemployment rate is 5.5%. We set $c_v = 0.0695$ so that the present value of the costs of vacancy posting, $c_v / q(\theta^{ss})$, is 10% of the aggregate conflict-indexed wage $w^{*,ss}$ at steady-state, in line with Silva and Toledo (2009). For the wage rule in (21), we set $\psi_E = 1$ so that all else equal a 1% increase in unemployment lowers real new hire wages by 1%, as Gertler et al. (2020) and Hazell and Taska (2020) estimate.

Results. Figure 13 displays our quantitative results for the post-pandemic inflation episode. Similar to Panel A of Figure 11, we study the impact of inflation shocks based on the headline Personal

[30] The definition of $\hat{w}_t^{\text{erosion}}$ is now given by (17), including the impact of inflation shocks on conflict-induced real wages $\hat{w}_t^*$ through changes in employment in (21).

Figure 13: The Aggregate Costs of Inflation due to Conflict—General Equilibrium and Employment



Notes: all panels display results from the general equilibrium extension of the baseline model with an employment margin. The top left panel is the path of the inflation shock that we feed into the model, measured as quarterly PCE inflation in deviations from a steady value of 2%. Agents have perfect foresight over the inflation path. We assume that inflation changes with its historical persistence after December 2023. The top right panel displays the impulse response of employment. The bottom left panel displays the impulse response of the real wage (solid blue) and wage erosion (dashed orange) with the area between representing wage catch-up. The bottom right panel decomposes the overall change in workers' welfare into components due to wage growth, conflict costs and employment.

Consumption Expenditures (PCE) inflation between January 2021 and December 2023 (shown in the left figure in Panel A of Figure 11) and consider the case of perfect foresight. The left panel displays employment $\{\hat{E}_t\}_{t=0}^{\infty}$ (black dash-dotted line), the overall real wage response $\{\hat{w}_t\}_{t=0}^{+\infty}$ (solid blue line), and the resulting wage erosion $\{\hat{w}_t^{\text{erosion}}\}_{t=0}^{+\infty}$ (dotted orange line).

We observe that inflation "greases the wheels" of the labor market: employment increases with inflation shocks. Additionally, as in the baseline model, the gap between real wages and wage erosion is large, meaning that a substantial fraction of wage growth was achieved through costly conflict. The impact of inflation shocks on worker welfare can be seen in the right panel. The solid blue line displays the impact of inflation on worker welfare (neglecting conflict costs) via changes in real wages and employment in each quarter t. That is, $E^{ss} \cdot \hat{w}_t + (1 - E^{ss})\, \hat{w}_t^* - \log(\phi)\, \hat{E}_t$ (replace $\hat{w}_t^{\text{erosion}}$ with $\hat{w}_t$ in (22)). In fact, in this calibration, the present value of this impact is positive, as the positive GE impact of inflation shocks on employment and wages outweighs the direct impact via falling real wages. The dotted orange line displays the impact of inflation on worker welfare (incorporating conflict costs) at each quarter t. That is, $E^{ss} \cdot \hat{w}_t^{\text{erosion}} + (1 - E^{ss})\, \hat{w}_t^* - \log(\phi)\, \hat{E}_t$ in (22). Its present value, the aggregate costs of inflation incorporating conflict, remains significantly negative for workers. The shaded region between the two lines, which measures the aggregate costs of inflation due to conflict, remains large. Because most workers are not new hires, they still need to pay conflict costs to keep up with inflation and benefit from the higher conflict-induced wages from the tighter labor market.

7 Conclusion

Why do workers dislike inflation so much? We show that "conflict costs" play a significant role: workers must incur these costs to have their nominal wages keep up with inflation, as employers do not automatically provide wage increases when inflation is high. We capture the conflict cost in a menu-cost style model applied to wage setting, and show both analytically and quantitatively, that conflict costs meaningfully change how inflation shocks impact workers' welfare. Disciplined by a survey of U.S. workers, we find that incorporating conflict costs more than doubles the costs of inflation to workers.

Beyond the specific application to the costs of inflation, our conflict cost model offers a tractable approach to introducing state-dependent wage setting, providing many avenues for future research. For example, firms may also face costs in adjusting wages away from the default wage offer. These firm-side conflict costs are particularly relevant for downward wage rigidity, as firms would prefer to adjust wages downward when possible. In subsequent work, we aim to quantify these firm-side conflict costs, link them to empirical evidence on downward wage rigidity, and study their macroeconomic implications.

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Appendix (For Online Publication)

Joao Guerreiro Jonathon Hazell Chen Lian Christina Patterson

A Proofs

Proof of Proposition 1

At $t = 0$, wage gaps implied by the employer's default wage offer $\left\{x_{i,0}^{d}\right\}_{i\in[0,1]}$ are distributed with cumulative distribution function

$$G_0^d\left(x_{i,0}^d;\boldsymbol{\pi}_\infty\right) = G^{d,ss}\left(x_{i,0}^d + \left(1-\gamma\right)\hat{\pi}_0\right), \tag{A.1}$$

where $G^{d,ss}$ is the steady-state stationary cumulative distribution function of implied by the employer's default wage offer, and where we define $\boldsymbol{\pi}_\infty = \{\pi_t\}_{t=0}^{+\infty}$. As further explained in the proof of Theorem 1, the worker's optimal conflict decision at $t = 0$ can be characterized as follows. When conflict is costly ($\kappa_{i,0} = \kappa$), the worker chooses to engage in conflict if $x_{i,0}^d \leq \underline{x}_0\left(\boldsymbol{\pi}_{\mathbf{1}:\infty}\right)$ and not if $x_{i,0}^d > \underline{x}_0\left(\boldsymbol{\pi}_{\mathbf{1}:\infty}\right)$, where $\underline{x}_0\left(\boldsymbol{\pi}_{\mathbf{1}:\infty}\right)$ is a threshold as a function of $\boldsymbol{\pi}_{\mathbf{1}:\infty} = \{\pi_\tau\}_{\tau=1}^{\infty}$. When conflict is costless ($\kappa_{i,0} = 0$), the worker chooses to engage in conflict if $x_{i,0}^d \leq 0$ and not if $x_{i,0}^d > 0$. Then the fraction of workers that conflict at 0 is

$$\begin{aligned}\mathrm{frac}_0 &= (1-\lambda)\, G_0^d\left(\underline{x}_0\left(\boldsymbol{\pi}_{\mathbf{1}:\infty}\right);\boldsymbol{\pi}_\infty\right) + \lambda G_t^d\left(0;\boldsymbol{\pi}_\infty\right)\\ &= (1-\lambda)\, G^{d,ss}\left(\underline{x}_0\left(\boldsymbol{\pi}_{\mathbf{1}:\infty}\right) + \left(1-\gamma\right)\hat{\pi}_0\right) + \lambda G^{d,ss}\left(\left(1-\gamma\right)\hat{\pi}_0\right),\end{aligned}$$

where the first term in the first line captures workers whose conflict is costly and whose conflict choice can then be characterized by the threshold $\underline{x}_0\left(\boldsymbol{\pi}_{\mathbf{1}:\infty}\right)$, and the second term in the first line captures workers whose conflict is costless and whose conflict choice can then be characterized by the threshold of 0. The second line substitutes in equation (A.1). Differentiating implies

$$\left.\frac{\partial \mathrm{frac}_0}{\partial \pi_0}\right|_{\{\pi_t=\pi^{ss}\}_{t=0}^{\infty}} = \left(1-\gamma\right)\left[(1-\lambda)\, g^{d,ss}\left(\underline{x}^{ss}\right) + \lambda g^{d,ss}(0)\right] > 0,$$

where $g^{d,ss}(\cdot)$ is the steady-state stationary probability density function of implied by the employer's default wage offer and we use the fact that $g^{d,ss}\left(\underline{x}^{ss}\right) > 0$.

Proof of Theorem 1 and Proposition 2.

Worker's problem. We first define $\chi_t\left(\boldsymbol{\pi}_t, \mathscr{I}_{\boldsymbol{i},\boldsymbol{t}}\left(h_{i,t};\boldsymbol{\pi}_\infty\right), h_{i,t}\right)$, which captures worker i's wage gap at time t for a given path of inflation $\boldsymbol{\pi}_t = \{\pi_\tau\}_{\tau=0}^t$, conflict choices $\mathscr{I}_{\boldsymbol{i},\boldsymbol{t}}\left(h_{i,t};\boldsymbol{\pi}_\infty\right) = \left\{\mathscr{I}_{i,\tau}\left(h_{i,\tau};\boldsymbol{\pi}_\infty\right);\boldsymbol{\pi}_\infty\right\}_{\tau=0}^t$, and history of idiosyncratic conditions $h_{i,t} \equiv \left(\left\{z_{i,\tau},\kappa_{i,\tau}\right\}_{\tau=0}^t, x_{i,-1}\right)$.[31] This object is connected to worker i's real wage $\omega_t\left(\boldsymbol{\pi}_t, \mathscr{I}_{\boldsymbol{i},\boldsymbol{t}}\left(h_{i,t};\boldsymbol{\pi}_\infty\right), h_{i,t}\right)$ as defined in the main text by

$$\chi_t\left(\boldsymbol{\pi}_t, \mathscr{I}_{\boldsymbol{i},\boldsymbol{t}}\left(h_{i,t};\boldsymbol{\pi}_\infty\right), h_{i,t}\right) = \log \omega_t\left(\boldsymbol{\pi}_t, \mathscr{I}_{\boldsymbol{i},\boldsymbol{t}}\left(h_{i,t};\boldsymbol{\pi}_\infty\right), h_{i,t}\right) - \log w_{i,t}^*,$$

where $w_{i,t}^*$ is invariant to conflict decisions and the path of inflation. One can hence write wage erosion and wage catch up defined in (10) and (11) as

$$\hat{w}_t^{\text{erosion}} \equiv \int_0^1 \chi_t\left(\boldsymbol{\pi}_t, \mathscr{I}_{\boldsymbol{i},\boldsymbol{t}}\left(h_{i,t};\boldsymbol{\pi}^{\boldsymbol{ss}}\right), h_{i,t}\right) di - \int_0^1 \chi_t\left(\boldsymbol{\pi}^{\boldsymbol{ss}}, \mathscr{I}_{\boldsymbol{i},\boldsymbol{t}}\left(h_{i,t};\boldsymbol{\pi}^{\boldsymbol{ss}}\right), h_{i,t}\right) di, \tag{A.2}$$

and

$$\hat{w}_t^{\text{catch up}} \equiv \int_0^1 \chi_t\left(\boldsymbol{\pi}_t, \mathscr{I}_{\boldsymbol{i},\boldsymbol{t}}\left(h_{i,t};\boldsymbol{\pi}_\infty\right), h_{i,t}\right) di - \int_0^1 \chi_t\left(\boldsymbol{\pi}_t, \mathscr{I}_{\boldsymbol{i},\boldsymbol{t}}\left(h_{i,t};\boldsymbol{\pi}^{\boldsymbol{ss}}\right), h_{i,t}\right) di, \tag{A.3}$$

where $\boldsymbol{\pi}^{\boldsymbol{ss}} = \{\pi^{ss}\}_{\tau=0}^\infty$, and $\mathscr{I}_{\boldsymbol{i},\boldsymbol{t}}\left(h_{i,t};\boldsymbol{\pi}^{\boldsymbol{ss}}\right)$ captures what the conflict decisions would have been, given steady-state inflation, as well as the same history of idiosyncratic shocks (i.e., $\mathscr{I}_{i,t}^{ss}$ in the main text). From (7) and (8), the impact of inflation on aggregate worker welfare can be written as

$$\hat{\mathscr{W}} = \int_0^1 \chi_t\left(\boldsymbol{\pi}_t, \mathscr{I}_{\boldsymbol{i},\boldsymbol{t}}\left(h_{i,t};\boldsymbol{\pi}_\infty\right), h_{i,t}\right) di - \int_0^1 \chi_t\left(\boldsymbol{\pi}^{\boldsymbol{ss}}, \mathscr{I}_{\boldsymbol{i},\boldsymbol{t}}\left(h_{i,t};\boldsymbol{\pi}^{\boldsymbol{ss}}\right), h_{i,t}\right) di - \hat{\varkappa}, \tag{A.4}$$

where $\hat{\varkappa}$ defined in (13) captures the aggregate costs of inflation due to conflict.

One useful property is that, for all $\left(\boldsymbol{\pi}_{\boldsymbol{t}}, \mathscr{I}_{\boldsymbol{i},\boldsymbol{t}}\left(h_{i,t};\boldsymbol{\pi}_\infty\right), h_{i,t}\right)$,

$$\frac{\partial \chi_t\left(\boldsymbol{\pi}_t, \mathscr{I}_{\boldsymbol{i},\boldsymbol{t}}\left(h_{i,t};\boldsymbol{\pi}_\infty\right), h_{i,t}\right)}{\partial \pi_s} = \begin{cases} 0 & \text{if } t < s \\ -\left(1-\gamma\right)\prod_{\tau=s}^t\left(1-\mathscr{I}_{i,\tau}\left(h_{i,\tau};\boldsymbol{\pi}_\infty\right)\right) & \text{if } t \geq s \end{cases}. \tag{A.5}$$

That is, if $t \geq s$, a one-unit increase in inflation at s lowers wage gap at t by $1-\gamma$ if the worker does not engage in conflict during $\{s, \cdots, t\}$.

The worker i's problem as a function of the inflation path $\boldsymbol{\pi}_\infty$ and initial wage gap $x_{i,-1}$ can be written as:

[31] With slight abuse of notation, the history of the idiosyncratic condition here is slightly different (but a function of) $h_{i,t} \equiv \left(\left\{z_{i,\tau},\kappa_{i,\tau}\right\}_{\tau=0}^t, w_{i,-1}, w_{i,-1}^*\right)$ as defined in the main text. This is motivated by the fact that the worker's problem (A.6) only depends on the initial wage gap $x_{i,-1} = \log w_{i,-1} - \log w_{i,-1}^*$.

$$\mathscr{U}\left(\boldsymbol{\pi}_{\infty}, x_{i,-1}\right) = \max_{\{\mathscr{I}_{i,t}(h_{i,t};\boldsymbol{\pi}_{\infty})\}_{t=0}^{\infty}} \mathbb{E}\left[\sum_{t=0}^{\infty} \beta^t \left[\chi_t\left(\boldsymbol{\pi}_{\boldsymbol{t}}, \boldsymbol{\mathscr{I}_{i,t}}\left(h_{i,t};\boldsymbol{\pi}_{\infty}\right), h_{i,t}\right) - \kappa_{i,t}\mathscr{I}_{i,t}\left(h_{i,t};\boldsymbol{\pi}_{\infty}\right)\right]\right] \quad \text{s.t. (6)}, \tag{A.6}$$

where $\mathbb{E}$ averages over the realization of idiosyncratic shocks $\{z_{i,t}, \kappa_{i,t}\}_{t=0}^{\infty}$. Let $\left\{\mathscr{I}^*_{i,t}\left(h_{i,t};\boldsymbol{\pi}_{\infty}\right)\right\}_{t=0}^{\infty}$ denote the optimally chosen conflict decision for each individual history as a function of the inflation path π_{∞} that solves (A.6) and $\mathscr{I}^*_{\boldsymbol{i,t}}\left(h_{i,t};\boldsymbol{\pi}_{\infty}\right) = \left\{\mathscr{I}^*_{i,\tau}\left(h_{i,\tau};\boldsymbol{\pi}_{\infty}\right)\right\}_{\tau=0}^{t}$ denote the corresponding individual history up to t.

Our goal is to apply the envelope theorem (Theorem 2) of Milgrom and Segal (2002), which allows the application of the theorem to settings with infinite discrete choices $\{\mathscr{I}_{i,t}\left(h_{i,t};\boldsymbol{\pi}_{\infty}\right)\}_{t=0}^{\infty}$. The sufficient condition to apply the Envelope Theorem in Milgrom and Segal (2002) is, for each s,

$$\mathbb{E}\left[\sum_{t=0}^{\infty} \beta^t \frac{\partial \chi_t\left(\boldsymbol{\pi}_{\boldsymbol{t}}, \boldsymbol{\mathscr{I}_{i,t}}\left(h_{i,t};\boldsymbol{\pi}_{\infty}\right), h_{i,t}\right)}{\partial \pi_s}\right]$$

exists and is uniformly upper bounded by a Lebesgue integrable function. This is indeed true given (A.5), which means that

$$\left|\mathbb{E}\left[\sum_{t=0}^{\infty} \beta^t \frac{\partial \chi_t\left(\boldsymbol{\pi}_{\boldsymbol{t}}, \boldsymbol{\mathscr{I}_{i,t}}\left(h_{i,t};\boldsymbol{\pi}_{\infty}\right), h_{i,t}\right)}{\partial \pi_s}\right]\right| \le \frac{1-\gamma}{1-\beta},$$

because each conflict decision $\mathscr{I}_{i,\tau}$ takes the value of either zero or one. Applying the Envelope Theorem and using (A.5), we have, for all $s \ge 0$,

$$\begin{aligned}
\frac{\partial \mathscr{U}\left(\boldsymbol{\pi}_{\infty}, x_{i,-1}\right)}{\partial \pi_s} &= \left(1-\gamma\right)\sum_{t=s}^{\infty} \beta^t \mathbb{E}\left[\sum_{t=0}^{\infty} \beta^t \frac{\partial \chi_t\left(\boldsymbol{\pi}_{\boldsymbol{t}}, \mathscr{I}^*_{\boldsymbol{i,t}}\left(h_{i,t};\boldsymbol{\pi}_{\infty}\right), h_{i,t}\right)}{\partial \pi_s}\right] \quad \text{a.e.} \\
&= -\left(1-\gamma\right)\sum_{t=s}^{\infty} \beta^t \mathbb{E}\left[\prod_{\tau=s}^{t}\left(1-\mathscr{I}^*_{i,\tau}\left(h_{i,\tau};\boldsymbol{\pi}_{\infty}\right)\right)\right] \quad \text{a.e.},
\end{aligned} \tag{A.7}$$

where a.e. means almost everywhere in π_s.

We now further characterize the worker's optimal conflict decision. First, consider the $t = 0$ conflict decision. After the realization of idiosyncratic shock $\left(z_{i,0}, \kappa_{i,0}\right)$, the worker's optimal conflict decision at $t = 0$ solves

$$\mathscr{V}\left(x^d_{i,0}, \kappa_{i,0}, \boldsymbol{\pi}_{\mathbf{1:\infty}}\right) \equiv \max_{\mathscr{I}_{i,0}} \left(1-\mathscr{I}_{i,0}\right)\left(x^d_{i,0} + \beta\mathscr{U}\left(\boldsymbol{\pi}_{\mathbf{1:\infty}}, x^d_{i,0}\right)\right) + \mathscr{I}_{i,0}\left(0 + \beta\mathscr{U}\left(\boldsymbol{\pi}_{\mathbf{1:\infty}}, 0\right) - \kappa_{i,0}\right), \tag{A.8}$$

where $\boldsymbol{\pi}_{\mathbf{1:\infty}} = \{\pi_\tau\}_{\tau=1}^{\infty}$ and $x^d_{i,0} = x_{i,-1} - \left(\mu + z_{i,0}\right) - \left(1-\gamma\right)\hat{\pi}_0$, the wage gap implied by the employer's default wage offer, summarizes the impact of $x_{i,-1}$, $z_{i,0}$, and $\hat{\pi}_0$ on the worker's problem. Moreover, we can apply the Envelope Theorem similarly to show that $\frac{\partial \mathcal{V}\left(x_{i,0}^{d},\kappa_{i,0},\boldsymbol{\pi}_{1:\infty}\right)}{\partial x_{i,0}^{d}}$ exists almost everywhere and its absolute value is bounded by $\frac{1-\gamma}{1-\beta}$. That is, similar to (A.7),

$$\frac{\partial \mathcal{V}\left(x_{i,0}^{d},\kappa_{i,0},\boldsymbol{\pi}_{1:\infty}\right)}{\partial x_{i,0}^{d}}=\sum_{t=0}^{\infty}\beta^{t}\mathbb{E}_{0}\left[\prod_{\tau=0}^{t}\left(1-\mathscr{I}_{i,\tau}^{*}\left(h_{i,\tau};\boldsymbol{\pi}_{\infty}\right)\right)\right] \quad \text{a.e.,}$$

where a.e. means almost everywhere in $x_{i,0}^{d}$ and $\mathbb{E}_0$ averages over the realization of idiosyncratic shocks $\{z_{i,t},\kappa_{i,t}\}_{t=1}^{\infty}$ starting from $t=1$. Note that

$$\begin{aligned}\mathcal{U}\left(\boldsymbol{\pi}_{\infty},x_{i,-1}\right)=&(1-\lambda)\int_{\underline{z}}^{\infty}\mathcal{V}\left(x_{i,-1}-\mu-(1-\gamma)\hat{\pi}_0-z_{i,0},\kappa,\boldsymbol{\pi}_{1:\infty}\right)f\left(z_{i,0}\right)dz_{i,0}\\&+\lambda\int_{\underline{z}}^{\infty}\mathcal{V}\left(x_{i,-1}-\mu-(1-\gamma)\hat{\pi}_0-z_{i,0},0,\boldsymbol{\pi}_{1:\infty}\right)f\left(z_{i,0}\right)dz_{i,0}.\end{aligned}$$

We know that

$$\begin{aligned}\frac{\partial\mathcal{U}\left(\boldsymbol{\pi}_{\infty},x_{i,-1}\right)}{\partial x_{i,-1}}=&(1-\lambda)\int_{\underline{z}}^{\infty}\frac{\partial\mathcal{V}\left(x_{i,-1}-\mu-(1-\gamma)\hat{\pi}_0-z_{i,0},\kappa,\boldsymbol{\pi}_{1:\infty}\right)}{\partial x_{i,0}^{d}}f\left(z_{i,0}\right)dz_{i,0}\\&+\lambda\int_{\underline{z}}^{\infty}\frac{\partial\mathcal{V}\left(x_{i,-1}-\mu-(1-\gamma)\hat{\pi}_0-z_{i,0},0,\boldsymbol{\pi}_{1:\infty}\right)}{\partial x_{i,0}^{d}}f\left(z_{i,0}\right)dz_{i,0}.\\=&\sum_{t=0}^{\infty}\beta^{t}\mathbb{E}\left[\prod_{\tau=0}^{t}\left(1-\mathscr{I}_{i,\tau}^{*}\left(h_{i,\tau};\boldsymbol{\pi}_{\infty}\right)\right)\right]\geq 0.\end{aligned}\tag{A.9}$$

In other words, $\mathcal{U}\left(\boldsymbol{\pi}_{\infty},x_{i,-1}\right)$ is weakly increasing and differentiable in $x_{i,-1}$.

First consider the case that conflict is costly ($\kappa_{i,0}=\kappa$). Because $\mathcal{U}\left(\boldsymbol{\pi}_{\infty},x_{i,0}^{d}\right)$ is weakly increasing in $x_{i,0}^{d}$, the value of not conflicting, $x_{i,0}^{d}+\beta\mathcal{U}\left(\boldsymbol{\pi}_{\infty},x_{i,0}^{d}\right)$, strictly increases in $x_{i,0}^{d}$. The value of conflicting $\beta\mathcal{U}\left(\boldsymbol{\pi}_{\infty},0\right)-\kappa_{i,0}$ is instead independent of $x_{i,0}^{d}$. The worker's optimal conflict choice can then be characterized by a threshold $\underline{x}_0\left(\boldsymbol{\pi}_{1:\infty}\right)$,[32] which satisfies

$$-\kappa+\beta\mathcal{U}\left(\boldsymbol{\pi}_{1:\infty},0\right)=\underline{x}_0\left(\boldsymbol{\pi}_{1:\infty}\right)+\beta\mathcal{U}\left(\boldsymbol{\pi}_{1:\infty},\underline{x}_0\left(\boldsymbol{\pi}_{1:\infty}\right)\right).\tag{A.10}$$

The worker chooses to engage in conflict if $x_{i,0}^{d}\leq\underline{x}_0\left(\boldsymbol{\pi}_{1:\infty}\right)$ and not if $x_{i,0}^{d}>\underline{x}_0\left(\boldsymbol{\pi}_{1:\infty}\right)$.[33] Second consider the case that conflict is costless ($\kappa_{i,0}=0$). In this case, the worker chooses to engage in conflict

[32] Such a threshold always exists and unique because $x+\beta\mathcal{U}\left(\boldsymbol{\pi}_{\infty},x\right)$ strictly increases in x, $\lim_{x\to-\infty}x+\beta\mathcal{U}\left(\boldsymbol{\pi}_{1:\infty},x\right)=-\infty$, and $\lim_{x\to+\infty}x+\beta\mathcal{U}\left(\boldsymbol{\pi}_{1:\infty},x\right)=+\infty$,

[33] There is a measure-zero set of workers who are indifferent between conflict and non-conflict. In our paper, we let these indifferent workers engage in conflict. Our results, e.g., Theorem 1, remain true if these indifferent workers do not engage in conflict.

if $x_{i,0}^{d} \leq 0$ and not if $x_{i,0}^{d} > 0$.[34]

Now we use the implicit Function Theorem for Lipschitz Functions (e.g., Clarke, 1990, p. 269) to prove that $\underline{x}_0(\boldsymbol{\pi}_{\mathbf{1:\infty}})$ is Lipschitz continuous in $\boldsymbol{\pi}_{\mathbf{1:\infty}}$ around $\boldsymbol{\pi}^{\boldsymbol{ss}}$. To apply this theorem, define $H(\boldsymbol{\pi}_\infty, x) \equiv -\kappa + \beta\mathscr{U}(\boldsymbol{\pi}_\infty, 0) - x - \beta\mathscr{U}(\boldsymbol{\pi}_\infty, x)$. One needs two conditions. First, $H(\boldsymbol{\pi}_\infty, x)$ is Lipschitz continuous in $\boldsymbol{\pi}_{\mathbf{1:\infty}}$ around $\boldsymbol{\pi}^{\boldsymbol{ss}}$ and $\underline{x}^{ss} \equiv \underline{x}_0(\boldsymbol{\pi}^{\boldsymbol{ss}})$. This is true because of (A.7), (A.9), and the fact that the absolute value of the partial derivatives is bounded above by $\frac{1-\gamma}{1-\beta}$. Second, $\frac{\partial H(\boldsymbol{\pi}^{\boldsymbol{ss}}, \underline{x}^{ss})}{\partial x} \neq 0$. This is true because $\frac{\partial H(\boldsymbol{\pi}^{\boldsymbol{ss}}, \underline{x}^{ss})}{\partial x} = -1 - \frac{\partial \mathscr{U}(\boldsymbol{\pi}^{\boldsymbol{ss}}, \underline{x}^{ss})}{\partial x_{i,-1}} \leq -1$. As a result, $\underline{x}_0(\boldsymbol{\pi}_{\mathbf{1:\infty}})$ is Lipschitz continuous in $\boldsymbol{\pi}_{\mathbf{1:\infty}}$ around $\boldsymbol{\pi}^{\boldsymbol{ss}}$.

Finally, consider the conflict decision for an arbitrary period t. It can be written as the same problem as (A.8),

$$\mathscr{V}\left(x_{i,t}^{d}, \kappa_{i,t}, \boldsymbol{\pi}_{\boldsymbol{t+1:\infty}}\right) \equiv \max_{\mathscr{I}_{i,t}} \left(1 - \mathscr{I}_{i,t}\right)\left(x_{i,t}^{d} + \beta\mathscr{U}\left(\boldsymbol{\pi}_{\boldsymbol{t+1:\infty}}, x_{i,t}^{d}\right)\right) + \mathscr{I}_{i,t}\left(0 + \beta\mathscr{U}\left(\boldsymbol{\pi}_{\boldsymbol{t+1:\infty}}, 0\right) - \kappa_{i,t}\right),$$

where $\boldsymbol{\pi}_{\boldsymbol{t+1:\infty}} = \{\pi_\tau\}_{\tau=t+1}^{\infty}$ and $x_{i,t}^{d} = x_{i,t-1} - \left(\mu + z_{i,t}\right) - \left(1-\gamma\right)\hat{\pi}_t$, the wage gap implied by the employer's default wage offer at t. The optimal conflict decision at t can be characterized the same way as at 0, and the conflict threshold $\underline{x}_t(\boldsymbol{\pi}_{\boldsymbol{t+1:\infty}})$ is the same function as $\underline{x}_0(\boldsymbol{\pi}_{\mathbf{1:\infty}})$ and is Lipschitz continuous in $\boldsymbol{\pi}_{\mathbf{1:\infty}}$ around $\boldsymbol{\pi}^{\boldsymbol{ss}}$.

Aggregate worker welfare. We now study the impact of inflation shocks on aggregate worker welfare. We define $\mathscr{W}(\boldsymbol{\pi}_\infty) \equiv \int_0^1 \mathscr{U}\left(\boldsymbol{\pi}_\infty, x_{i,-1}\right) di$. From (7) and (8), the impact of inflation on aggregate worker welfare can then be written as $\hat{\mathscr{W}} = \mathscr{W}(\boldsymbol{\pi}_\infty) - \mathscr{W}(\boldsymbol{\pi}^{\boldsymbol{ss}})$. From (A.7),

$$\begin{aligned}
\frac{\partial \mathscr{W}(\boldsymbol{\pi}_\infty)}{\partial \pi_s} &= -\left(1-\gamma\right)\sum_{t=s}^{\infty}\beta^t \int_0^1 \mathbb{E}\left[\prod_{\tau=s}^{t}\left(1 - \mathscr{I}_{i,\tau}^{*}\left(h_{i,\tau}; \boldsymbol{\pi}_\infty\right)\right)\right] di, \quad \text{a.e.} \\
&= -\left(1-\gamma\right)\sum_{t=s}^{\infty}\beta^t \Phi_{s,t}(\boldsymbol{\pi}_\infty) \quad \text{a.e.}
\end{aligned}$$

where $\Phi_{s,t}(\boldsymbol{\pi}_\infty) \equiv \mathbb{E}\left[\int_0^1 \left(\Pi_{\tau=s}^{t}\left(1 - \mathscr{I}_{i,\tau}^{*}\left(h_{i,\tau}; \boldsymbol{\pi}_\infty\right)\right)\right) di\right]$ captures the "survival" probability between period s and $t \geq s$, i.e., the fraction of workers who never engage in conflict during the period s, $s+$

[34] In our model, as discussed in the main text, the stationary distribution of wage gaps implied by the employer's default wage offer, $G^{d,ss}\left(x_{i,-1}^{d}\right)$ has a non-positive support. As a result, at steady-state inflation, the worker always prefers to conflict and set the wage gap to zero if it is costless to do so. With positive inflation shocks ($\hat{\pi}_t \geq 0$ for all t), the distribution of wage gaps implied by the employer's default wage offer, $G_t^{ss}\left(x_{i,t}^{d}\right)$, further studied below, also has a non-positive support for all t. So the worker again always prefers to conflict and set the wage gap to zero if it is costless to do so. The characterization here is more general, allowing negative inflation shocks and the possibility of positive wage gaps implied by the employer's default wage offer. Therefore, the worker could choose not to conflict even if it is costless to do so.

$1, \cdots, t$. Define $\tilde{\mathscr{W}}(\varepsilon) = \mathscr{W}(\varepsilon \boldsymbol{\pi}_\infty + (1-\varepsilon)\boldsymbol{\pi}^{ss})$. We have

$$\tilde{\mathscr{W}}'(\varepsilon) = -(1-\gamma)\sum_{s=0}^{\infty}\sum_{t=s}^{\infty}\beta^t \Phi_{s,t}(\varepsilon\boldsymbol{\pi}_\infty + (1-\varepsilon)\boldsymbol{\pi}^{ss})\hat{\pi}_s \quad \text{a.e.}$$

As a result, for all $\boldsymbol{\pi}_\infty$,

$$\hat{\mathscr{W}}(\boldsymbol{\pi}_\infty) = -(1-\gamma)\sum_{s=0}^{\infty}\sum_{t=s}^{\infty}\beta^t \left(\int_0^1 \Phi_{s,t}(\varepsilon\boldsymbol{\pi}_\infty + (1-\varepsilon)\boldsymbol{\pi}^{ss})\, d\varepsilon\right)\hat{\pi}_s. \tag{A.11}$$

From the formula for wage erosion in (10) and using (A.5), we know that

$$\begin{aligned}
\hat{w}_t^{\text{erosion}} &= -(1-\gamma)\sum_{s=0}^{t}\left(\int_0^1 \mathbb{E}\left[\prod_{\tau=s}^{t}\left(1-\mathscr{I}_{i,\tau}^{*}(h_{i,\tau};\boldsymbol{\pi}^{ss})\right)\right] di\right)\cdot\hat{\pi}_s, \\
&= -(1-\gamma)\sum_{s=0}^{t}\Phi_{s,t}(\boldsymbol{\pi}^{ss})\cdot\hat{\pi}_s.
\end{aligned}\tag{A.12}$$

Note that $\Phi_{s,t}(\boldsymbol{\pi}^{ss})$ is equal to Φ_{t-s}^{ss} defined in the main text, i.e., the "survival" probability at steady-state inflation. It only depends on $t-s$ because the distribution of wage gaps in each period is the same, given by the stationary distribution. This proves Proposition 2.

We now prove the key part of Theorem (1). That is, to first order, $\hat{\mathscr{W}} \approx \sum_{t=0}^{\infty}\beta^t \hat{w}_t^{\text{erosion}}$. From (A.12), we know that

$$\sum_{t=0}^{\infty}\beta^t \hat{w}_t^{\text{erosion}} = -(1-\gamma)\sum_{s=0}^{\infty}\sum_{t=s}^{\infty}\beta^t\Phi_{s,t}(\boldsymbol{\pi}^{ss})\hat{\pi}_s.$$

Together with (A.11), we only need to prove that $\Phi_{s,t}(\boldsymbol{\pi}_\infty)$ is continuous in $\boldsymbol{\pi}_\infty$ around $\boldsymbol{\pi}^{ss}$ for all $t \geq s$. As proved formally below, this follows naturally from the Lipschitz continuity of $\underline{x}_t(\boldsymbol{\pi}_{t+1:\infty})$ in $\boldsymbol{\pi}_{t+1:\infty}$ around $\boldsymbol{\pi}^{ss}$ for each $t \geq 0$.

Formally, we first prove by induction that, for each $t \geq 0$, $G_t^d\left(x_{i,t}^d;\boldsymbol{\pi}_\infty\right)$ is continuous in $\boldsymbol{\pi}_\infty$ around $\boldsymbol{\pi}^{ss}$ and is continuous in $x_{i,t}^d$, where $G_t^d\left(x_{i,t}^d;\boldsymbol{\pi}_\infty\right)$ is the cumulative distribution function of the wage gaps implied by the employer's default wage offer at t. From the proof of Proposition (1), we know that, at $t=0$, $G_0^d\left(x_{i,0}^d;\boldsymbol{\pi}_\infty\right) = G^{d,ss}\left(x_{i,0}^d + (1-\gamma)\hat{\pi}_0\right)$ is continuous in $\hat{\pi}_0$ (hence $\boldsymbol{\pi}_\infty$) and $x_{i,0}^d$. For all $t \geq 0$, given $G_t^d\left(x_{i,t}^d;\boldsymbol{\pi}_\infty\right)$, we can find, $G_t(x_{i,t};\boldsymbol{\pi}_\infty)$, the cumulative distribution function of the wage gaps at the end of period t (after conflict decisions):

$$\begin{aligned}
G_t(x_{i,t};\boldsymbol{\pi}_\infty) = (1-\lambda)&\left(\max\left\{G_t^d(x_{i,t};\boldsymbol{\pi}_\infty) - G_t^d(\underline{x}_t(\boldsymbol{\pi}_{t+1:\infty});\boldsymbol{\pi}_\infty), 0\right\} + G_t^d(\underline{x}_t(\boldsymbol{\pi}_{t+1:\infty});\boldsymbol{\pi}_\infty)\mathbb{1}_{x_{i,t}\geq 0}\right) \\
&+ \lambda\left(\max\left\{G_t^d(x_{i,t};\boldsymbol{\pi}_\infty) - G_t^d(0;\boldsymbol{\pi}_\infty), 0\right\} + G_t^d(0;\boldsymbol{\pi}_\infty)\mathbb{1}_{x_{i,t}\geq 0}\right),
\end{aligned}\tag{A.13}$$

where the first line captures workers whose conflict is costly and whose conflict choice can then be characterized by the threshold $\underline{x}_t(\boldsymbol{\pi}_{t+1:\infty})$, and the second line captures workers whose conflict is costless and whose conflict choice can then be characterized by the threshold 0. Recall that $\underline{x}_t(\boldsymbol{\pi}_{t+1:\infty})$ is Lipschitz continuous in $\boldsymbol{\pi}_{t+1:\infty}$ around $\boldsymbol{\pi}^{ss}$. If $G_t^d\left(x_{i,t}^d;\boldsymbol{\pi}_\infty\right)$ is continuous in $\boldsymbol{\pi}_\infty$ around $\boldsymbol{\pi}^{ss}$ and is continuous in $x_{i,t}^d$, $G_t\left(x_{i,t};\boldsymbol{\pi}_\infty\right)$ is continuous in $\boldsymbol{\pi}_\infty$ around $\boldsymbol{\pi}^{ss}$ and is continuous in $x_{i,t}$ outside the point $x_{i,t}=0$.

One can then find

$$
\begin{aligned}
G_{t+1}^d\left(x_{i,t+1}^d;\boldsymbol{\pi}_\infty\right) &= \int_{\underline{z}}^{\infty} G_t\left(\mu+(1-\gamma)\hat{\pi}_{t+1}+z_{i,t+1}+x_{i,t+1}^d;\boldsymbol{\pi}_\infty\right) f\left(z_{i,t+1}\right) dz_{i,t+1} \\
&= \int_{-\infty}^{0} G_t\left(x_{i,t};\boldsymbol{\pi}_\infty\right) f\left(x_{i,t}-\mu-(1-\gamma)\hat{\pi}_{t+1}-x_{i,t+1}^d\right) dx_{i,t} \\
&+ \int_{0}^{\infty} G_t\left(x_{i,t};\boldsymbol{\pi}_\infty\right) f\left(x_{i,t}-\mu-(1-\gamma)\hat{\pi}_{t+1}-x_{i,t+1}^d\right) dx_{i,t}
\end{aligned}
$$

where $f(\cdot)$ is the probability density function for $z_{i,t+1}$. If $G_t\left(x_{i,t};\boldsymbol{\pi}_\infty\right)$ is continuous in $\boldsymbol{\pi}_\infty$ around $\boldsymbol{\pi}^{ss}$ and is continuous in $x_{i,t}$ outside the point $x_{i,t}=0$, $G_{t+1}^d\left(x_{i,t+1}^d;\boldsymbol{\pi}_\infty\right)$ is continuous in $\boldsymbol{\pi}_\infty$ around $\boldsymbol{\pi}^{ss}$ and is continuous in $x_{i,t+1}^d$. This finishes the proof by induction that, for each $t\geq 0$, $G_t^d\left(x_{i,t}^d;\boldsymbol{\pi}_\infty\right)$ is continuous in $\boldsymbol{\pi}_\infty$ around $\boldsymbol{\pi}^{ss}$.

Now we prove that $\Phi_{s,t}(\boldsymbol{\pi}_\infty)$ is continuous around $\boldsymbol{\pi}^{ss}$ for all $t\geq s$. To do so, we introduce $G_{s,t}\left(x_{i,t};\boldsymbol{\pi}_\infty\right)$, the distribution of wage gap $x_{i,t}$ conditioning that the employer's default wage offer "survives" between s and t, i.e., $\prod_{\tau=s}^{t}\left(1-\mathscr{I}_{i,\tau}^*\left(h_{i,\tau};\boldsymbol{\pi}_\infty\right)\right)=1$. First, for all $s\geq 0$,

$$
\Phi_{s,s}(\boldsymbol{\pi}_\infty) = (1-\lambda)\left(1-G_s^d\left(\underline{x}_s(\boldsymbol{\pi}_{t+1:\infty});\boldsymbol{\pi}_\infty\right)\right)+\lambda\left(1-G_s^d(0;\boldsymbol{\pi}_\infty)\right)
$$

is continuous in $\boldsymbol{\pi}_\infty$ around $\boldsymbol{\pi}^{ss}$. And

$$
G_{s,s}\left(x_{i,s};\boldsymbol{\pi}_\infty\right) = \max\left\{\frac{(1-\lambda)\left(G_s^d\left(x_{i,s};\boldsymbol{\pi}_\infty\right)-G_s^d\left(\underline{x}_s(\boldsymbol{\pi}_{s+1:\infty});\boldsymbol{\pi}_\infty\right)\right)}{\Phi_{s,s}(\boldsymbol{\pi}_\infty)},0\right\}+\max\left\{\frac{\lambda G_s^d\left(x_{i,s};\boldsymbol{\pi}_\infty\right)-G_s^d(0;\boldsymbol{\pi}_\infty)}{\Phi_{s,s}(\boldsymbol{\pi}_\infty)},0\right\}
$$

is continuous in $\boldsymbol{\pi}_\infty$ around $\boldsymbol{\pi}^{ss}$ and in $x_{i,s}$. Moreover, for any $t\geq s$, define $G_{s,t+1}\left(x_{i,t+1}^d;\boldsymbol{\pi}_\infty\right)$, as the distribution of $x_{i,t+1}^d$ conditioning that the employer's default wage offer "survives" between s and t.

We have, for any $t \geq s$,

$$G^d_{s,t+1}\left(x^d_{i,t+1};\boldsymbol{\pi}_\infty\right) = \int_{\underline{z}}^{\infty} G_{s,t}\left(\mu + (1-\gamma)\hat{\pi}_{t+1} + z_{i,t+1} + x^d_{i,t+1};\boldsymbol{\pi}_\infty\right) f\left(z_{i,t+1}\right) dz_{i,t+1}$$

$$\Phi_{s,t+1}(\boldsymbol{\pi}_\infty) = \Phi_{s,t}(\boldsymbol{\pi}_\infty)\left((1-\lambda)\left(1 - G^d_{s,t+1}\left(\underline{x}_{t+1}(\boldsymbol{\pi}_{t+2:\infty});\boldsymbol{\pi}_\infty\right)\right) + \lambda\left(1 - G^d_{s,t+1}(0;\boldsymbol{\pi}_\infty)\right)\right)$$

$$G_{s,t+1}\left(x_{i,t+1};\boldsymbol{\pi}_\infty\right) = \max\left\{\frac{(1-\lambda)\left(G^d_{s,t+1}\left(x_{i,t+1};\boldsymbol{\pi}_\infty\right) - G^d_{s,t+1}\left(\underline{x}_{t+1}(\boldsymbol{\pi}_{t+2:\infty});\boldsymbol{\pi}_\infty\right)\right)}{\Phi_{s,t+1}(\boldsymbol{\pi}_\infty)/\Phi_{s,t}(\boldsymbol{\pi}_\infty)}, 0\right\}$$
$$+ \max\left\{\frac{\lambda\left(G^d_{s,t+1}\left(x_{i,t+1};\boldsymbol{\pi}_\infty\right) - G^d_{s,t+1}(0;\boldsymbol{\pi}_\infty)\right)}{\Phi_{s,t+1}(\boldsymbol{\pi}_\infty)/\Phi_{s,t}(\boldsymbol{\pi}_\infty)}, 0\right\}.$$

By induction, for all $t \geq s$, $\Phi_{s,t}(\boldsymbol{\pi}_\infty)$ is continuous in $\boldsymbol{\pi}_\infty$ and $G_{s,t}\left(x_{i,t};\boldsymbol{\pi}_\infty\right)$ is continuous in $\boldsymbol{\pi}_\infty$ around $\boldsymbol{\pi}^{ss}$ and in $x_{i,t}$. This finishes the proof that $\Phi_{s,t}(\boldsymbol{\pi}_\infty)$ is continuous in $\boldsymbol{\pi}_\infty$ around $\boldsymbol{\pi}^{ss}$ for all $t \geq s$. As a result, to first order, $\hat{\mathscr{W}} \approx \sum_{t=0}^{\infty} \beta^t \hat{w}_t^{\text{erosion}}$. The rest of Theorem 1 follows directly from the fact that $\hat{\mathscr{W}} = \sum_{t=0}^{\infty} \beta^t \hat{w}_t - \hat{\varkappa}$ and $\hat{w}_t = \hat{w}_t^{\text{erosion}} + \hat{w}_t^{\text{catch-up}}$.

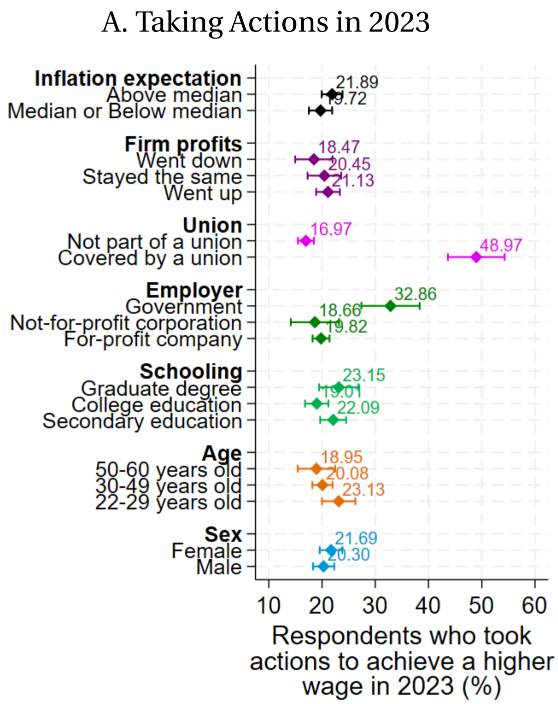
Proof of Proposition 3.

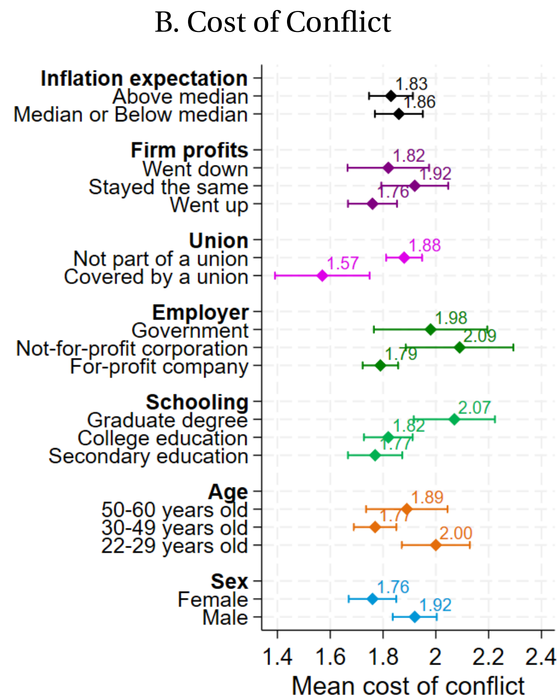
The workers' problem (9) depends the degree of indexation γ and inflation shocks $\{\hat{\pi}_t\}_{t=0}^{+\infty}$ only through *inflation shocks net-of-indexation* $(1-\gamma)\hat{\pi}_t$. To first order, $\hat{\mathscr{W}}$ and $\hat{\varkappa}$ will all be linear functions of $\left\{(1-\gamma)\hat{\pi}_t\right\}_{t=0}^{+\infty}$. The degree of indexation simply scales both $\hat{\mathscr{W}}$ and $\hat{\varkappa}$ by a factor of $1-\gamma$, but does not affect $\frac{\hat{\varkappa}}{\hat{\mathscr{W}}}$. This proves Proposition 3.

B Appendix Figures and Tables

B.1 Appendix Figures

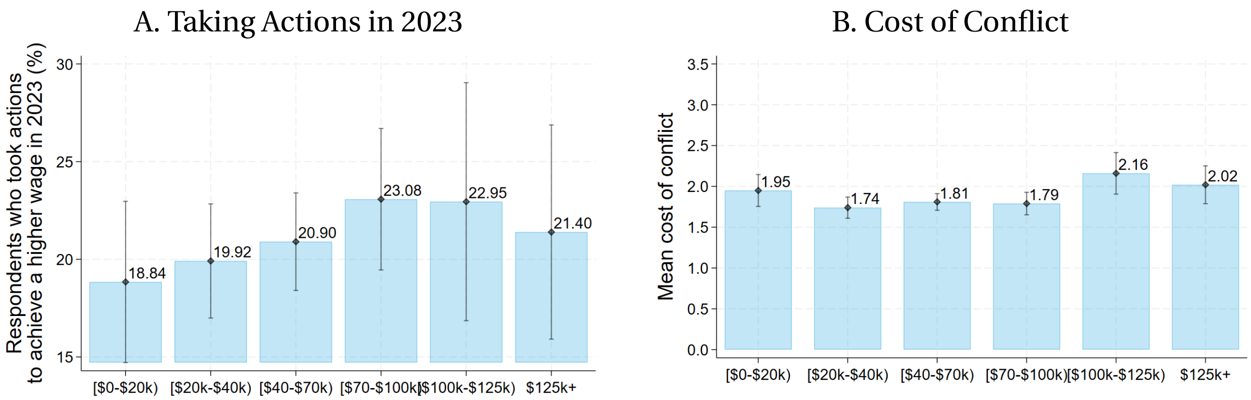
Figure B.1: Heterogeneity in Conflict: Demographics





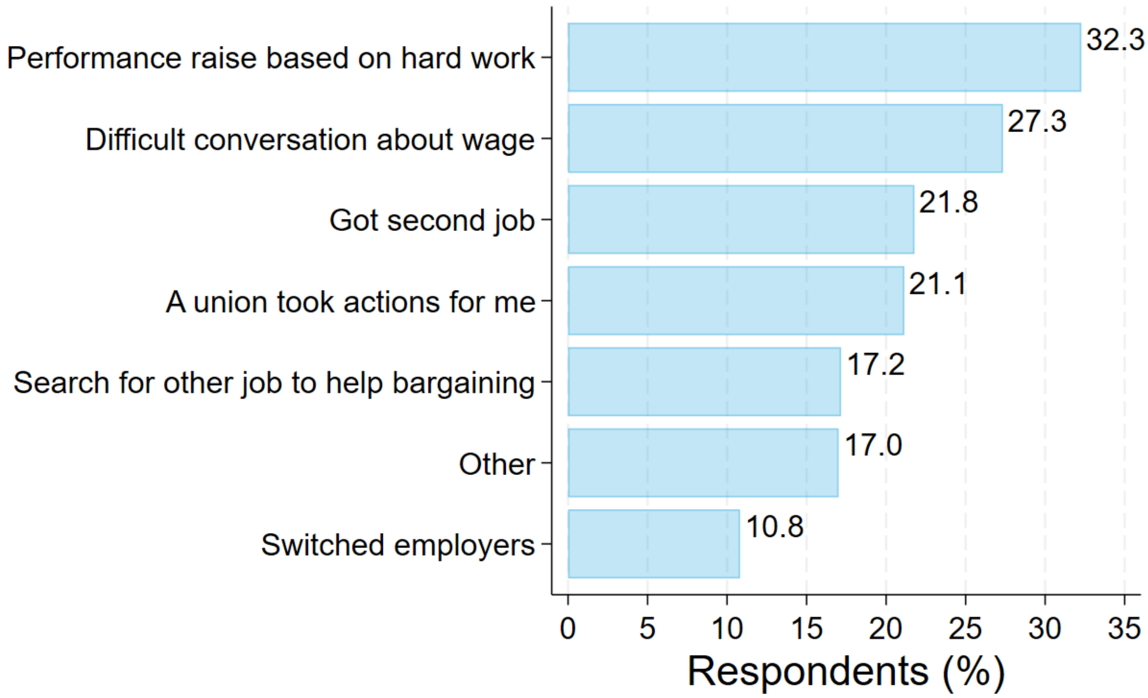
Note: Panel A displays the percentage of participants who took actions to achieve a higher wage in 2023, with 95% confidence intervals shown for each demographic category. Panel B illustrates the mean cost of conflict, also with 95% confidence intervals displayed for each demographic category. Cost of conflict is defined as the difference between the wage growth participants believe they will receive if they take actions to increase their pay ($\Delta W^{\text{conflict}}$) in the next 12 months and their indifference wage (ΔW^{indiff}), which is the wage growth participants would be willing to accept if offered by their employers in the next 12 months. Panel B restricts the data to respondents who bargain first and then accept the offer. The categories depicted include inflation expectations, firm profits, union membership, employer type, education level, age, and gender.

Figure B.2: Heterogeneity in Conflict: Income



Note: Panel A shows the percentage of participants who took actions to achieve a higher wage in 2023, with 95% confidence intervals displayed for each income category. Panel B illustrates the mean cost of conflict, also with 95% confidence intervals shown for each income category. The cost of conflict is defined as the difference between the wage growth participants believe they will receive if they take actions to increase their pay ($\Delta W_{\text{conflict}}$) in the next 12 months and their indifference wage (ΔW_{indiff}), which is the wage growth participants would be willing to accept if offered by their employers in the next 12 months. Panel B restricts the data to respondents who bargain first and then accept the offer.

Figure B.3: Types of Costly Actions Achieving Higher Wages



Notes: the figure displays the percentage of survey participants who undertook costly actions to secure higher wage growth in 2023. Participants were asked to choose all actions that applied to them. Each bar in the figure corresponds to the following answer choices in order: "I worked longer hours or performed better at work to get a performance-based pay increase"; "I initiated a difficult conversation with my employer about my pay"; "I obtained a second job in addition to my main job"; "A union bargained for higher pay on my behalf"; "I searched for a higher-paying job with other employers to facilitate pay negotiations with my employer"; "Other, please add additional comments below"; and "I switched employers to get a raise." To answer this question without imposing preconceptions, we took two steps. First, in a pilot of 100 people, we asked respondents who took actions to explain them in open-ended form. Second, we grouped these actions into a set of categories, and asked the full survey to select actions from within these categories. We also allowed respondents to select an "other" option, and randomized the order of the categories.

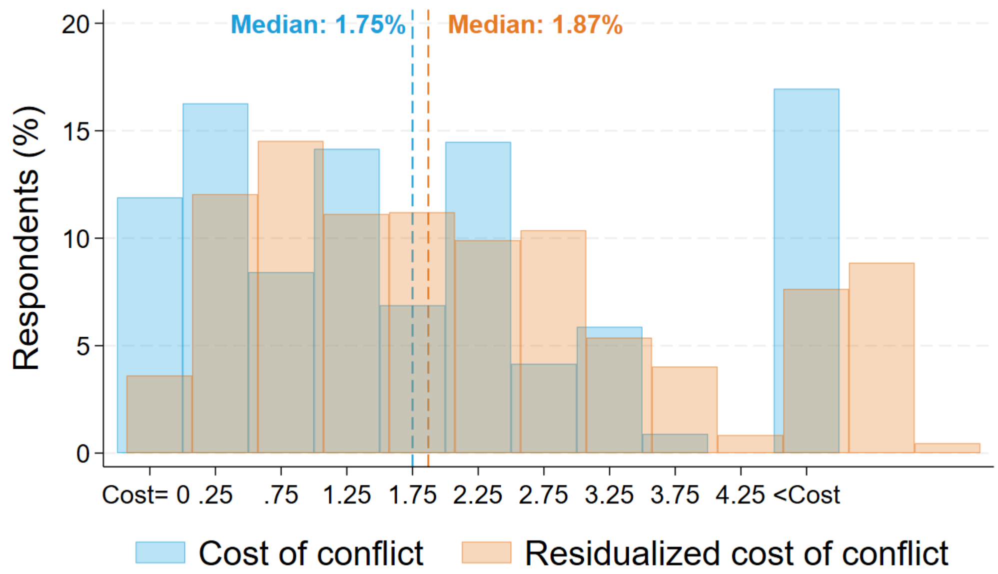
Figure B.4: The Effectiveness of Conflict: Within-Individual Distributions

Note: Panels A and B depict difference between the reported wage growth during 2023 and the hypothetical wage growth respondents reported they would have received if no actions had been taken or if actions had been taken to achieve a higher pay, respectively. The unit of observation is the respondent. The data range has been truncated, with values ranging from a minimum of -15% to a maximum of 15%. The data has been restricted to respondents who indicated that they took actions to achieve a higher pay during 2023 in Panel A and to respondents who indicated that a union took actions to achieve a higher pay on their behalf or that they accepted their employers' default wage during 2023 in Panel B.

Figure B.5: Motivation to Accept Wage Offer

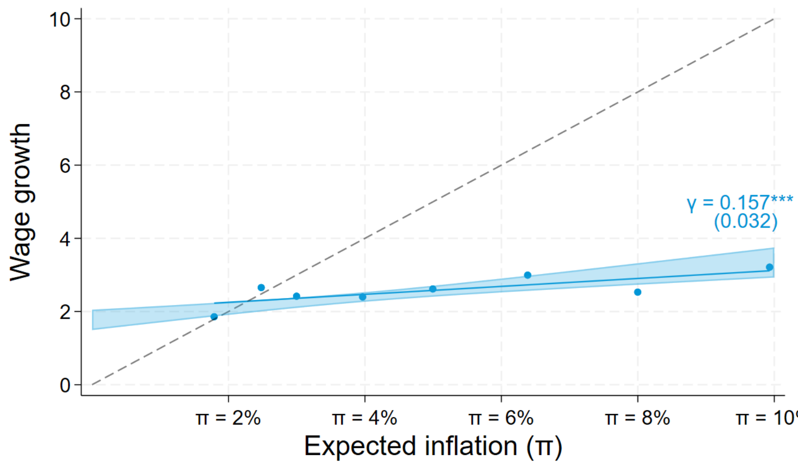
Note: This figure illustrates the percentage of survey participants who stated their motivations to accept their employers' default pay offer during 2023. Each bar in the figure represents the following answer choices in order: "I am unlikely to be able to find a higher paying job that suits me as well as my current job, perhaps because of the perks and benefits offered by my job, or because there are few good alternative jobs."; "My company does not negotiate to increase my pay. Perhaps because they would have to lay off workers or because they can replace me with another employee."; "My company sets pay in line with the rest of the industry, and industry-wide pay is not growing, perhaps because of the state of the overall economy."; "Taking actions to raise my pay, such as a difficult conversation or searching for a new job, is too difficult. These actions take too much time or effort, or risk a conflict with my employer."; "My employer's default wage offer was satisfactory, because they offered wage growth in excess of the increase in my cost of living."; "My contract was negotiated before the higher inflation."; and "Other, please add additional comments below". The data in this figure only includes respondents who stated that they accepted their employers' default pay offer during 2023.

Figure B.6: Cost of Conflict: Residualized for Demographics



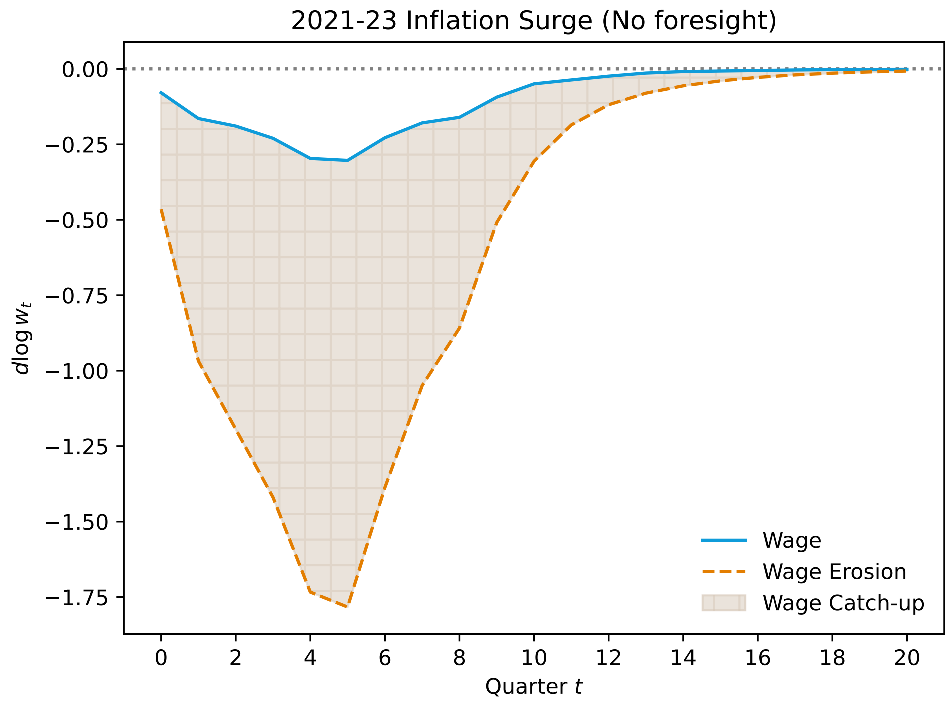
Note: The figure illustrates the overlaid histogram of cost of conflict and the residualized cost of conflict, showing the percentage of participants with each value. The cost of conflict, illustrated in blue in the figure, is defined as the difference between the wage growth participants believe they will receive if they take actions to increase their pay ($\Delta W^{\text{conflict}}$) in the next 12 months and their indifference wage (ΔW^{indiff}), which is the wage growth participants would be willing to accept if offered by their employers in the next 12 months. The residualized cost of conflict, illustrated in orange in the figure, has been generated by regressing cost of conflict on dummy variables for the categories of age, education, income, and union coverage. The categories excluded were 30-49 years old, income of [100k-125k), graduate education, and non-union coverage or not reported union coverage. The data is limited to respondents who bargain first and then accept the offer.

Figure B.7: Wage Indexation: Variation from Inflation Expectations



Note: This figure restricts observations to respondents who expect an inflation rate of no more than 10% next year, excluding 36.24% of the sample of respondents who predict that prices will go up next year. This binned scatterplot depicts the relationship between the default wage and the expected inflation in the following 12 months, along with the 95% confidence interval of the predicted relationship. The default wage is defined as the wage growth that participants anticipate their employers will offer them next year. The gray dashed line serves as a reference 45-degree line. The coefficient of this relationship is displayed, with the standard errors enclosed in brackets. The stars indicate levels of statistical significance: 1% (***), 5% (**), and 10% (*).

Figure B.8: The Effect of 2021-23 Inflation With No Foresight



Notes: The path of inflation matches headline quarterly PCE inflation over 2021-3. We plot the percent deviation of the real wage from steady state in the solid blue line. We plot the welfare effect of the inflationary shock in dashed orange, which is wage erosion. The gap between the two lines, shaded in grey, is wage catch-up, which is associated with conflict costs. Different to the main text, agents do not have perfect foresight. Instead, they expect inflation to be at the steady state in the next period, and are surprised by every subsequent realization of inflation away from the steady state.

B.2 Appendix Tables

Table B.1: Distributions in Survey Sample vs. Population

	Survey	US population
Male	0.52	0.52
Female	0.48	0.48
Secondary education (e.g. GED/GCSE)	0.02	0.02
High school diploma/A-levels	0.37	0.39
Technical/community college	0.12	0.11
Undergraduate degree (BA/BSc/other)	0.32	0.30
Graduate degree (MA/MSc/MPhil/other)	0.14	0.13
Doctorate degree (PhD/other)	0.04	0.04
Democrat	0.29	0.28
Republican	0.25	0.26
Independent	0.33	0.33
None	0.06	0.07
Other party	0.06	0.06
22-29 years old	0.24	0.20
30-39 years old	0.38	0.29
40-49 years old	0.21	0.26
50-60 years old	0.17	0.26
Full-Time	0.83	0.83
Part-Time	0.17	0.17
For-profit company	0.80	0.77
Not-for-profit corporation	0.10	0.07
State government	0.03	0.06
Federal government	0.02	0.03
Local government	0.04	0.07
Other employer	0.01	
White	0.68	0.75
Black	0.12	0.14
Asian	0.08	0.07
Mixed	0.08	0.02
Other	0.04	0.02
No reported ethnicity	0.00	

Covered by a union	0.11	0.13
Not part of a union	0.81	0.87
No reported	0.07	
Income		
\$0-\$19,999	0.11	0.12
\$20,000-\$39,999	0.24	0.22
\$40,000-\$69,999	0.34	0.31
\$70,000-\$99,999	0.17	0.16
\$100,000-\$124,999	0.06	0.08
\$125,000+	0.07	0.11

Note: The table displays statistics for the overall U.S. population, as compared to the sample of respondents in our survey. We pre-screen so that our respondents are at least 22 years old but no older than 60, full-time or part-time employed, and not self-employed. The statistics for the U.S. population were also limited by these criteria before taking the summary statistics, which are constructed using IPUMS-CPS-ASEC data for March 2023, and Gallup data for 2024.

Table B.2: Inflation and Union Strikes—Robustness Table

	Difference in log number of workers on strike							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
5-year diff in inflation rates	2.922***	2.764***	2.439***	2.302***	1.915***	3.132***	2.846***	
	(0.410)	(0.405)	(0.449)	(0.451)	(0.474)	(1.055)	(0.431)	
5-year diff GDP per capita							0.000**	
							(0.000)	
2-year diff in inflation rates								0.883**
								(0.373)
Observations	1872	1872	1872	1872	5955	1021	1765	2079
Country FE		✓		✓	✓	✓		✓
Year FE			✓	✓	✓	✓		✓
Industry FE					✓			
Weight: 1960 population						✓		

Notes: this table illustrates the relationship between labor market strikes and inflation. The dependent variable is the 5-year log difference of "Workers involved in strikes and lockouts," sourced from the International Labour Organization, multiplied by 100 for ease of interpretation. We use headline inflation, sourced by the World Bank, trimmed at 2.5% on each tail. In the first column, we regress the 5 year difference in the log number of workers on strike on the 5 year difference in inflation rates. In the second column we add country fixed effects, in the third column year fixed effects, in the fourth column country and year fixed effects, and in the seventh column a control for the 5 year change in real GDP per capita. In the fifth column we use industry-by-country data with industry, country and year fixed effects; with 7 broad industries. In the sixth column we repeat the fourth column but weight by 1960 population. The final column repeats the fourth column but with 2 year differences. Standard errors are clustered by country. The analysis includes 78 countries spanning from 1969 to 2022. Data availability varies by year and country. Stars denote levels of statistical significance: 1% (***), 5% (**), and 10% (*).

C Additional Model Analysis

C.1 Theoretical Extensions

More general distribution of conflict costs. Our main result, Theorem 1, does not depend on the "Calvo-plus" form and holds for a more general distribution of conflict costs with non-negative supports, because the application of the envelope theorem in Milgrom and Segal (2002) does not require specific restrictions on the distribution of conflict costs. Formally, we consider the general case that the conflict cost $\kappa_{i,t}$ is i.i.d. over time and across workers, independent of $z_{i,t}$, and drawn based on the conditional distribution function $H\left(\kappa_{i,t}\right)$ with a support of $[0,\infty)$. The worker problem part of the Proof in Theorem 1 continues to hold, with the only modification being that the conflict threshold $\underline{x}_t\left(\boldsymbol{\pi}_{\boldsymbol{t+1:\infty}};\kappa_{i,t}\right)$ now also depends on $\kappa_{i,t}$, given by

$$-\kappa_{i,t}+\beta\mathscr{U}\left(\boldsymbol{\pi}_{\boldsymbol{t+1:\infty}},0\right)=\underline{x}_t\left(\boldsymbol{\pi}_{\boldsymbol{t+1:\infty}};\kappa_{i,t}\right)+\beta\mathscr{U}\left(\boldsymbol{\pi}_{\boldsymbol{1:\infty}},\underline{x}_t\left(\boldsymbol{\pi}_{\boldsymbol{t+1:\infty}};\kappa_{i,t}\right)\right).$$

That is, worker with a conflict cost $\kappa_{i,t}$ at t chooses to engage in conflict if $x^d_{i,t}\leq\underline{x}_t\left(\boldsymbol{\pi}_{\boldsymbol{t+1:\infty}};\kappa_{i,t}\right)$ and not if $x^d_{i,0}>\underline{x}_t\left(\boldsymbol{\pi}_{\boldsymbol{t+1:\infty}};\kappa_{i,t}\right)$. Similar to the Proof in Theorem 1, $\underline{x}_t\left(\boldsymbol{\pi}_{\boldsymbol{t+1:\infty}};\kappa_{i,t}\right)$ is is Lipschitz continuous in $\boldsymbol{\pi}_{\boldsymbol{t+1:\infty}}$ around $\boldsymbol{\pi}^{\boldsymbol{ss}}$ for each $\kappa_{i,t}\geq 0$.

The aggregate worker welfare part in Theorem 1 also continues to hold, with minor modifications about how we go from $G^d_t\left(x^d_{i,t};\boldsymbol{\pi}_\infty\right)$ to $G_t\left(x_{i,t};\boldsymbol{\pi}_\infty\right)$,

$$G_t\left(x_{i,t};\boldsymbol{\pi}_\infty\right)=\int_0^\infty\left[\max\left\{G^d_t\left(x_{i,t};\boldsymbol{\pi}_\infty\right)-G^d_t\left(\underline{x}_t\left(\boldsymbol{\pi}_{\boldsymbol{t+1:\infty}};\kappa_{i,t}\right);\boldsymbol{\pi}_\infty\right),0\right\}+G^d_t\left(\underline{x}_t\left(\boldsymbol{\pi}_{\boldsymbol{t+1:\infty}};\kappa_{i,t}\right);\boldsymbol{\pi}_\infty\right)\mathbb{1}_{x_{i,t}\geq 0}\right]dH\left(\kappa_{i,t}\right),$$

how we construct $\Phi_{s,s}\left(\boldsymbol{\pi}_\infty\right)$ and $G_{s,s}\left(x_{i,s};\boldsymbol{\pi}_\infty\right)$,

$$\Phi_{s,s}\left(\boldsymbol{\pi}_\infty\right)=\int_0^\infty\left(1-G^d_s\left(\underline{x}_s\left(\boldsymbol{\pi}_{\boldsymbol{s+1:\infty}};\kappa_{i,s}\right);\boldsymbol{\pi}_\infty\right)\right)dH\left(\kappa_{i,s}\right),$$
$$G_{s,s}\left(x_{i,s};\boldsymbol{\pi}_\infty\right)=\int_0^\infty\max\left\{\frac{G^d_s\left(x_{i,s};\boldsymbol{\pi}_\infty\right)-G^d_s\left(\underline{x}_s\left(\boldsymbol{\pi}_{\boldsymbol{s+1:\infty}};\kappa_{i,s}\right);\boldsymbol{\pi}_\infty\right)}{\Phi_{s,s}\left(\boldsymbol{\pi}_\infty\right)},0\right\}dH\left(\kappa_{i,s}\right),$$

and how we construct $\Phi_{s,t+1}\left(\boldsymbol{\pi}_\infty\right)$ and $G_{s,t+1}\left(x_{i,t+1};\boldsymbol{\pi}_\infty\right)$ for any $t\geq s$,

$$\Phi_{s,t+1}\left(\boldsymbol{\pi}_\infty\right)=\Phi_{s,t}\left(\boldsymbol{\pi}_\infty\right)\int_0^\infty\left(1-G^d_{s,t+1}\left(\underline{x}_{t+1}\left(\boldsymbol{\pi}_{\boldsymbol{t+2:\infty}};\kappa_{i,t+1}\right);\boldsymbol{\pi}_\infty\right)\right)dH\left(\kappa_{i,t+1}\right),$$
$$G_{s,t+1}\left(x_{i,t+1};\boldsymbol{\pi}_\infty\right)=\int_0^\infty\max\left\{\frac{G^d_{s,t+1}\left(x_{i,t+1};\boldsymbol{\pi}_\infty\right)-G^d_{s,t+1}\left(\underline{x}_{t+1}\left(\boldsymbol{\pi}_{\boldsymbol{t+2:\infty}};\kappa_{i,t+1}\right);\boldsymbol{\pi}_\infty\right)}{\Phi_{s,t+1}\left(\boldsymbol{\pi}_\infty\right)/\Phi_{s,t}\left(\boldsymbol{\pi}_\infty\right)},0\right\}dH\left(\kappa_{i,t+1}\right).$$

Conflict-induced real wages affected by inflation shocks. In our main analysis, the conflict-induced (real) wage $w^*_{i,t}$ is invariant to inflation shocks. Our main result, Theorem 1, can be extended to the case where $w^*_{i,t}$ is affected by inflation shocks. In this case, the worker's problem can then be summarized by:

$$\max_{\{\mathscr{I}_{i,t}\}_{t=0}^{\infty}} \mathbb{E}\left[\sum_{t\geq 0}\beta^t\left[x_{i,t}-\kappa_{i,t}\mathscr{I}_{i,t}\right]\right],$$

subject to the dynamics of the wage gap

$$x_{i,t}=\begin{cases} x_{i,t-1}-\left(\mu+z_{i,t}\right)-\hat{g}_{w,t}-\left(1-\gamma\right)\hat{\pi}_t & \text{if } \mathscr{I}_{i,t}=0 \\ 0 & \text{if } \mathscr{I}_{i,t}=1 \end{cases},$$

where $g_{w,t}\equiv\log\left(w^*_t/w^*_{t-1}\right)$ is the growth rate of aggregate conflict-induced (real) wage $\log w^*_t=\int\log w^*_{i,t}di$. This is the same problem as (9) with relevant aggregate shocks replaced from $\{\left(1-\gamma\right)\hat{\pi}_t\}_{t=0}^{\infty}$ to $\{\hat{g}_{w,t}+\left(1-\gamma\right)\hat{\pi}_t\}^{\infty}$. So the Proof in Theorem 1, which focuses on the problem in (9) based on wage gaps, continues to hold:

$$\hat{\mathscr{W}}^x=\sum_{t=0}^{\infty}\beta^t\hat{x}_t^{\text{erosion}},$$

where $\hat{x}_t^{\text{erosion}}$ is defined as in (A.2), which captures the aggregate shocks on aggregate wage gaps (from the conflict-induced wage) while holding each worker's conflict decision as if inflation and productivity growth are at the steady-state level, and is given by

$$\hat{x}_t^{\text{erosion}}\approx-\left(1-\gamma\right)\sum_{s=0}^{t}\Phi_{t-s}^{ss}\hat{\pi}_s-\sum_{s=0}^{t}\Phi_{t-s}^{ss}\hat{g}_{w,s}\quad\forall t\geq 0,$$

and $\hat{\mathscr{W}}^x$ is now defined as in (A.4), which captures the impact of inflation shocks on worker welfare sans the exogenous component in (8):

$$\hat{\mathscr{W}}^x\approx\hat{\mathscr{W}}-\sum_{t=0}^{\infty}\beta^t\hat{w}_t^*.$$

From the definition of wage gap, $x_{i,t}\equiv\log w_{i,t}-\log w^*_{i,t}$, we know that wage erosion, which captures the aggregate shocks on aggregate real wages while holding each worker's conflict decision as if inflation and productivity growth are at the steady-state level, is connected with $\hat{x}_t^{\text{erosion}}$ by:

$$\hat{w}_t^{\text{erosion}}=\hat{x}_t^{\text{erosion}}+\hat{w}_t^*,$$

where $\hat{w}^*_t=\sum_{s=0}^{t}\hat{g}_{w,s}$. Together, we arrive at (17).

Allowing other aggregate shocks. In the main analysis, we study the case in which the only aggregate shocks are inflation shocks. Our main result, Theorem 1, can be extended to the case with other aggregate shocks (e.g., TFP shocks from changing aggregate productivity growth $g_{z,t}$). In this case, the worker's problem can then be summarized by:

$$\max_{\{\mathscr{I}_{i,t}\}_{t=0}^{\infty}} \mathbb{E}\left[\sum_{t\geq 0}\beta^t\left[x_{i,t}-\kappa_{i,t}\mathscr{I}_{i,t}\right]\right],$$

subject to the dynamics of the wage gap

$$x_{i,t}=\begin{cases} x_{i,t-1}-\left(\mu+z_{i,t}\right)-\left(1-\gamma_g\right)\hat{g}_t-\left(1-\gamma\right)\hat{\pi}_t & \text{if } \mathscr{I}_{i,t}=0\\ 0 & \text{if } \mathscr{I}_{i,t}=1\end{cases},$$

where γ_z captures the degree of indexation of default wages to TFP shocks and $\hat{g}_t \equiv g_t - g^{ss}$. This is the same problem as (9) with relevant aggregate shocks replaced from $\left\{\left(1-\gamma\right)\hat{\pi}_t\right\}_{t=0}^{\infty}$ to $\left\{\left(1-\gamma_g\right)\hat{g}_t+\left(1-\gamma\right)\hat{\pi}_t\right\}^{\infty}$. So the Proof in Theorem 1, which focuses on the problem in (9) based on wage gaps, continues to hold:

$$\hat{\mathscr{W}}^x \approx \sum_{t=0}^{\infty}\beta^t\hat{x}_t^{\text{erosion}},$$

where $\hat{x}_t^{\text{erosion}}$ is defined as in (A.2), which captures the aggregate shocks on aggregate wage gaps (from the conflict-induced wage) while holding each worker's conflict decision as if inflation and productivity growth are at the steady-state level, and is given by

$$\hat{x}_t^{\text{erosion}} \approx -\left(1-\gamma\right)\sum_{s=0}^{t}\Phi_{t-s}^{ss}\hat{\pi}_s-\sum_{s=0}^{t}\left(1-\gamma_g\right)\Phi_{t-s}^{ss}\hat{g}_s \quad \forall t\geq 0,$$

and $\hat{\mathscr{W}}^x$ is now defined as in (A.4), which captures the impact of inflation shocks on worker welfare sans the exogenous component in (8):

$$\hat{\mathscr{W}}^x \equiv \hat{\mathscr{W}}-\sum_{t=0}^{\infty}\frac{\beta^t}{1-\beta}\hat{g}_t.$$

From the definition of wage gap, $x_{i,t} \equiv \log w_{i,t} - \log w_{i,t}^*$, we know that wage erosion, which captures the aggregate shocks on aggregate real wages while holding each worker's conflict decision as if inflation and productivity growth are at the steady-state level, is connected with $\hat{x}_t^{\text{erosion}}$ by:

$$\hat{w}_t^{\text{erosion}} = \hat{x}_t^{\text{erosion}}+\sum_{l=0}^{t}\hat{g}_l.$$

Together, we arrive at

$$\hat{w}_t^{\text{erosion}} \approx -(1-\gamma)\sum_{s=0}^{t}\Phi_{t-s}^{ss}\hat{\pi}_s + \sum_{s=0}^{t}\left[1-(1-\gamma_g)\Phi_{t-s}^{ss}\right]\hat{g}_s \quad \forall t \geq 0, \tag{C.1}$$

similar to (17).

Conflict costs increasing with the wage gains from conflict. The worker i's problem is given by

$$\max_{\{w_{i,t}\}_{t=0}^{\infty}} \mathbb{E}\left[\sum_{t=0}^{\infty}\beta^t\left(\log w_{i,t} - \frac{\kappa}{2}\left(\log w_{i,t} - \log\left(w_{i,t-1}e^{\alpha-(1-\gamma)\pi_t}\right)\right)^2\right)\right],$$

where $w_{i,t}^{\text{d}} = w_{i,t-1}e^{\alpha-(1-\gamma)\pi_t}$ captures the default real wage offered by the employer as in the main analysis. We can again summarize it terms of "wage gap," $x_{i,t} \equiv \log w_{i,t} - \log w_{i,t}^*$, defined as the difference between the actual wage and the frictionless wage $w_{i,t}^*$ given by (5):

$$\mathscr{U}(\boldsymbol{\pi}_\infty, x_{i,-1}) = \max_{\{x_{i,t}\}_{t=0}^{\infty}}\sum_{t=0}^{\infty}\beta^t\left\{x_{i,t} - \frac{\kappa}{2}\left(x_{i,t} - \left[\overbrace{x_{i,t-1}-(\mu+z_{i,t})-(1-\gamma)\hat{\pi}_t}^{x_{i,t}^d}\right]\right)^2\right\}.$$

Worker's optimal choice of $x_{i,t}$ implies, for all $t \geq 0$,

$$1-\kappa\left(x_{i,t}-x_{i,t}^d\right)+\beta\mathbb{E}_t\left[\kappa\left(x_{i,t+1}-x_{i,t+1}^d\right)\right]=0,$$

where $\mathbb{E}_t$ averages over the realization of idiosyncratic shocks $\{z_{i,s},\kappa_{i,s}\}_{s=t+1}^{\infty}$ starting from $t+1$. Iterating forward, we have, for all $t \geq 0$,

$$x_{i,t} = x_{i,t}^d + \frac{1}{\kappa(1-\beta)}.$$

Applying the envelope theorem similar to the proof of Theorem (1), for all $s \geq 0$,

$$\frac{\partial\mathscr{U}(\boldsymbol{\pi}_\infty, x_{i,-1})}{\partial\pi_s} = -\beta^t\kappa\left(x_{i,s}-x_{i,s}^d\right)(1-\gamma) = -\frac{\beta^s}{1-\beta}(1-\gamma) \quad \text{a.e.,}$$

Similar to the proof of Theorem (1), the impact of inflation on aggregate worker welfare is

$$\begin{aligned}\hat{\mathscr{W}} &= \int_0^1 \mathscr{U}(\boldsymbol{\pi}_\infty, x_{i,-1})\,di - \int_0^1 \mathscr{U}(\boldsymbol{\pi}^{ss}, x_{i,-1})\,di. \\ &= -(1-\gamma)\sum_{s=0}^{\infty}\beta^s\sum_{k=0}^{\infty}\beta^k\hat{\pi}_s = \sum_{t=0}^{\infty}\beta^t\hat{w}_t^{\text{erosion}},\end{aligned}$$

where

$$\hat{w}_t^{\text{erosion}} \approx -\left(1-\gamma\right)\sum_{s=0}^{t}\hat{\pi}_s$$

is now defined as how inflation shocks would impact workers' real wages if their conflict decisions (defined in terms of the intensity of the conflict $x_{i,t}-x_{i,t}^{d}$) are held at steady-state level.

Beyond hand to mouth consumers. In the main analysis, we study the case in which the worker has log utility and is hand-to-mouth. Our main result, Theorem 1, can be extended to the case where the worker faces a standard borrowing constraint or does not have log utility. Here, we allow the worker's utility $u(\cdot)$ to be an arbitrary twice-differentiable, strictly increasing, and strictly concave function. The worker's budget constraint is given by

$$c_{i,t}+a_{i,t}=w_{i,t}+(1+r)\,a_{i,t-1}\quad \text{s.t.}\quad a_{i,t}\geq \underline{a}, \tag{C.2}$$

where $a_{i,t}$ is the net savings, r is the real rate of return on savings (treated as exogenous as in the main analysis), and $a_{i,-1}$ is given. The worker is subject to the standard borrowing constraint $a_{i,t}\geq \underline{a}$. We now prove that the impact of inflation $\{\hat{\pi}_t\}_{t=0}^{+\infty}$ on aggregate worker welfare is now given by (18) in the main text.

The worker i's problem as a function of the inflation path $\boldsymbol{\pi}_\infty$ and initial conditions $\left(w_{i,-1},w_{i,-1}^{*},a_{i.-1}\right)$ can be written as:

$$\mathcal{U}\left(\boldsymbol{\pi}_\infty,w_{i,-1},w_{i,-1}^{*},a_{i,-1}\right)=\max_{\{a_{i,t}(h_{i,t};\boldsymbol{\pi}_\infty),\mathscr{I}_{i,t}(h_{i,t};\boldsymbol{\pi}_\infty)\in\{0,1\}\}_{t=0}^{\infty}}$$
$$\mathbb{E}\left[\sum_{t=0}^{\infty}\beta^t u\left(\omega_t\left(\boldsymbol{\pi}_{\boldsymbol{t}},\mathscr{I}_{\boldsymbol{i,t}}\left(h_{i,t};\boldsymbol{\pi}_\infty\right),h_{i,t}\right)\right)-\kappa_{i,t}\mathscr{I}_{i,t}\left(h_{i,t};\boldsymbol{\pi}_\infty\right)\right]\quad \text{s.t. (4) \& (C.2).} \tag{C.3}$$

Note that the wage gaps are no longer sufficient statistics for workers' problems when the worker faces a standard borrowing constraint or does not have log utility. Let $\left\{\mathscr{I}_{i,t}^{*}\left(h_{i,t};\boldsymbol{\pi}_\infty\right)\right\}_{t=0}^{\infty}$ denote the optimally chosen conflict decision and $\mathscr{I}_{\boldsymbol{i,t}}^{*}\left(h_{i,t};\boldsymbol{\pi}_\infty\right)=\left\{\mathscr{I}_{i,\tau}^{*}\left(h_{i,\tau};\boldsymbol{\pi}_\infty\right)\right\}_{\tau=0}^{t}$ the corresponding individual history up to t. Also let $\left\{a_{i,t}^{*}\left(h_{i,t};\boldsymbol{\pi}_\infty\right),c_{i,t}^{*}\left(h_{i,t};\boldsymbol{\pi}_\infty\right)\right\}_{t=0}^{\infty}$ denote the optimally chosen net savings and the corresponding consumption given the optimally chosen conflict and net savings decisions.

The key challenge is that the envelope theorem we use for Theorem 1 (Theorem 2 of Milgrom and Segal (2002)) only applies to unconstrained problems. To apply the envelope theorem suitable for constrained problems (Corollary 5 of Milgrom and Segal (2002)), the choice set must be a convex compact set. We henceforth consider an alternative problem where workers to choose the *probability* of conflict with their employer to increase pay, $\mathscr{I}_{i,t}\in[0,1]$. In this case, workers' choices $\left\{\mathscr{I}_{i,t}\left(h_{i,t};\boldsymbol{\pi}_\infty\right)\right\}_{t=0}^{\infty}$

reside in a convex compact set.[35] The dynamics of the worker $i's$ real wage is given by:

$$w_{i,t} = \begin{cases} w_{i,t-1}e^{\alpha-(1-\gamma)\pi_t} & \text{with prob. } 1-\mathscr{I}_{i,t} \\ w^*_{i,t} & \text{with prob. } \mathscr{I}_{i,t} \end{cases}. \tag{C.4}$$

The worker's alternative problem is then given by

$$\tilde{\mathscr{U}}\left(\boldsymbol{\pi}_\infty, w_{i,-1}, w^*_{i,-1}, a_{i,-1}\right) = \max_{\{a_{i.t}(h_{i,t};\boldsymbol{\pi}_\infty),\mathscr{I}_{i,t}(h_{i,t};\boldsymbol{\pi}_\infty)\in[0,1]\}_{t=0}^\infty} \mathbb{E}\left[\sum_{t=0}^\infty \beta^t u\left(\omega_t\left(\boldsymbol{\pi}_t, \mathscr{I}_{\boldsymbol{i,t}}\left(h_{i,t};\boldsymbol{\pi}_\infty\right), h_{i,t}\right)\right) - \kappa_{i,t}\mathscr{I}_{i,t}\left(h_{i,t};\boldsymbol{\pi}_\infty\right)\right] \quad \text{s.t. (C.2) and (C.4).} \tag{C.5}$$

In fact, the worker's value $\tilde{\mathscr{U}}\left(\boldsymbol{\pi}_\infty, w_{i,-1}, w^*_{i,-1}, a_{i,-1}\right)$, allowing them to choose the probability of conflict $\mathscr{I}_{i,t}\left(h_{i,t};\boldsymbol{\pi}_\infty\right) \in [0,1]$, is the same as the worker's value $\mathscr{U}\left(\boldsymbol{\pi}_\infty, w_{i,-1}, w^*_{i,-1}, a_{i,-1}\right)$, when they make a discrete choice of whether to conflict or not $\mathscr{I}_{i,t}\left(h_{i,t};\boldsymbol{\pi}_\infty\right) \in \{0,1\}$. This is because a worker will choose an interior probability of conflict $\mathscr{I}_{i,t}\left(h_{i,t};\boldsymbol{\pi}_\infty\right) \in (0,1)$ if and only if they are indifferent between conflict and non-conflict. By the same token, the optimally chosen conflict decision $\left\{\mathscr{I}^*_{i,t}\left(h_{i,t};\boldsymbol{\pi}_\infty\right)\right\}_{t=0}^\infty$ for the problem (C.3) also maximizes the alternative problem (C.5).

We can then apply the envelope theorem in Corollary 5 of Milgrom and Segal (2002) to the alternative problem (C.5).[36] Similar to (A.7),

$$\frac{\partial \log \omega_t\left(\boldsymbol{\pi}_t, \mathscr{I}^*_{\boldsymbol{i,t}}\left(h_{i,t};\boldsymbol{\pi}_\infty\right), h_{i,t}\right)}{\partial \pi_s} = \begin{cases} 0 & \text{if } t < s \\ -(1-\gamma)\prod_{\tau=s}^t\left(1-\mathscr{I}^*_{i,\tau}\left(h_{i,\tau};\boldsymbol{\pi}_\infty\right)\right) & \text{if } t \geq s \end{cases}. \tag{C.6}$$

As a result,

$$\begin{aligned} \frac{\partial \mathscr{U}\left(\boldsymbol{\pi}_\infty, w_{i,-1}, w^*_{i,-1}, a_{i,-1}\right)}{\partial \pi_s} &= (1-\gamma)\sum_{t=s}^\infty \beta^t \mathbb{E}\left[\sum_{t=0}^\infty \lambda_{i,t} w_{i,t} \frac{\partial \log \omega_t\left(\boldsymbol{\pi}_t, \mathscr{I}^*_{\boldsymbol{i,t}}\left(h_{i,t};\boldsymbol{\pi}_\infty\right), h_{i,t}\right)}{\partial \pi_s}\right] \quad \text{a.e.} \\ &= -(1-\gamma)\sum_{t=s}^\infty \beta^t \mathbb{E}\left[u'\left(c_{i,t}\right) w_{i,t} \prod_{\tau=s}^t \left(1-\mathscr{I}^*_{i,\tau}\left(h_{i,\tau};\boldsymbol{\pi}_\infty\right)\right)\right] \quad \text{a.e.,} \end{aligned} \tag{C.7}$$

where $w_{i,t} = \omega_t\left(\boldsymbol{\pi}_t, \mathscr{I}^*_{\boldsymbol{i,t}}\left(h_{i,t};\boldsymbol{\pi}_\infty\right), h_{i,t}\right)$ and $\lambda_{i,t} = u'\left(c_{i,t}\right) = u'\left(c^*_{i,t}\left(h_{i,t};\boldsymbol{\pi}_\infty\right)\right)$ capture the Lagrange

[35]We use the fact that the infinite product of compact sets $[0,1]$ remains compact under the product topology.

[36]We also need to check whether the objective and the constraint in (C.3) are concave in worker choices. In this case, because workers choose the probability of conflict, both the objective and the constraint in (C.3) are linear (and hence weakly concave) in worker choices.

multiple of the budget constraint at history $h_{i,t}$ given the aggregate shock $\boldsymbol{\pi}_\infty$. Aggregating (C.7),

$$\frac{\partial \mathcal{W}\left(\boldsymbol{\pi}_\infty\right)}{\partial \pi_s} = -\left(1-\gamma\right)\sum_{t=s}^{\infty}\beta^t\int_0^1 \mathbb{E}\left[u'\left(c_{i,t}\right)w_{i,t}\prod_{\tau=s}^{t}\left(1-\mathscr{I}_{i,\tau}^*\left(h_{i,\tau};\boldsymbol{\pi}_\infty\right)\right)\right]di, \quad \text{a.e.}$$

Similar to the proof of Theorem 1, we know that, to first order,

$$\hat{\mathcal{W}} \approx \sum_{t=0}^{\infty}\int_0^1 u'\left(c_{i,t}^{ss}\right)w_{i,t}^{ss}\hat{w}_{i,t}^{\text{erosion}}di,$$

where $c_{i,t}^{ss} = c_{i,t}^*\left(h_{i,t};\boldsymbol{\pi}^{\boldsymbol{ss}}\right)$, $w_{i,t}^{ss} = \omega_t\left(\boldsymbol{\pi}^{\boldsymbol{ss}}, \mathscr{I}_{\boldsymbol{i,t}}^*\left(h_{i,t};\boldsymbol{\pi}^{\boldsymbol{ss}}\right), h_{i,t}\right)$, and

$$\begin{aligned}\hat{w}_{i,t}^{\text{erosion}} &\equiv \log\left(\omega_t\left(\boldsymbol{\pi}_t, \mathscr{I}_{\boldsymbol{i,t}}\left(h_{i,t};\boldsymbol{\pi}^{\boldsymbol{ss}}\right), h_{i,t}\right)\right) - \log\left(\omega_t\left(\boldsymbol{\pi}^{\boldsymbol{ss}}, \mathscr{I}_{\boldsymbol{i,t}}\left(h_{i,t};\boldsymbol{\pi}^{\boldsymbol{ss}}\right), h_{i,t}\right)\right)\\ &\approx -\left(1-\gamma\right)\sum_{s=0}^{t}\prod_{\tau=s}^{t}\left(1-\mathscr{I}_{i,\tau}^*\left(h_{i,\tau};\boldsymbol{\pi}_\infty\right)\right)\cdot\hat{\pi}_s.\end{aligned}$$

This proves (18) in the main text.

C.2 General Equilibrium Determination of Employment and Wages

Worker's problem and welfare. Similar to (8), we can rewrite the utility of worker $i \in [0,1]$ as a function of wage gaps, conflict decisions, and an exogenous constant exogenous to worker i:

$$\mathbb{E}\left[\sum_{t\geq 0}\beta^t\left[x_{i,t} - \kappa_{i,t}\mathscr{I}_{i,t} + \left(1-E_{i,t}\right)\log\left(\phi\right)\right]\right] + \underbrace{\mathbb{E}\left[\sum_{t\geq 0}\beta^t u\left(w_{i,t}^*\right)\right]}_{\text{Exogenous to worker i}}, \tag{C.8}$$

where $E_{i,t}$ is the end-of-period employment status of worker i ($E_{i,t} = 1$ means being employed and $E_{i,t} = 0$ means being unemployed; it is exogenous to worker i) and the wage gap $x_{i,t} \equiv \log w_{i,t} - \log w_{i,t}^*$ if the worker is employed and $x_{i,t} = 0$ if the worker is unemployed. The worker's optimal conflict decisions then solve

$$\mathscr{U}\left(\boldsymbol{g}_\infty, E_{i,-1}, x_{i,-1}\right) = \max_{\left\{\mathscr{I}_{i,t}\left(h_{i,t};\boldsymbol{\pi}_\infty\right)\right\}_{t=0}^{\infty}}\mathbb{E}\left[\sum_{t\geq 0}\beta^t\left[x_{i,t} - \kappa_{i,t}\mathscr{I}_{i,t} + \left(1-E_{i,t}\right)\log\left(\phi\right)\right]\right] \text{ s.t. } \quad \text{(C.9)},$$

where $\boldsymbol{g}_\infty = \left\{\pi_\tau, g_{w,\tau}, f_\tau\right\}_{\tau=0}^{\infty}$ is the history of aggregate conditions,[37]

$$h_{i,t} \equiv \left(\left\{z_{i,\tau}, \kappa_{i,\tau}, s_{i,\tau}, f_{i,\tau}\right\}_{\tau=0}^{t}, x_{i,-1}, E_{i,-1}\right)$$

[37] The growth rate of the aggregate component of the conflict-induced wage $g_{w,\tau} \equiv \log\left(w_\tau^*/w_{\tau-1}^*\right)$ and the job finding probability f_τ are endogenous functions of the aggregate shocks $\{\pi_\tau\}_{\tau=0}^{\infty}$. However, they are exogenous to workers. As a result, we treat $\left\{\pi_\tau, g_{w,\tau}, f_\tau\right\}_{\tau=0}^{\infty}$ as separate, exogenous aggregate inputs to workers' problems.

is the history of idiosyncratic shocks up to t, $s_{i,t}$ is the i.i.d. separation shock for worker i at period t ($s_{i,t}=0$ with probability $1-s$ and $s_{i,t}=0$ with probability s), and $f_{i,\tau}$ is the i.i.d. job finding shock uniformly distributed in $[0,1]$. If a currently unemployed worker draws $f_{i,\tau}\leq f_{\tau}$, they become employed. The evolution of wage gap is given by

$$x_{i,t}=\begin{cases} x_{i,t-1}-\left(\mu+z_{i,t}\right)-\left(1-\gamma\right)\left(\pi_t-\pi^{ss}\right)-g_{w,t} & \text{if } \mathscr{I}_{i,t}=0 \text{ and } s_{i,t}=0 \text{ and } E_{i,t-1}=1 \\ 0 & \text{if } \mathscr{I}_{i,t}=1 \text{ or } s_{i,t}=1 \text{ or } E_{i,t-1}=0, \end{cases} \tag{C.9}$$

which captures the fact that, if the unemployed finds a job, their initial wage is be given by $w^*_{i,t}$. If they stay unemployed, they earn $\phi w^*_{i,t}$. As a result, if $E_{i,t-1}=0$ or $s_{i,t}=1$, the wage gap $x_{i,t}$ is zero. The end-of-period employment status of worker i, $E_{i,t}=E_t\left(h_{i,t},\mathbf{g}_\infty\right)$ is a function of $h_{i,t}$ and $\mathbf{g}_\infty$, exogenous to worker i's decisions. Its evolution is given by

$$E_t\left(h_{i,t},\mathbf{g}_\infty\right)=\begin{cases} 1 & \text{if } \left(E_{i,t-1}\left(h_{i,t-1},\mathbf{g}_\infty\right)=1 \;\&\; s_{i,t}=0\right) \text{ or } \left(\left(E_{i,t-1}\left(h_{i,t-1},\mathbf{g}_\infty\right)=0 \text{ or } s_{i,t}=1\right) \;\&\; f_{i,t}\leq f_\tau\right) \\ 0 & \text{else} \end{cases}.$$

Similar to the proof of the envelope theorem in the case where inflation shocks impact conflict-induced real wages in (17) , we have, for all $s\geq 0$,

$$\frac{\partial\mathscr{U}\left(\mathbf{g}_\infty,E_{i,-1},x_{i,-1}\right)}{\partial\pi_k}=-\left(1-\gamma\right)\mathbb{E}\left[E_{k-1}\left(h_{i,k-1};\mathbf{g}_\infty\right)\sum_{t=k}^{\infty}\beta^t\prod_{\tau=k}^{t}(1-s)^{\tau+1-k}\left(1-\mathscr{I}^*_{i,\tau}\left(h_{i,\tau};\mathbf{g}_\infty\right)\right)\right]\quad \text{a.e.} \tag{C.10}$$

$$\frac{\partial\mathscr{U}\left(\mathbf{g}_\infty,E_{i,-1},x_{i,-1}\right)}{\partial g_{w,k}}=-\mathbb{E}\left[E_{k-1}\left(h_{i,k-1};\mathbf{g}_\infty\right)\sum_{t=k}^{\infty}\beta^t\prod_{\tau=k}^{t}(1-s)^{\tau+1-k}\left(1-\mathscr{I}^*_{i,\tau}\left(h_{i,\tau};\mathbf{g}_\infty\right)\right)\right]\quad \text{a.e.} \tag{C.11}$$

$$\frac{\partial\mathscr{U}\left(\mathbf{g}_\infty,E_{i,-1},x_{i,-1}\right)}{\partial f_k}=-\sum_{t=0}^{k}\beta^t\frac{\partial\mathbb{E}\left[E_t\left(h_{i,t},\mathbf{g}_\infty\right)\right]}{\partial f_k}\log\left(\phi\right)\quad \text{a.e.} \tag{C.12}$$

Similar to the proof of the envelope theorem in the main analysis, we define the "survival" probability of the employer's default wage between period k and $t\geq k$,

$$\Phi_{k,t}\left(\mathbf{g}_\infty\right)=\int_0^1\mathbb{E}\left[E_{k-1}\left(h_{i,k-1};\mathbf{g}_\infty\right)\prod_{\tau=k}^{t}(1-s)^{\tau+1-k}\left(1-\mathscr{I}^*_{i,\tau}\left(h_{i,\tau};\mathbf{g}_\infty\right)\right)\right]di.$$

At steady state,

$$\begin{aligned}
\Phi_{k,t}\left(\boldsymbol{g}^{ss}\right) &= \int_0^1 \mathbb{E}\left[E_{k-1}\left(h_{i,k-1};\boldsymbol{g}^{ss}\right)\prod_{\tau=k}^{t}(1-s)^{\tau+1-k}\left(1-\mathscr{I}_{i,\tau}^{*}\left(h_{i,\tau};\boldsymbol{g}^{ss}\right)\right)\right]di \\
&= \int_0^1 E_{-1}\left(h_{i,-1};\boldsymbol{g}^{ss}\right)di\cdot\left(\mathbb{E}\left[\prod_{\tau=0}^{t-k}(1-s)^{\tau+1}\left(1-\mathscr{I}_{i,\tau}^{*}\left(h_{i,\tau};\boldsymbol{g}^{ss}\right)\right)|E_{i,-1}=1\right]\right) \\
&\equiv E^{ss}\cdot\Phi_{t-k}^{ss},
\end{aligned}$$

where $\mathbb{E}\left[\cdot|E_{i,-1}=1\right]$ averages over both the realization of shocks, and the initial wage gaps $x_{i,-1}$ of initially employed workers $(E_{i,-1}=1)$. Aggregate and take into consideration of the final term in (C.8), we know that, to first order

$$\hat{\mathscr{W}} \approx \sum_{t=0}^{\infty}\beta^{t}\left[E^{ss}\cdot\hat{w}_t^{\text{erosion}}-\log\left(\phi\right)\cdot\hat{E}_t+\hat{w}_t^{*}\right],$$

where

$$\hat{w}_t^{\text{erosion}} \approx -\left(1-\gamma\right)\sum_{k=0}^{t}\Phi_{t-k}^{ss}\hat{\pi}_k-\sum_{k=0}^{t}\Phi_{t-k}^{ss}\hat{g}_{w,k}+\hat{w}_t^{*}.$$

Firm's problem. The value of a firm employing worker i is given by

$$\begin{aligned}
\mathscr{J}_t\left(\vartheta_{i,t},w_{i,t}\right) = \vartheta_{i,t}-w_{i,t}+(1-s)\,\beta\mathbb{E}_t\left[\mathscr{I}_{i,t+1}^{*}\mathscr{J}_{t+1}\left(\vartheta_{i,t+1},w_{i,t+1}^{*}\right)+\left(1-\mathscr{I}_{i,t+1}^{*}\right)\mathscr{J}_{t+1}\left(\vartheta_{i,t},w_{i,t+1}\right)\right] \\
+\beta s\max\left\{\mathscr{V}_{t+1},0\right\}
\end{aligned}$$

where $\mathscr{I}_{i,t+1}^{*}$ captures worker i's optimal conflict decision, $\mathscr{V}_t$ denotes the value of a posted vacancy, and we use the fact that firms are owned by risk-neutral capitalists with a discount rate β. The value of a posted vacancy is given by

$$\mathscr{V}_t = -c_v\int_0^1\vartheta_{i,t}di+q\left(\theta_t\right)\int_0^1\mathscr{J}_t\left(\vartheta_{i,t},w_{i,t}^{*}\right)di+\beta\left(1-q\left(\theta_t\right)\right)\max\left\{\mathscr{V}_{t+1},0\right\},$$

The free entry condition implies that $\mathscr{V}_t=0$ for all $t\geq 0$.

Capitalists' consumption-and-savings problem. Capitalists own the firms, earn dividends from their operation, and pay the costs to post new vacancies. They face a standard intertemporal consumption-savings decision problem. In equilibrium, the real interest rate $e^{i_t-\pi_{t+1}}$ must satisfy the capitalists' Euler equation: $\beta e^{i_t-\pi_{t+1}}=1$, because capitalists are risk-neutral with a discount rate β.

Monetary policy. In the main text, we specify monetary policy as determining a path for inflation $\{\pi_t\}_{t\geq 0}$. Implicitly, we assume that monetary policy controls the path of nominal interest rates $\{i_t\}_{t\geq 0}$

in order to implement the path of inflation.

Good's market clearing. The model is closed via good's market clearing. Let C_t^w and C_t^c denote the aggregate consumption of workers and capitalists, respectively. Goods market clearing is given by:

$$C_t^w + C_t^c + \left(c_v \int_0^1 \vartheta_{i,t} di\right) v_t = Y_t + (1 - E_t)\,\phi w_t^*,$$

where v_t denotes the total number of vacancies posted, and $Y_t \equiv E_t \int_0^1 \vartheta_{i,t} di$ denotes aggregate production, i.e., the sum of production of all firms.

D Survey Questionnaire

D.1 Pre-screening background questions

1. Before we begin, please enter your Prolific ID below.

   [Text box]

2. What is your current age in years?

   [Text box]

   [We accepted participants aged 22 to 60 years old.]

3. What is your employment status?

   [Full-Time; Part-Time; Due to start a new job within the next month; Unemployed (and job seeking); Not in paid work (e.g. homemaker, retired or disabled); Other]

   [We accepted participants who selected Full-Time or Part-Time]

4. Please describe your work

   [Employee of a for-profit company or business or of an individual, for wages, salary, or commissions; Employee of a not-for-profit, tax-exempt, or charitable organization; Local government employee (city, county, etc.); State government employee; Federal government employee; Self-employed in own not-incorporated business, professional practice, or farm; Self-employed in own incorporated business, professional practice, or farm; Working without pay in family business or farm; None of the above]

   [We rejected participants who selected Self-employed in own not-incorporated business, professional practice, or farm; Self-employed in own incorporated business, professional practice, or farm or Working without pay in family business or farm]

D.2 Consent

This is a consent form. Please read and click below to continue.

Study background: this is a study by researchers at the London School of Economics, the University of Chicago, and the University of California. Your participation in this research will take approximately 7 minutes.

What happens in this research study: if you decide to participate, you will be asked to complete a series of questions about your perceptions of inflation, the costs of inflation, and how you negotiate your pay. You will also answer basic questions about demographics.

Compensation: there are no costs to you for participating in this research study, except for your time. On completion of the survey, you will be redirected to Prolific. You will be paid around $1.50 for completing the survey.

Risks: Your involvement in this study poses no additional risks beyond those encountered in daily life.

Benefits: Participating in this research offers compensation, as detailed earlier. Additionally, the findings may contribute to society by informing better policymaking. This, in turn, can guide efforts to minimize the negative effects of inflation. Voluntary participation: participating in this research is voluntary. You can withdraw from the study at any time.

Confidentiality: We will collect data through a Qualtrics questionnaire in the University of Chicago system, overseen by our Research Team. All gathered data will be securely stored in a password-protected Dropbox account dedicated to this research project. Identifiable data will not be collected as part of this study. If you decide to withdraw, any collected data will be permanently deleted. De-identified information from this study may be used for future research studies or shared with other researchers for future research without your additional informed consent.

Contact: For questions, concerns, or complaints about this research, contact the researchers at danielav@uchicago.edu. For inquiries regarding the IRB process for this study, reach out to the University of Chicago IRB team at cdanton@uchicago.edu.

Agreement to participate: by clicking continue, you indicate that you have read this consent form and voluntarily agree to participate in the study.

D.3 Preamble

The button to continue will appear after 15 seconds.

The **annual inflation** rate measures how much prices in the economy rise from year to year. It is defined as the yearly growth of the general level of prices of goods and services. For example, an inflation rate of 2% means that, on average, prices for goods and services rise by 2% over 12 months. In other words, an average bundle of goods and services that costs $100 at the beginning of a year costs $102 at the end of the year. If the inflation rate is negative, it is referred to as deflation. Deflation means that, on average, prices of goods and services fall from one year to the next.

D.4 Demographics

1. How long have you been working for your current employer?

[Less than 1 year; Between 1 and 3 years (2); Between 3 and 5 years (3); Between 5 and 10 years (4); More than 10 years (5)]

2. Do most people in your occupation or industry have their pay set by a union?

[Yes; No; I don't know]

3. Which category represents your annual pre-tax individual pay from your current employer?

If you have multiple jobs, please report the pay in the job in which you have the most earnings

[15 non-overlapping brackets from $0-$9,999 to $200,000 or more]

4. What is the value of your household's **total financial investment** (checking and savings accounts, stocks, bonds, 401(k), real state, etc.) **minus total financial liabilities** (credit card debt, mortgages, student loans, consumer loans, etc.)? If you are not sure, please estimate.

You should choose a negative range if the value of your liabilities is greater than the value of your investments.

[29 non-overlapping brackets from - $50,000 or less to $1,000,000 or more]

D.5 Experienced inflation in 2023

1. During the year 2023, did prices in general go up or down?

[*Prices in general went up; Prices in general went down; Prices in general stayed the same; I don't know]*

- **Branch:** If in Q1 of this section "Prices in general went up"

2. During the year 2023, by what percent did prices in general rise?

Please write your answer in percent. If you mean x%, input x.

[Text box]%

3. A general rise in prices in the economy, which we call inflation, can have many effects, both positive and negative. On net, do you think your household was made better or worse off because of inflation in the year 2023?

[*We were substantially worse off; We were somewhat worse off; Inflation didn't really affect our household; We were somewhat better off; We were substantially better off]*

- **Same branch:**
  - **Sub-branch:** If in Q3 of this branch "We were substantially worse off" OR "We were somewhat worse off"

4. What were the biggest factors that contributed to your dislike for the rise in inflation (which is defined as the growth rate in prices) in the year 2023?

Please pick ***up to three reasons.***

[Inflation hurts my real buying power, it makes me poorer: things that I buy became more expensive more quickly than my pay rose.; Inflation reduced the value of my savings, such as my investments or pension, potentially meaning I had to change my saving behavior.; Inflation causes a lot of inconvenience: budgeting and financial planning is more difficult and confusing for me, for example, I find it

harder to comparison shop or plan my savings decisions.; Inflation is bad for society overall, for instance because inflation harms the overall economy, reduces political stability, disproportionately harms disadvantaged groups.; Inflation makes it challenging for businesses to operate effectively. When inflation is high, businesses struggle to set accurate prices for their goods and services. This leads to a poor allocation of resources and production.; Higher inflation makes it harder to know what will happen in the future.; Other, please add additional comments below [Text box]]

5. Please rank your top reasons that contributed to your dislike for the rise in inflation (which is defined as the growth rate in prices) in the year 2023, from the most (1) to the least (3) important reason.

[The options chose by respondents in the previous questions with radio bottoms next to them to rank these options]

- **Same branch:**
  - **Same sub-branch:**
    - **Under sub-branch:** If in Q4 of this sub-branch "Inflation hurts my real buying power, it makes me poorer: things that I buy became more expensive more quickly than my pay rose."

6. Message: You previously suggested that a key reason that you disliked inflation was that the things that you buy became expensive more quickly than your pay rose, which reduced your standard of living. We want to understand more about your answer.

- **Same branch:**
  - **Same sub-branch:**
    - **Under sub-branch:** If in Q4 of this sub-branch not selected "Inflation hurts my real buying power, it makes me poorer: things that I buy became more expensive more quickly than my pay rose."

6. Message: You previously suggested that pay not keeping up with prices was not a key cost of inflation for your household over the past year. We want to understand a little bit more about why this is.

- **Same branch:**
  - **Sub-branch:** If in Q3 of this branch "Inflation didn't really affect our household"

4. What were the reasons why you were not affected by inflation in the year 2023?

[My income, or my household's income, increased at roughly the same rate as inflation, ensuring that my real buying power did not fall as inflation rose.; My household altered our spending behavior in order to consume cheaper goods but maintain our living standards.; My household didn't notice any significant changes in the price of the goods that we buy. We could afford what we needed without cutting back on our budget.; Other, please add additional comments below[Text box]]

- **Same branch**
  - **Sub-branch:** If in Q3 of this branch "We were somewhat better off" OR "We were substantially better off"

4. Why do you think your household was made better off because of inflation in the year 2023?

[My income, or my household's income, increased at a higher rate than inflation, ensuring an increase in my real buying power; Other, please add additional comments below[Text box]]

- **Branch:** If in Q1 of this section "Prices in general went down"

2. During the year 2023, by what percent did prices in general fall?
Please write your answer in percent. If you mean x%, input x.

[Text box]%

3. A general fall in prices in the economy, which we call deflation, can have many effects, both positive and negative. On net, do you think your household was made better or worse off because of deflation in the year 2023?

[We were substantially worse off; We were somewhat worse off; Deflation didn't really affect our household; We were somewhat better off; We were substantially better off]

- **Same branch:**
  - **Sub-branch:** If in Q3 of this branch "We were substantially worse off" OR "We were somewhat worse off"

4. Why do you think your household was made worse off because of deflation in the year 2023?

[Text box]

- **Same branch:**
  - **Sub-branch:** If in Q3 of this branch "Deflation didn't really affect our household"

4. Why do you think your household was not really affected by deflation in the year 2023?

[Text box]

D.6 Exploring actions to increase pay

1. What was your pay growth in 2023?

Please write your answer in percent. If you mean x%, input x.

[Text box]%

2. Common strategies to increase pay include initiating a difficult conversation with your employer to ask for a raise, searching for higher paying jobs with other employers, or switching employers in order to get a raise. Moreover, you could have obtained a second job or worked longer hours to get a raise. A union could also bargain for higher pay on your behalf.

Did your employer offer you this [Stated pay growth value in Q1 in this section]% by default or did you, or a union on your behalf, use any of the actions above or other actions to increase your pay?

[My employer offered me this pay by default.; My employer did not offer me this pay by default and I, or a union on my behalf, used some of the strategies above.]

- **Branch:** If in Q2 of this section "My employer offered me this pay by default."

3. What was your motivation for accepting your employer's default wage offer and not taking other actions to negotiate a higher pay raise?

*Please pick **up to three options.***

[My company does not negotiate to increase my pay. Perhaps because they would have to lay off workers or because they can replace me with another employee.; I am unlikely to be able to find a higher paying job that suits me as well as my current job, perhaps because of the perks and benefits offered by my job, or because there are few good alternative jobs.; My company sets pay in line with the rest of the industry, and industry-wide pay is not growing, perhaps because of the state of the overall economy.; Taking actions to raise my pay, such as a difficult conversation or searching for a new job, is too difficult. These actions take too much time or effort, or risk a conflict with my employer.; My employer's default wage offer was satisfactory, because they offered wage growth in excess of the increase in my cost of living.; My contract was negotiated before the higher inflation.; Other, please add additional comments below [Text box]]

4. Please rank your top reasons for accepting your employer's default wage offer and not taking other actions to negotiate a higher pay raise, from the most (1) to the least (3) important reason.

[The options chose by respondents in the previous questions with radio bottoms next to them to rank these options]

- **Branch:** If in Q2 of this section "My employer did not offer me this pay by default and I, or a union on my behalf, used some of the strategies above."

3. Did you take any of the following actions to achieve this pay change?
Please select all that apply

[I initiated a difficult conversation with my employer about my pay; I searched for a higher paying job with other employers, to make it easier to bargain with my employer over pay; I switched employers in order to get a raise; I obtained a second job in addition to my main job; I worked longer hours or performed better at work in order to get a performance based pay increase; A union bargained for higher pay on my behalf; Other, please add additional comments below [Text box]]

4. Above, you indicated that you got a pay raise of this [Stated pay growth value in Q1 in this section]% by implementing a common strategy to increase pay such as initiating a difficult conversation with your employer to ask for a raise, searching for higher paying jobs with other employers, switching employers in order to get a raise or other. Moreover, you could have obtained a second job or worked longer hours to get a raise. A union could have also bargained for higher pay on your behalf.
If you, or possibly your union, had not implemented any of these strategies, what pay growth do you think your employer would have offered you in 2023?
Please write your answer in percent. If you mean x%, input x.

[Text box]%

5. What was your, or your union's, motivation for taking actions in order to secure a pay increase in 2023?
Please pick ***up to three options.***

[My cost of living increased due to high inflation, therefore I needed more money to fund my spending and saving plans; My performance and output in the workplace increased significantly; I always bargain for pay; It was a long time since the last time my pay had been increased; Other, please add additional comments below[Text box]]

6. Please rank your top reasons for taking actions in order to secure a pay increase in 2023, from the most (1) to the least (3) important reason.

[*The options chose by respondents in the previous questions with radio bottoms next to them to rank these options]*

- **Same branch:**
  - **Sub-branch:** If in Q3 of this branch "I initiated a difficult conversation with my employer about my pay"

8. How many times in 2023 did you initiate a difficult conversation with your employer about your pay?

[Text box] times

9. Compared to a typical year, how were the conversations with your employer about pay?

[The conversations were substantially easier; The conversations were somewhat easier; The conversations were the same as a typical year; The conversations were somewhat more difficult; The conversations were substantially more difficult]

- **Same branch:**
  - **Sub-branch:** If in Q3 of this branch "A union bargained for higher pay on my behalf"

10. Compared to a typical year, did your union take more actions to increase pay in 2023 (e.g. engage in a tough negotiation or go on strike)?

[Compared to a typical year, my union did not take more actions to increase pay.; Compared to a typical year, my union took more actions to increase pay. My union engaged in tougher negotiations.; Compared to a typical year, my union took more actions to increase pay. My union organized a strike.; Compared to a typical year, my union took other actions to increase pay, please add additional comments below. [Text box]]

- **Same branch:**
  - **Sub-branch:** If in Q3 of this branch "I obtained a second job in addition to my main job"

11. In how many months in 2023 did you work for a second job in addition to your main job?

[Text box] months

12. Compared with a typical year, did you spend more months working on a second job in addition to your main job in 2023?

[Yes; No]

- **Same branch:**
  - **Sub-branch:** If in Q3 of this branch "I searched for a higher paying job with other employers, to make it easier to bargain with my employer over pay"

13. In how many months in 2023 did you submit at least 1 job application?

[Text box] months

14. Compared to a typical year, did you submit more job applications in 2023?

[Yes; No]

- **Same branch:**
  - **Sub-branch:** If in Q3 of this branch "I worked longer hours or performed better at work in order to get a performance based pay increase"

15. In how many months in 2023 did you work longer hours or did extra work to increase your performance?

[Text box] months

16. Compared to a typical year, did you work longer hours or did extra work to increase your performance in 2023?

[Yes; No]

- **Same branch:**
  - **Sub-branch:** If in Q3 of this branch "I switched employers in order to get a raise"

17. How many times in 2023 did you switch employers in order to get a raise?

[Text box] times

18. Compared to a typical year, did you switch employers more times in order to get a raise in 2023?

[Yes; No]

- **Branch:** If in Q2 of this section "My employer did not offer me this pay by default and I, or a union on my behalf, used some of the strategies above" but the only choice selected in Q2 of this section was "A union bargained for higher pay on my behalf" OR if in Q1 of this section "My employer offered me this pay by default."

19. Above, you indicated that you got a pay growth of [Stated pay growth value in Q1 in this section]% in 2023.

What pay growth do you think you could have attained in 2023 if you had taken actions such as initiating a difficult conversation with your employer to ask for a raise, searching for higher paying jobs with other employers, switching employers in order to get a raise, or others?

Please write your answer in percent. If you mean x%, input x.

[Text box] %

D.7 Employer's profits

1. During the year 2023, do you think that your employer's profits:

[Went up; Stayed the same; Went down; Not relevant - I work for a non-profit or government; I don't know]

D.8 Attention check

1. In questionnaires like ours, sometimes there are participants who do not carefully read the questions and quickly click through the survey. This means that there are a lot of random answers which

compromise the results of research studies. To show that you read our questions carefully, please enter turquoise as your answer to the next question.

What is your favorite color?

[Text box]

D.9 Future inflation

1. During the next 12 months, do you think that prices in general will go up, or go down, or stay where they are now?

[Go up; Stay the same; Go down; I don't know]

- **Branch:** If in Q1 of this section "Go up"

2. By about what percent do you expect prices to go up on the average, during the next 12 months?
Please write your answer in percent, if you mean x%, input x

[Text box] %

- **Branch:** If in Q1 of this section "Go down"

2. By about what percent do you expect prices to go down on the average, during the next 12 months?
Please write your answer in percent, if you mean x%, input x

[Text box] %

D.10 Cost of conflict

Common strategies to increase pay include initiating a difficult conversation about pay with employers, or searching for higher paid jobs with other employers. Please, think ahead to 12 months from now. Suppose that you are working at the same job at the same place you currently work, and working the same number of hours.

1. What pay growth do you think you would get by default if you do \textbf{not take any strategies at your disposal to increase your pay, including the common strategies listed above?
Please write your answer in percent, if you mean x%, input x

[Text box] %

2. What pay growth do you think you would get if you do your best to increase pay using any strategies at your disposal, including the common strategies listed above?
Please write your answer in percent, if you mean x%, input x

[Text box] %

3. Your employer increases pay for everyone in your position, including you, by z% (possible values listed below). Would you accept your employer's offer without taking any actions to increase your pay or would you do your best to increase your pay using any strategies at your disposal (such as initiating a difficult conversation about pay with employers, or searching for higher paid jobs with other employers)?
Remember that you have said that if you do your best to increase pay using any strategies at your disposal, you would have a pay growth of [Stated pay growth value in Q2 in this section]%.

[9 rows presented in either descending or ascending order, each with different pay growth values. The maximum value corresponds to the pay growth stated in Q2 of this section, while the minimum value is this pay growth value minus 4. The difference between each row is 0.5 percentage points. For each row, respondents are presented with two options: "I would accept my employer's pay growth offer" or "I would do my best using any strategies at my disposal to increase my pay further."]

D.11 Hypothetical inflation

[In this section, participants were randomly assigned to one of 5 possible hypothetical inflation scenarios, either 2%, 4%, 6%, 8% or 10%.]
Consider a hypothetical situation in which inflation is expected to be [Hypothetical inflation]% in the next 12 months. Suppose that you are working at the same job at the same place you currently work, and working the same number of hours.
1. What pay growth do you think you would get by default if you do not take any strategies at your disposal to increase your pay (such as initiating a difficult conversation about pay with employers, or searching for higher paid jobs with other employers)?
Please write your answer in percent, if you mean x%, input x

[Text box] %

2. Would you accept your employer's offer without taking any actions to increase your pay or would you do your best to increase your pay using any strategies at your disposal?

[I would accept my employer's pay growth offer; I would do my best using any strategies at my disposal to increase my pay further]