THE GREAT DECOUPLING: MACROECONOMIC PERCEPTIONS, REAL WAGES, AND COVID-19[*]

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Abstract: The American public's view of the macroeconomy has changed dramatically in recent years, in seemingly-perplexing ways. To document this phenomenon and better understand it, this paper analyzes forty-seven years of surveys on the state of the U.S. economy. This phenomenon is best understood as a persistent sense that the *change* in economic conditions is somewhat worse than expected. This is partly attributable to stagnant nominal wages despite high inflation and low unemployment, which reduced the purchasing power the economy delivered to households. A long-term decline in U.S. wage cyclicality has made unemployment a weak determinant of economic sentiment.

Keywords: economic sentiment; consumer perceptions; economic surveys; macroeconomic conditions

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** This paper has several figures that are best viewed in color. **

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Traditional macroeconomics evaluates the health of the economy through objective fundamentals like unemployment, inflation, and output growth. Theoretical models and policy prescriptions are also expressed in these terms, and are typically unshaped by the public's perception of economic conditions. For the most part, economists have concerned themselves with these perceptions only insofar as they predict future values of macroeconomic fundamentals.

Until recently, there has been little cost to doing so, because these perceptions have evolved in line with these fundamentals. During recessions, slowdowns in output and increases in unemployment raise consumers' pessimism about the economy; high inflation does the same thing. The reverse happens when these variables move in the opposite direction.

Recent years have stood this pattern on its head. As the economic recovery from the Covid-19 pandemic gathered steam in 2021 and progressed the following year, a perplexing and persistent economic pessimism set in, with the American public seemingly ignoring large gains in output and employment to despair over a modest increase in inflation. This pessimism has been widely noted in the media, as discussed below, and a variety of explanations for it postulated, none conclusively.

We partly unravel this perplexity in this paper, carefully documenting economic perceptions before, during, and after the onset of Covid and uncovering their fundamental economic correlates. Doing so helps us understand not only this important moment in economic history, but also the nature of these perceptions themselves, as we revisit decades-old measurement decisions and empirical findings that, for the present moment, obscure as much as they reveal. Two are foremost among these: the seemingly pedestrian detail of how public opinion about the state of the economy is measured, and the value, as it were, of low unemployment.

The first is tackled in Section I, in which we estimate two flexible, summary, decades-long indices of economic perceptions that extend into early 2024. These reveal sizeable shifts in

sentiment originating *prior* to Covid, which do not appear in other, more standard, less flexible indices. The mystery of Covid-era perceptions begins *before* Covid. The second is tackled in Sections II and III, in which we relate these indexes to macroeconomic fundamentals. We affirm that the public has been strikingly negative about the economy when judged by traditional measures, a phenomenon we call "The Great Decoupling." Then, delving more deeply, we find a more nuanced role for labor market tightness than has been previously apprehended. In a decades-long development that has gone largely unnoticed, the troika of unemployment, real wages, and economic perceptions has become somewhat disjointed. Low unemployment did not offset the effect of Covid-era inflation on real wages and was not valued highly on its own; as a result, pessimism increased. These findings cannot explain the entirety of Covid-era sentiment, but they do make it somewhat less surprising. To a significant degree, the American public judges the economy by the purchasing power it delivers to households; when that falls pessimism rises.

Section I. Measuring Economic Perceptions

Two Approaches. Almost all studies of economic perceptions in the U.S. utilize one of two longstanding sentiment indexes: the Index of Consumer Sentiment (ICS) from the University of Michigan or the Consumer Confidence Index (CCI) from the Conference Board. Each is formed by averaging the responses to five questions about "business conditions," personal finances, the job market, etc. For present purposes these indexes are problematic in two fundamental ways.[1]

[1] The criticisms to follow also hold for each survey's two "sub-indices," one about current conditions and another about future expectations.

First, these questions *prescribe* which aspects of the economy the index is determined from, while the averaging prescribes their relative value. In the ICS, three of the five questions inquire about households' financial condition (directly or indirectly, by asking whether it is a good time to buy household durables). Inflation concerns are well-represented in such a survey. The CCI is quite different: four of the five questions pertain to "business conditions" or "available jobs."[2] Either way, respondents cannot include or weight different aspects of the economy as they see fit.

The second problem is that each survey juxtaposes questions about the *level* of economic conditions with questions about the *change* in conditions, and questions about *current* economic activity with questions about the *future*. For example, across the two surveys, one question asks whether business conditions *are good or bad* (currently), another asks whether they *will be good or bad* (in six months), and another asks whether they *are getting better or worse*. As a result, equivalent index values could be generated by one economy that was bad but improving, and another that was good but declining.

Both problems obscure public sentiment about the economy and complicate efforts to determine its macroeconomic determinants or "rationality." The solution is straightforward: ask Americans to directly assess the current state of the economy and whether it is getting better or worse, separately reporting the responses to each question. Many reputable surveys do just this. Grant (2014) analyzed these surveys and concluded that they are statistically distinct from the Michigan and Conference Board indices, informative about current values of macroeconomic variables (which are reported with a lag), and related to these variables and to each other in

[2] The fifth question asks about "total family income six months from now." Inflation could perversely cause answers to this question to be more positive.

consistent and sensible ways. This work is the natural starting point for understanding consumer perceptions during the pandemic.

We call questions about the current state of the economy "good economy" (GE) questions, and those about the change in economic conditions "better/worse" (BW) questions. Each type of question is asked by several pollsters, often at irregular intervals, and always with slight differences in phrasing. All offer multiple response options ("the economy is good," "the economy is fair," and so on). For each question type, we wish to amalgamate this information into a single index that runs continuously for the full time span of the data. This technical matter is worked out by Grant (2014) using a generalization of a standard ordered probit model, and we employ these methods here. The estimation approach, survey questions, and data are described in full in Appendix A. The GE index runs from late 1985 through early 2024, while the BW index runs from mid-1976 through early 2024. Each serves as the summary measure of economic perceptions for that question type, with higher values representing greater positivity.

Results. Figure 1 presents both indexes, along with the thresholds that distinguish the response options ("good," "fair," etc.) for each survey included in the data (*New York Times*, Gallup, etc.). Neither index has natural units, which are governed by technical factors, but because each survey's thresholds lie about one unit apart, interpretation is simple. A one unit increase in either index is akin to each respondent choosing the next best response option: a "good" economy instead of a "fair" economy, or an economy that is "getting better" instead of "staying the same."[3]

[3] The lone exception is a better/worse survey that accepts, but does not offer, "staying the same" as a response option. As a result, that option is rarely chosen, so its thresholds draw closer.

Note also that the mean value of the GE index roughly corresponds to each survey's middle threshold, which separates positive responses ("good," "excellent," etc.) from negative ones ("not so good," "only fair," etc.). In this sense the index is "centered": a response that is positive on its face is also positive in relative terms. The same is true for the BW index, whose mean of (nearly) zero falls squarely in the middle of each survey's "neutral territory," that is, between the two thresholds bracketing a neutral response ("staying the same," as opposed to "better" or "worse").

Both indexes largely adhere to the business cycle, with less favorable perceptions during acknowledged recessions. The Covid-era trough is comparable to those experienced previously, but extends far beyond the formal recessionary period, which ended in April 2020. This phenomenon had not been previously experienced.

Figure 2 compares the Good Economy index with the ICS and CCI over the last decade. This comparison demonstrates the benefit of our "unprescribed" approach to measuring sentiment. While all three indices trend similarly in the first third of this ten year period, they diverge afterwards. The output-oriented CCI soars during the middle third, dips during Covid lockdowns in 2020, then regains a moderate level afterwards. The price-oriented ICS, in contrast, remains largely static during the middle third of this period and then plummets. The GE index mimics the CCI during 2017-2019 and the ICS afterward, consistent with a shared emphasis on prices and production that neither alternative adequately captures. The net change over the full ten year period depends on which index is consulted–positive for the CCI, negative for the ICS, nil for our measure–as does the very notion of a post-Covid "crisis of confidence." However, the low values of the flexible GE index indicate that this crisis is genuine.

A closer look at Figure 2 reveals a subtler but equally important phenomenon. While the

onset of Covid lockdowns in March 2020 prompted immediate course reversals in the ICS and CCI, the GE index had already been plummeting. Over half of the decline from its Oct. 2019 peak to its Sept. 2020 nadir occurred before lockdowns took effect.[4] Such a precipitous fall is rare and can only be attributed to aspects of the economy that the ICS and CCI do not inquire about.

Our other index, the BW index, reflects the change in economic conditions rather than their level. As such, it should be expected to resemble the temporal change in the GE index. This was confirmed by Grant (2014), who found the BW index to be best fit by an eight month, backward difference of the GE index. In addition to alleviating endogeneity concerns that would obtain if the BW index were forward-looking, this relation suggests that the two indexes are, to a reasonable degree, measuring the same construct, one in levels, the other in differences.

To update this finding to our newer data, Figure 3 graphs the BW index alongside the differenced GE index, along with two measures of their similarity over rolling three year windows: their simple correlation and mean squared difference. The correlations are generally quite high, punctuated by brief periods to the contrary, generally preceding recessions. This closeness is disrupted in the year of Covid impact, 2020, but is restored as the three-year window leaves 2020 behind, in the last points of the graph. The "sensible" relation between the GE and BW indexes continues to hold post-Covid.

The BW index highlights a second phenomenon: the failure of sentiment to recover as the economy regained some normalcy in early 2021. Post-lockdown, responses to this question peaked

[4] All three Good Economy surveys reported for March 2020 were taken in the first half of that month, before lockdowns began in earnest. Just over half of the decline in that index occurs by then. The BW index exhibits a contemporaneous, but milder, decline beginning in Sept. 2019.

at parity in April 2021 before descending again into pessimism.[5] Meanwhile, the GE index–which had fallen more sharply– recovered only 40% of its pre-lockdown value, less than for the ICS (54%) and CCI (92%). By mid-2021, the ICS and CCI both remained somewhat buoyant, while the GE index had dropped to a new low. This phenomenon, too, can only be explained by sentiment-dampening factors lying outside the purview of these other surveys.

In summary, measurement matters. The magnitude of the drop in sentiment, its timing, and its interpretation all depend on the index that is consulted. The unprescribed GE and BW indexes constructed here both declined for months before lockdowns began, driven by factors the CCI and ICS don't pick up. These factors may have persisted beyond 2020, explaining both indices' failure to recover substantially in early 2021. These dynamics went largely unnoticed: the media frenzy accompanying "The Great Decoupling" was almost a year away.

Section II. Macroeconomic Underpinnings

Methods. The natural starting point for trying to understand changes in economic perceptions is to link them to macroeconomic fundamentals. Accordingly, we regress our indices on a standard set of variables gleaned from the studies cited below: inflation, the unemployment rate, output growth, a medium-term interest rate (the seven-year Treasury bill), and an index of the strength of the dollar.[6]

[5] Two surveys ask the BW question monthly throughout this period. In every month but April 2021, "worse" responses were more frequent than "better."

[6] Inflation is calculated using the all-urban Consumer Price Index, and the unemployment rate is seasonally adjusted. Each quarterly observation of the real, chain-weighted, seasonally-adjusted Gross Domestic Product is assumed to pertain to the middle month of each quarter; the other months are calculated by linear interpolation. The trade-weighted index of exchange rates of the U.S.'s most

All are shown in Figure B1 in Appendix B.

We estimate levels and differences specifications for the GE index and regress the BW index on differences of the independent variables. Backward differences of twelve months are used in the differenced GE specification and eight months in the BW specification (following the findings noted previously). Estimation is conducted using ordinary least squares (OLS), with the standard errors adjusted using the Newey-West correction. These regression specifications were all used and justified in Grant (2014), making the current study "pre-registered" of a sort.

Other, non-economic factors could also influence economic perceptions. Some of these will be themselves influenced by macroeconomic fundamentals, while others will operate independently from them. The first group includes media coverage. Disentangling causation from correlation here is tricky, and even recent, methodologically sophisticated studies disagree (Hopkins et al., 2017; Boydstun et al., 2018). However, even when media coverage is found to matter, "the lion's share of consumer sentiment is explained by economic fundamentals...economic performance accounts for...much of the variance in economic media tone" (Boydston et al., 2018, p. 997; see also Larsen et al., 2021). Our regressions estimate the total effect of macroeconomic fundamentals on economic perceptions: the direct effect plus any indirect effects operating through mediators such as media coverage. Any independent effect of these mediators enters the residual, along with that of other non-economic factors. We say more about some of these at the end of this paper.

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important trading partners is from the Federal Reserve Bank of St. Louis, and is scaled by a factor of ten so its standard deviation is comparable to those of the other variables. Inflation and output growth are calculated using twelve month backward differences.

The values of unemployment and output are subject to revision over time. The revised values better explain these survey responses, implying that economic assessments are based on the public's genuine perceptions of macroeconomic conditions, not reported statistics. All estimations use the most recent values available as of May 2024. See Grant (2014) for more detail.

Baseline Results. Descriptive statistics and estimates are given in Tables 1 and 2. We begin where Grant (2014) left off, with the pre-Great Recession time frame, which is found in the leftmost column(s) of each regression specification (GE levels, GE differences, BW) in these two tables. Here sentiment is most strongly influenced by unemployment: an increase of three percentage points would cause all respondents to select the next worse response option. Significant but smaller effects, in the expected direction, are observed with inflation and GDP growth, with positive effects for the exchange rate and mixed, often small effects for the interest rate. Except for this last variable, the estimates are fairly consistent across specifications, in part because assessments of the macroeconomy adjust rapidly (see Grant, 2014).

These estimates imply that one percentage point of unemployment was "worth" three to five percentage points of inflation, in terms of perceptions. This ratio is duplicated in studies that relate measures of happiness or life satisfaction to unemployment and inflation (DiTella, MacCulloch, and Oswald, 2001, 2003; Wolfers, 2003; Blanchflower et al., 2014); with other such studies duplicating our generally small effects of long-term interest rates and economic growth (Oswald, 1997; see also Welsch, 2007, 2011). The same ratio appears when relating post-1970 presidential approval to economic conditions (Berlemann and Enkelmann, 2014).

This widespread ratio aligns with the "costs" of each factor, as they were experienced by the public. The cost of inflation is straightforward: a loss of purchasing power. An unanticipated, general price increase of one percent lowers purchasing power by one percent in the short run (less in the long run, as the labor market adjusts). In contrast, the costs of unemployment are multifaceted and large (Helliwell and Huang, 2014). During this time frame, a one percentage point decrease in unemployment raised U.S. men's wages by about 1.5% (Coleman, 1984; Bils, 1985; Rayack, 1987;

Solon, Barsky, and Parker, 1994; see also Barlevy, 2001). In addition, the unemployed lose earnings and the opportunity to gain valuable work experience and suffer from reduced mental health, while the employed are less able to switch jobs and have fewer weekly hours. This logic supports the 3:1-5:1 ratio observed in this literature and supports an emphasis on unemployment as the macroeconomic factor of greatest concern to households.

The Great Decoupling. This ratio implies that post-2020 economic perceptions should be relatively strong. Inflation that topped out five percentage points above its sample period average (in Table 1) would be outweighed by unemployment that was three percentage points below its average and solid economic growth. To illustrate, we extend the estimation period through Dec. 2019, to stay shy of Covid, and use the estimated coefficients–also found in Tables 1 and 2–to predict the values of each index through Dec. 2023. (The estimates and R^2 values through 2023, included in these tables as well, testify to Covid's disruptive effect.)

Figure 4 contains the actual and predicted values of each index, whose difference equals the residual. Prior to the Covid era, residuals in all three dependent variables were occasionally sizeable, generally at the onset of and emergence from recession, with a magnitude of about one half unit. These residuals are dwarfed by those in the pandemic's early stages, first positive, then negative, as perceptions under-reacted to large swings in unemployment and GDP. This is plausibly the result of two large income supports that took effect during that period, Economic Impact Payments (EIP) and expanded unemployment insurance (UI) benefits, which were both well-timed to offset negative swings in sentiment. Not having fallen as much as expected, perceptions had less ground to recover as the economy stabilized.

After these swings, the predicted and actual values of the GE index adopt different trajectories. Throughout this period it is indeed predicted to be high, but from 2021 to late 2022 the actual index increasingly falls behind these predictions, eventually achieving a yawning gap of more than one unit. We call this "The Great Decoupling," which has justifiably perplexed onlookers.

This decoupling also appears in the BW index, but more subtly. It hews more closely to expectations, consistently falling mildly short of the mark. Moderately low values during much of 2021 and early 2022 are predicted by the model, as is a mild recovery in late 2022 and 2023. Still, these modest negative residuals accumulate over time, dragging the GE index down. The Great Decoupling is best understood as a continuous sense that the economy is getting *somewhat more worse* than fundamentals predict, which caused the GE index to further descend from an *already-low post-Covid starting point* whose provenance, intermingled with the effects of Covid, is unclear.

Public Reaction. The divergence between objective and subjective measures of macroeconomic conditions observed in The Great Decoupling began to be widely recognized in early 2022.

> There's something very peculiar going on with how Americans perceive the economy...there's a huge disconnect between economic reality, which is mixed–inflation is a big concern, but job growth has been terrific–and public perceptions, which are weirdly dismal. (Paul Krugman, *New York Times*, Mar. 3, 2022)

Once this was recognized, the search for explanations began. Some were founded in under-appreciated economic factors:

> One theory...goes like this: When voters secure a raise or new job, they tend to interpret that as a product of their own efforts and abilities; when they go to the store and see that prices are up, they blame "the economy" and the politicians who manage it (Eric Levitz, "Five Reasons Voters Underrate the Biden Economy, *New York Magazine*, Feb. 2022).

> In the long run we are all dead, Keynes famously said. What he didn't say, but I will, is that in the medium run our wages have not yet caught up with inflation...Right now it is the medium run that is more vivid in the eyes of most Americans. (Tyler Cowen, "Economic Pessimism Makes Sense Right Now," Bloomberg, Nov. 10, 2021)

> Even though gas prices have retreated significantly over the past couple of months, behavioral economists say much of the nation's collective angst can be chalked up to prices at the pump. (Martha White, "Consumers Still Don't Feel Great about the Economy, Despite Lower Gas Prices," *CNN Business*, Aug. 12, 2022)

Others were rooted in behavioral factors, namely, psychology or politics:

> People are not responding rationally to objective data right now. We are living in polarized, partisan times. Questions about consumer confidence or the country being on the right or wrong track are meant to get at people's views of the world outside of politics. But nothing lies outside of politics anymore. (Fareed Zakaria, *Washington Post*, Feb. 10, 2022)

> [The] media have accentuated the negative...CNN and MSNBC devoted 50 percent more screen time in November to inflation than to all other economic developments combined...Fox News has devoted three times as much screen time to inflation as CNN. (Paul Krugman, *New York Times*, Feb. 3, 2022)

> Soon after President Biden took office–and as the pandemic seemed to be winding down–[economic] optimism returned. Until it didn't. An inextricable part of this is partisanship... Partisanship is part of what's driving pessimism. (Philip Bump, *Washington Post*, June 7, 2022)

Still others were based on tangible non-economic factors:

> The *Times*'s Nate Cohn makes a persuasive case [for] two causes–the delta variant and the withdrawal from Afghanistan... Life was getting messy, and the president who had promised normalcy...was not delivering. (Fareed Zakaria, *Washington Post*, Feb. 10, 2022)

> I would be surprised if a media narrative were the full story. What else might explain the dissatisfaction? Even if you forget about inflation, the experience of living and working in the U.S. economy is often unpleasant right now... Public buses and subways are unreliable...after-school activities are unreliable, creating child-care gaps. Grocery stores are routinely out of items. Retail lines are long. Doctor's appointments can be hard to get... By many measures–mental health, suicide attempts, blood pressure, violent crime, vehicle crashes, student learning–society is not functioning very well. (David Leonhardt, *New York Times*, Feb. 1, 2022)

This panoply of potential explanations has persisted to the present. Their common thread is that they try to *humanize* economic perceptions. To some degree, macroeconomic fundamentals stand at arm's length from households' quotidian concerns: unemployment, output growth, and inflation only partly determine a household's ability to pay its bills. Thus, when economic perceptions diverge from these fundamentals, it is natural to try to close that distance.

Of course, this need not generate empirical credibility. For example, Eric Levitz' quote above implies the irrelevance of unemployment, compared to inflation; this is flatly contradicted by the estimates in Tables 1 and 2. In Appendix B, we pre-screen other hypothesized economic factors by determining whether they are systematically related to the pre-Covid residuals in either index. This exercise yields only one viable candidate for further analysis: real wages. This factor humanizes economic perceptions, resolves a specification problem lurking below the surface of the results presented so far, and helps us understand Covid-era sentiment.

Section III. Real Wages, Economic Perceptions, and The Great Decoupling

Labor Market Tightness and Economic Perceptions. In Tables 1 and 2, extending the end of the estimation period from Aug. 2008 to Dec. 2019 leaves the estimates largely unchanged, with one exception: unemployment. The effect of this most important factor falls by about half in all three specifications–a sign that they are somehow incomplete.

This reason is rooted in two somewhat overlooked strands of evidence in the literature. The first argues that labor market fluidity, as expressed in worker flows between jobs and/or employment, has declined in recent decades (Molloy et al., 2016; Davis and Haltiwanger, 2014).

Both studies show that this labor market ossification is partly attributable to an aging workforce; beyond that, the explanations are multifaceted but less conclusive.[7]

Such ossification should dampen the wage impact of business cycle fluctuations. The second strand of evidence confirms this point. Two studies (Grant, 2001; Molloy et al., 2016) find direct evidence of reduced wage cyclicality over time, though the details differ.[8] These are accompanied by a sequence of panel studies that relate individuals' real wage changes to the contemporaneous change in unemployment. Earlier studies of this type, cited above, found that a one percentage point decrease in the unemployment rate raised men's wages by about 1.5%; the two studies analyzing later time periods obtain notably smaller estimates.[9] (If pay has become less responsive to unemployment, it is likely–though unproven–that benefits, hours, and working conditions have become less responsive too.) Then the unemployment effects in Tables 1 and 2 should be smaller in more recent estimation windows, which is what we observe.

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[7] Working papers by Bagga (2022) and Bryson (2022) argue that increases in firm size and age play an important role.

[8] Grant (2001) compares the 1975-81 period with 1983-93 and finds dramatically reduced cyclicality among union workers. Molloy et al. (2016) estimates Beaudry and DiNardo's (1991) implicit contract model for three different decades–the 1980s, 1990s, and 2000s–and obtains markedly lower estimates for the 2000s. Grant (2003) affirms Beaudry and DiNardo's estimates for 1976-1984 and extends them to a variety of data sets spanning the mid 1960s to the late 1990s.

[9] Gertler et al. (2020; data from 1990-2012) find that a one point reduction in unemployment raises men's wages by 0.5% for job stayers and 1.6% for job switchers. In the earlier studies cited above, the analogous values are 0.5% and 3-4%. Bellou and Kaymak (2021; data from 1979-2008) find that a one point drop in unemployment raises overall wages by only 0.2%, well below early studies' 1.5% average for men, and less than half of Solon et al.'s (1994) estimate for women.

While some studies relate wage levels to unemployment levels and individual fixed effects, no early studies (with 1960s-1980s data) employ this approach, and the two specifications yield quite different estimates (Ballou and Kaymak, 2021). Thus these estimates cannot be informative about changes in wage cyclicality over time.

To probe more directly, we relate real wages to pre-Covid residuals in each index. This is not a trivial exercise to conduct. The skill composition of the workforce varies countercyclically (Solon et al., 1994), preventing the use of aggregate wage statistics for this purpose. Instead, economists use microdata that tracks individuals' wage growth over time. Two such sources are available: Solon et al. (1992) report mean annual wage changes among males from 1967-1987, while the Federal Reserve Bank of Atlanta publishes twelve-month mean wage growth on a monthly basis from 1983 forward.[10] The annual real wage changes implied by both are graphed in the top panel of Figure 5. These series are not related to the GE residual but are to the BW residual. Correlations of real wages with the (pre-Covid) annualized BW residual in Figure 5 are 0.48 for both series. These findings motivate incorporating real wages into our formal analysis.[11]

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[10] Solon et al. utilize the Panel Study of Income Dynamics (PSID), while the Atlanta Fed utilizes matched panels from the Current Population Survey (CPS), as in Grant's (2001) and Daly et al.'s (2012) wage cyclicality analyses. Each data source has limitations: the PSID is relatively small, while the CPS has temporal gaps during part of 1985-6 and 1995-6 and loses everyone who changes residence in the twelve months between their first and second interview. However, Kim (2009) and Nekarda (2009) both show that bias from this sample attrition is small. The analysis in the text uses values that are "weighted to be representative of each month's population of wage and salary earners..." and smoothed using a three month centered moving average (to reduce noise).

Median wage growth in the Atlanta Fed series generally follows that of average hourly earnings, with larger values near the end of expansions and smaller values during contractions, as would be expected from countercyclical variation in the skill composition of the workforce. During the post-Covid expansion, this variation was particularly important: from early 2020 to early 2024, the Atlanta Fed series grew faster than CPI inflation, while Average Hourly Earnings and the Employment Cost Index ran behind it. The data and more detail can be found at https://www.atlantafed.org/chcs/wage-growth-tracker.

[11] The decision to account for wages specifically, and not household income generally, is not haphazard. The Federal Reserve's Survey of Household Economics and Decisionmaking inquires both about households' own financial condition and the state of the economy, and demonstrates that respondents clearly distinguish between the two, particularly during a period of large transfer payments (see Thompson, 2022, and many others).

Formal Analysis of Real Wage Effects. The right panel of Table 2 adds the Atlanta Fed's wage growth measure, reported monthly and deflated using the CPI, as an explanatory variable in our BW regressions. Two time periods are analyzed: 1983-2019, to predate Covid, and 1983-2023, omitting 2020 as an outlier.

The relevance of real wages is immediately clear. Its coefficient estimate is large over both time periods and the regression's fit is greatly improved. With a pre-Covid R^2 value of 0.47, almost half of the variance in the relatively volatile BW index is explained. Furthermore, upon real wages' inclusion, the inflation estimate falls to zero. In forming perceptions, inflation is penalized because it destroys the purchasing power of earnings, with residual effects on the value of assets or debt being secondary at best. The real wage estimate is double the previous regression's inflation estimate, implying that (in the short term) nominal wages increase half as much as prices do. This sluggish wage adjustment is what makes inflation so undesirable to begin with.

The inclusion of wages also stabilizes the unemployment coefficients. To demonstrate, we re-estimate the BW specification, with and without real wages, over a successive sequence of time periods, ending in Dec. 2000, Dec. 2001, etc. The resulting sets of estimates are graphed in Figure 6. Controlling for real wages, the unemployment estimate is quite stable up to the onset of Covid. Without this control, on the other hand, it drops by about 1/3 over the same time frame. The drop is even greater when data from the 1970s and early 1980s is included in estimation, in the bottom graph in the figure, consistent with particularly high wage cyclicality during that early period.

Nonetheless, the right half of Table 2 shows that unemployment remains important even after accounting for wage changes, consistent with its "multifaceted and large" costs. This occurs because real wages are nearly acyclical in the Atlanta Fed data, so that the two variables have largely

independent effects. Regressing twelve-month real wage growth on current and lagged unemployment and contemporaneous inflation yields the following:

$$\underset{t}{Real\ Wage\ Growth\ (in\ \%)} = constant - \underset{(0.04)}{0.48}U_t + \underset{(0.03)}{0.21}U_{t-12} - \underset{(0.03)}{0.59}Inflation_t + e$$

where t is in months.[12] Other specifications are even less procyclical, as are the only comparable estimates in the literature, the difference estimates of Ballou and Kaymak (2021). These estimates are far below those of the earlier studies cited above, which still form the basis for the profession's consensus on U.S. wage cyclicality. In modern times, however, the relation between wages and unemployment is weak.

In summary, the belief that low unemployment makes a good economy has been implicitly predicated on the presumption of high accompanying wage growth, which households value highly. In general, this presumption has not been true for some time, as the American labor market has ossified. It was particularly untrue after Covid.

Real Wages and Covid-era Perceptions. As Covid receded, a sizeable drop in unemployment coincided with a large increase in inflation. From Jan. 2021 to July 2022, unemployment fell three percentage points while inflation rose seven. Such a combination had not been seen since the Korean War. It was uniquely formulated to produce perplexing economic perceptions.

Again wages are key. Tight labor markets do not assure strong wage growth, but inflation lowers real wages considerably. The inflation estimate of -0.6 in the regression above implies that nominal wages increase half as much as prices in the short run. This relation has rarely been

[12] These estimates span 1983-2023, but those for 1983-2019 are virtually identical.

estimated in the U.S. wage cyclicality literature, leaving it unprepared for this scenario.[13] As seen in the top panel of Figure 5, the decline in inflation-adjusted pay in 2021 and 2022 was substantial.

With these facts, the stage is set for disappointing post-Covid economic perceptions. A precipitous increase in inflation, unique in recent memory, lowers real wages and generates a substantial loss of purchasing power despite low unemployment, which exerts little pressure the other way. As a result, the public feels that the economy has been getting worse, not better, and the GE index continues to decline.

This narrative helps explain post-Covid economic perceptions. The bottom panel of Figure 5 shows the actual and predicted BW index with, and without, controlling for real wages. This additional control contributes to unusually strong sentiment pre-Covid, moderates its predicted "whiplash" during the onset of Covid, and helps explain its decline in 2021 and early 2022 and slow recovery afterwards. Even more important is what this graph doesn't show: implied sentiment if the low unemployment of this period had exerted material upward pressure on pay, as in the wage cyclicality studies cited in Section II. Simple calculations indicate that the BW index would be half a unit larger during this period–a large effect that, here, makes the difference between an economy that is getting better and one that is getting worse. (The differenced GE index, also shown in the figure, largely mirrors the BW index and–even more closely–its predicted value.)

The BW index is lower than predicted throughout the final three years of Figure 5; the public continues to feel that the change in economic conditions is somewhat worse than fundamentals predict. A restoration of sentiment is likely to take the reverse path: a steady sense that

[13] In the U.S. wage cyclicality literature, only one study controls for inflation. That study, Grant (2001), did not report those estimates, but was completed by this author and the results had been archived. Coefficient estimates on inflation were about -0.7, similar to that found here.

the economy is getting better, which makes the GE index grow over time. The precursor to this reversal is visible in Figure 5's final year: an improvement in the BW index as inflation fell and real wages began to grow. At the end of 2023, it was only slightly below its predicted value and inching toward positive territory; the GE index has already experienced some growth. As unemployment and inflation are both low as of 2024, the best prospect for further optimism lies in continued wage growth, as far as economic fundamentals are concerned.

Section IV. Conclusion

During the later part of the 20th century, the public's assessment of the macroeconomy was fundamentally "reasonable." Different surveys of economic conditions related coherently to each other, to related surveys, and to macroeconomic fundamentals in a way that was sensible and fairly stable over time. A point of unemployment mattered much more than a point of inflation, in line with a contemporaneous literature demonstrating the sizeable procyclicality of real wages.

Recent decades have upended this conventional wisdom in the same way that Hemingway described the onset of bankruptcy: gradually, then suddenly. The importance of unemployment waned as wage cyclicality tempered. Then came Covid. It, and its aftermath, blew apart the tightly linked triangle of labor market tightness, real wage growth, and economic perceptions–first (probably) through mammoth government transfers that offset the financial impact of unemployment, then through pay's failing to keep pace with inflation despite a tight labor market. This helped cause economic perceptions to decouple from standard business cycle indicators, generating unusually pessimistic responses to "Better/Worse" (BW) questions and increasingly

pessimistic responses to "Good Economy" (GE) questions: The Great Decoupling.

This narrative is by no means exhaustive. Even before Covid, fundamental economic factors explain only around half of the variance of the BW index (and of changes in the GE index). Non-economic or other indeterminate factors have always played a key role in economic sentiment. These could include media coverage and politics, both of which have received considerable attention recently (e.g., Macaulay and Song, 2023). However, such factors do not offer clear answers to numerous phenomena documented here: the stark downturn in sentiment in the fall of 2019; the public's unremitting BW pessimism, even when returning to normalcy from lockdown; and, especially, the steady accumulation of (GE) pessimism over time, spanning presidential administrations and both sides of Covid. In Appendix B we carefully examine the role of political factors and media coverage and find that neither accounts for post-Covid perceptions.

At the same time, reports of rationality's demise are exaggerated. With the inclusion of real wages, economic factors exhibit a stable relationship with sentiment over time; levels (GE) and changes (BW) measures continue to be sensibly related; both indexes still respond to macroeconomic fundamentals in the expected way (though not always with the anticipated vigor). Indeed, the hallmark of The Great Decoupling–multiple years of negative BW residuals–is not unusual, having previously occurred in 1978-1981, 1988-1992, and 2006-2008 (see Figure 4).

Several of these findings are possible only with the distinct, unprescribed GE and BW indexes estimated here, which let survey respondents decide for themselves which aspects of the economy matter, and how much. Given the availability of the techniques and data needed to create these indices, they offer a more promising route to understanding economic perceptions.

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Table 1. Regression Results for Good Economy Index (coefficient estimates, with robust standard errors in parentheses).

Independent Variable	Mean (Standard Dev.) June '76- Dec. '23	***Levels*** Dec. '85- Aug. '08 (N=273)	Dec. '85- Dec. '19 (N=409)	Dec. '85- Dec. '23 (N=457)	***Differences*** Dec. '86- Aug. '08 (N=261)	Dec. '86- Dec. '19 (N=397)	Dec. '86- Dec. '23 (N=445)
Unemployment (percentage points)	6.14 (1.75)	-0.39* (0.03)	-0.17* (0.02)	-0.16* (0.04)	-0.35* (0.05)	-0.16* (0.05)	-0.07* (0.03)
One Year Output Growth (percent)	2.69 (2.09)	0.06* (0.02)	0.09* (0.02)	0.05* (0.02)	0.03 (0.02)	0.05* (0.02)	0.03 (0.02)
Twelve Month Inflation (percent)	3.59 (2.63)	-0.08* (0.02)	-0.06* (0.03)	-0.11* (0.02)	-0.06* (0.02)	-0.06* (0.02)	-0.06* (0.02)
Exchange Rate (Fed series, scaled by 0.1)	9.35 (1.37)	0.13* (0.02)	0.14* (0.02)	0.14* (0.05)	0.08* (0.03)	0.05 (0.03)	0.04 (0.04)
Seven Year T-Bill Rate (percentage pts)	5.71 (3.42)	-0.00 (0.02)	0.09* (0.03)	0.01 (0.06)	0.02 (0.02)	0.09* (0.03)	0.07* (0.03)
Time in Years / Constant Term	----	-0.02* (0.01)	0.02* (0.01)	-0.01 (0.01)	-0.03 (0.03)	0.02 (0.03)	-0.01 (0.03)
R^2	----	0.91	0.85	0.65	0.69	0.52	0.33
standard deviation of dependent variable	----	0.42	0.50	0.48	0.31	0.30	0.31

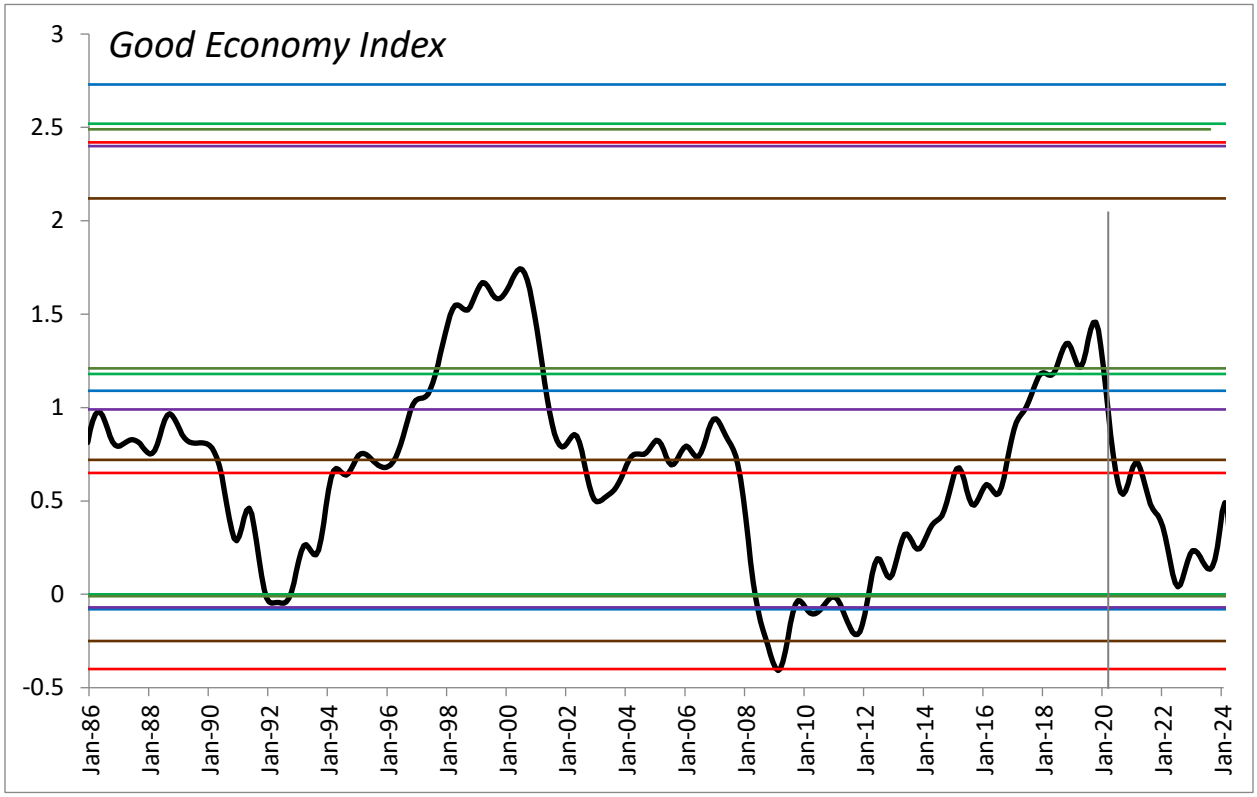
Note: The dependent variable is the level or backward twelve-month difference of the Good Economy index described in the text. Revised values of each independent variable are used in all regressions. The time trend is included in the levels regression, which also includes a unreported constant; the constant is reported for the differences regression. * = $p < .05$.

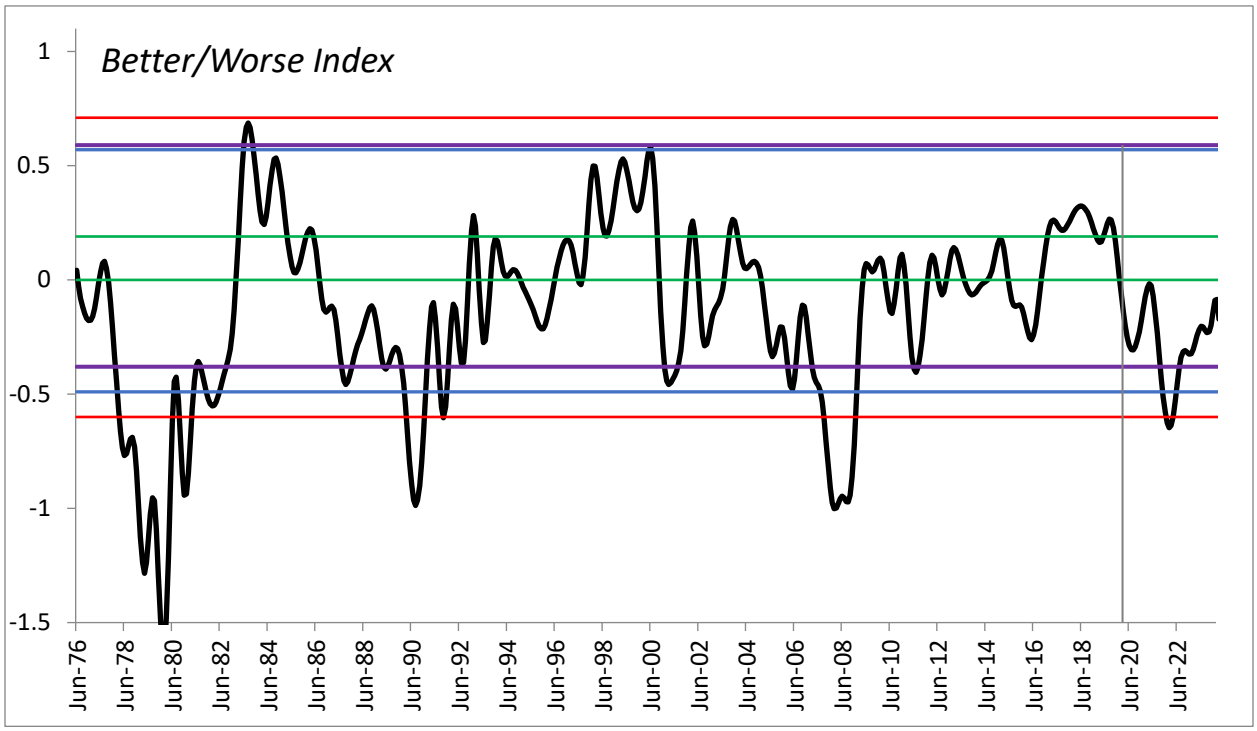
Table 2. Regression Results, Better/Worse Index (coefficient estimates, with robust standard errors in parentheses).

Independent Variable	June '76-Aug. '08 (N=387)	Dec. '85-Aug. '08 (N=273)	June '76-Dec. '19 (N=523)	June '76-Dec. '23 (N=571)	Pre-Covid, months with wage data Jan. '83 - Dec. '19 (N=414)		months with wage data, exclude 2020 only Jan. '83 - Dec. '23 (N=450)	
Δ Unemployment (percentage points)	-0.39* (0.06)	-0.31* (0.08)	-0.25* (0.07)	-0.06 (0.04)	-0.15* (0.06)	-0.16* (0.05)	-0.07 (0.05)	-0.07 (0.05)
Δ One Year Output Growth (percent)	0.03 (0.02)	0.06 (0.03)	0.05* (0.02)	0.05* (0.02)	0.06* (0.01)	0.05* (0.01)	0.05* (0.02)	0.04* (0.01)
Δ Twelve Month Inflation (percent)	-0.09* (0.04)	-0.09 (0.05)	-0.07* (0.03)	-0.04 (0.03)	-0.05* (0.02)	0.01 (0.02)	-0.04* (0.02)	0.02 (0.02)
Δ Exchange Rate (Fed series)	0.10* (0.05)	0.10 (0.07)	0.06 (0.05)	0.08 (0.06)	0.17* (0.06)	0.14* (0.06)	0.17* (0.06)	0.16* (0.06)
Δ Seven Year T-Bill Rate (percentage pts)	-0.12* (0.04)	-0.02 (0.05)	-0.08 (0.05)	-0.07 (0.04)	0.05 (0.04)	0.04 (0.03)	0.03 (0.03)	0.05* (0.03)
Real Wage Growth (percentage)	----	----	----	----	----	0.11* (0.02)	----	0.13* (0.02)
R^2	0.43	0.30	0.33	0.19	0.35	0.47	0.24	0.41

Note: The dependent variable is the Better/Worse index described in the text. Revised values of each independent variable are used in all regressions; a constant is also included. Real wage growth is (by necessity) taken over the previous twelve months; the other differences over the previous eight months. The standard deviation of the dependent variable is approximately 0.4 in all time frames. * = $p < .05$.

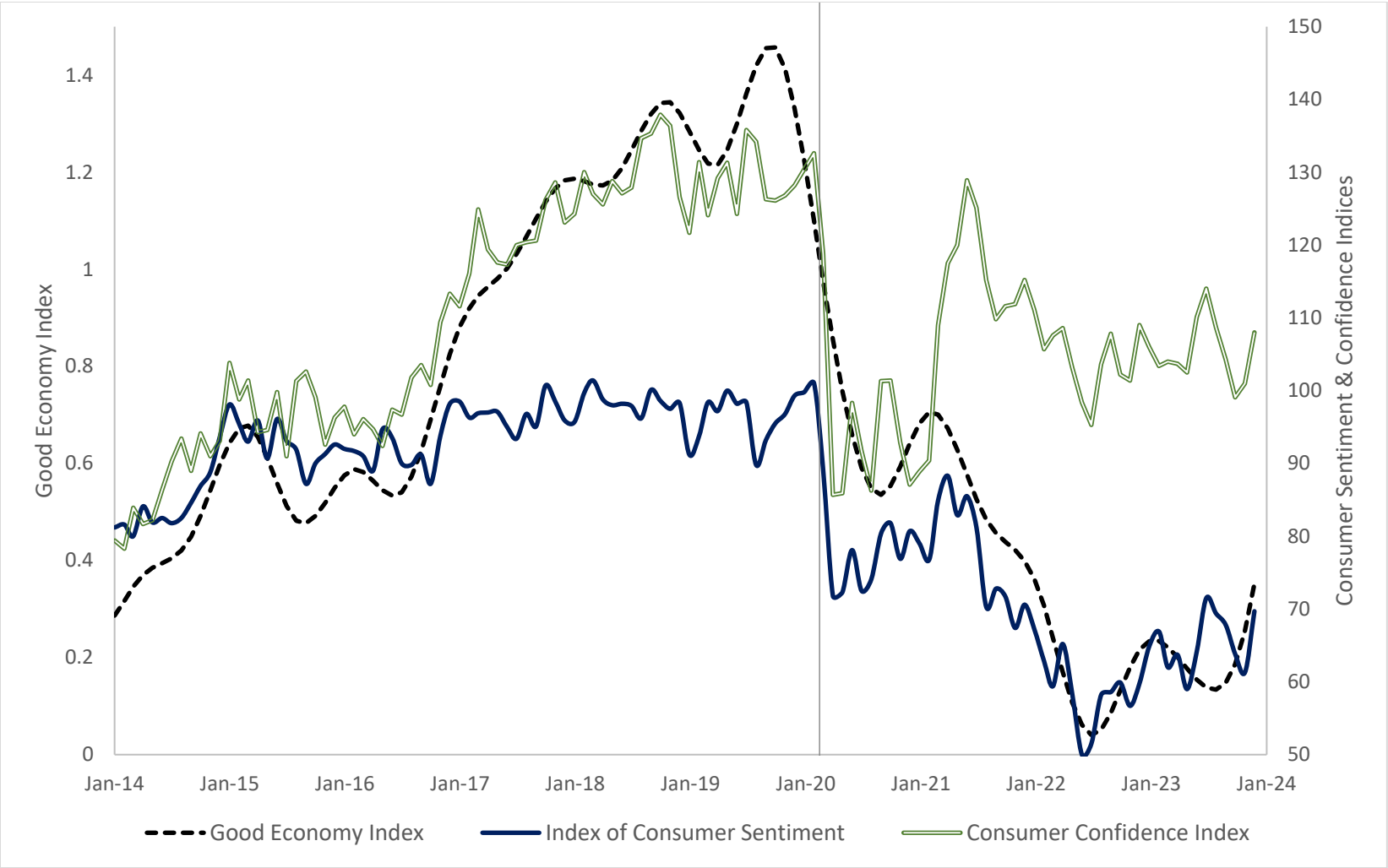
Figure 1. Indices and Associated Thresholds, Good Economy (top) and Better/Worse (bottom) Questions.





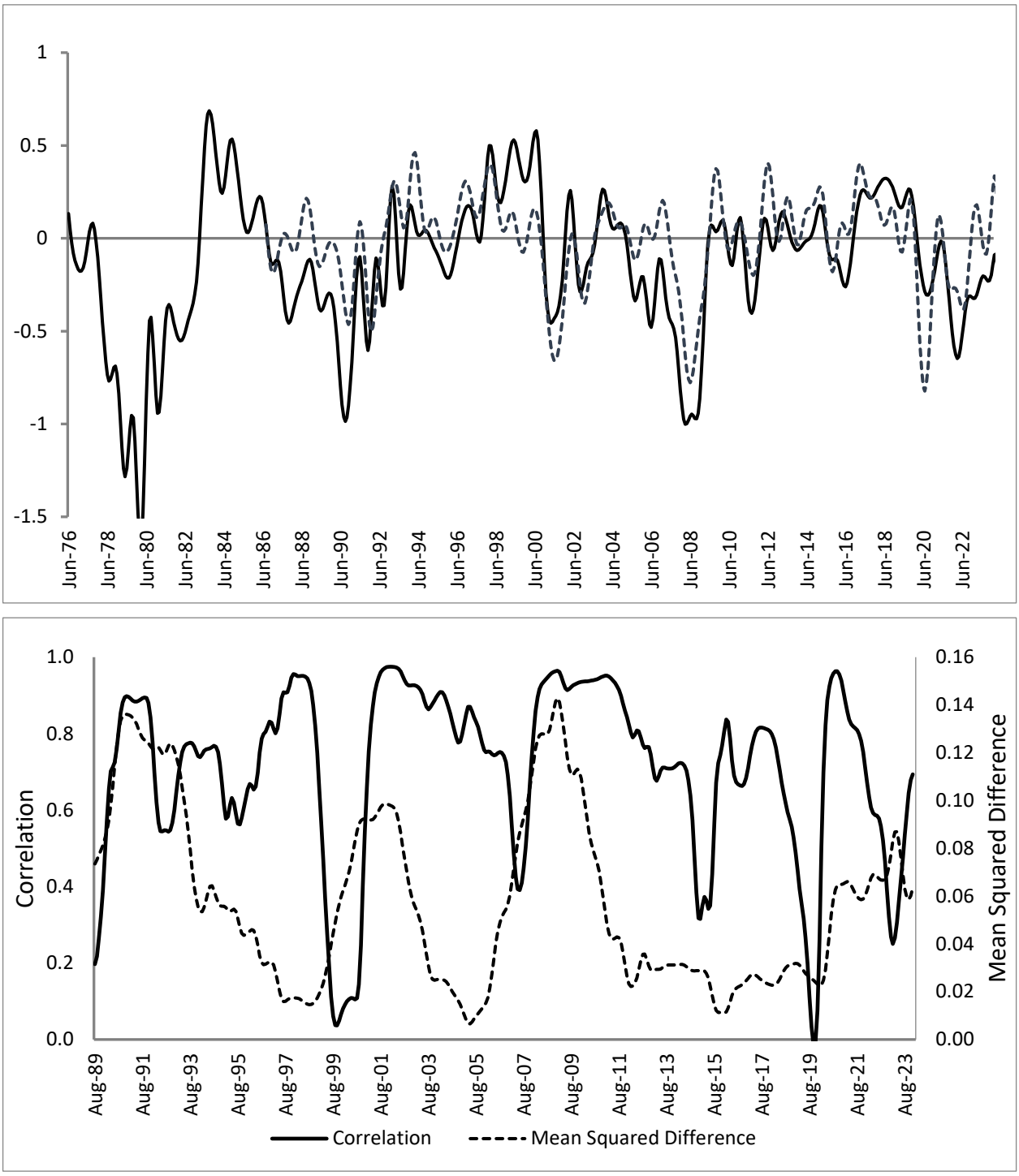
Note: ABC/Washington Post Thresholds are in Blue, CBS/New York Times in Red, Gallup in Green, QU (good economy) and YouGov (better/worse) in Purple, Pew in Orange, CNN in Brown. The vertical line marks March 2020, the onset of Covid lockdowns.

Figure 2. Three Measures of Consumer Sentiment, Jan. 2014 – Jan. 2024.



Note: the vertical line demarcates March 2020.

Figure 3. Two Indices Compared. **Top:** Better/Worse (solid) and Differenced Good Economy (dashed) Indices. **Bottom:** Similarity Measures, Better/Worse and Differenced Good Economy Indexes, Three Year Rolling Window Ending in Date Shown**.**



Note: Eight-month backward differences are applied to the Good Economy index, following Grant (2014).

Figure 4. Predicted and Actual Values of the Dependent Variable using Pre-Covid Coefficient Estimates (through Dec. 2019, with predictions through Dec. 2023).

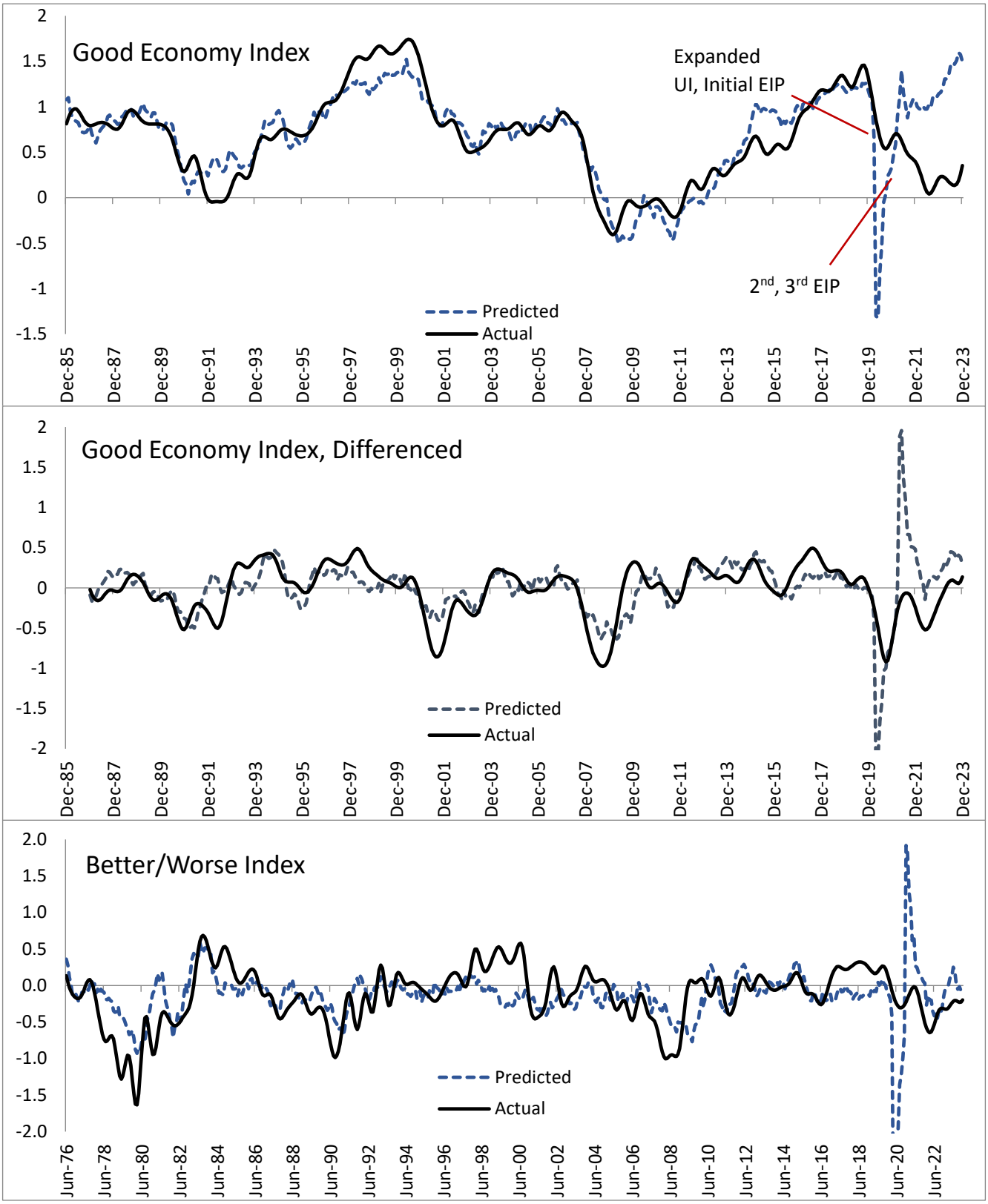
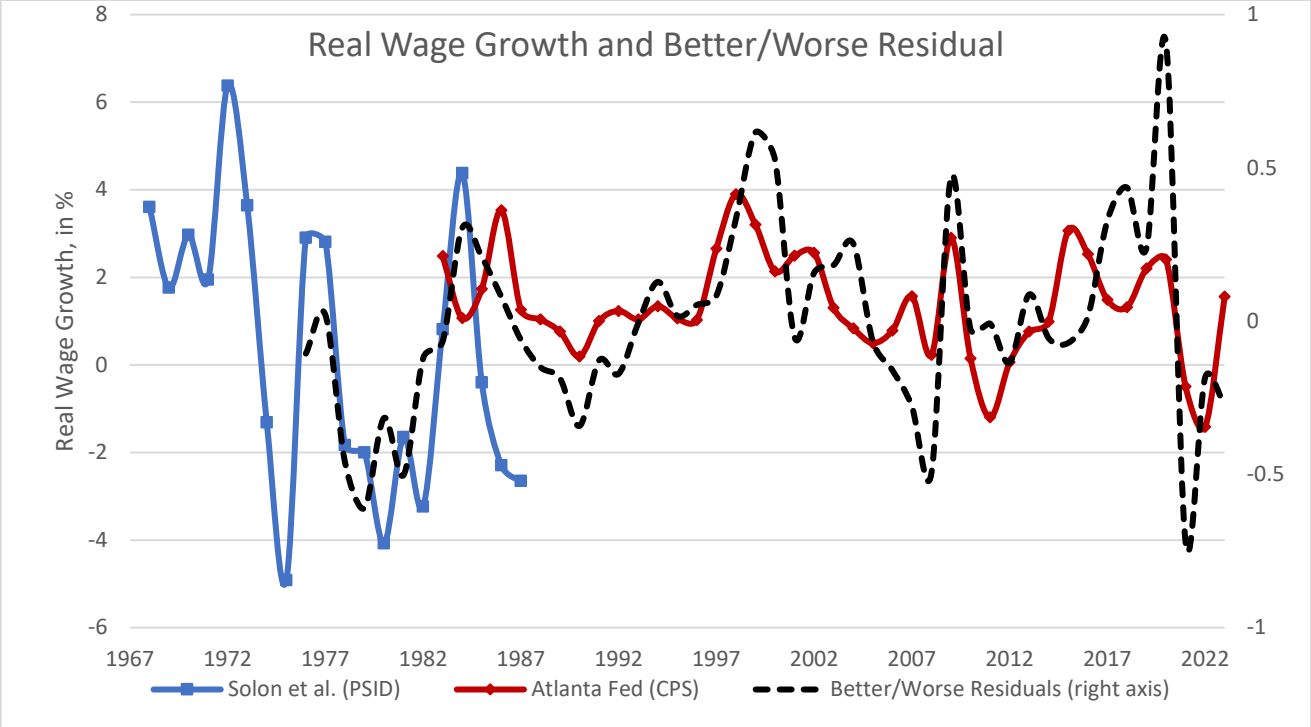
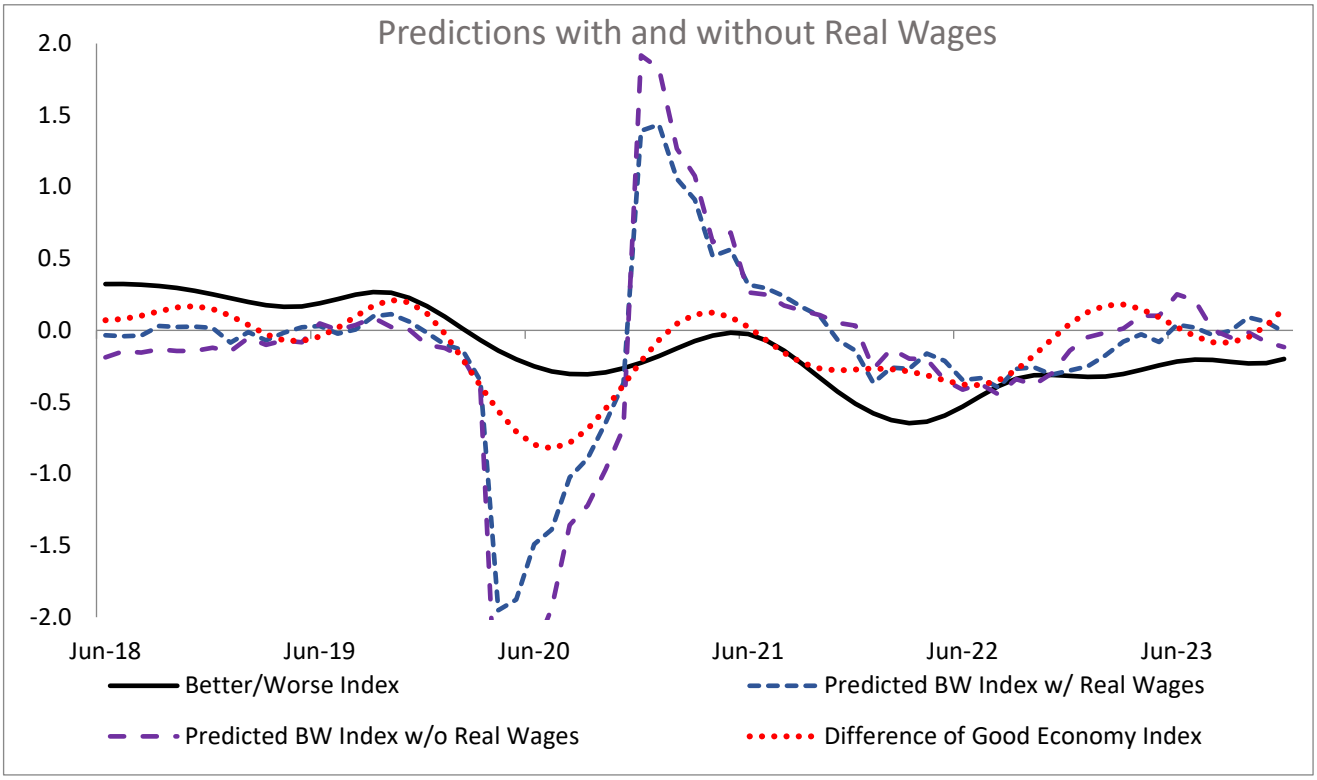


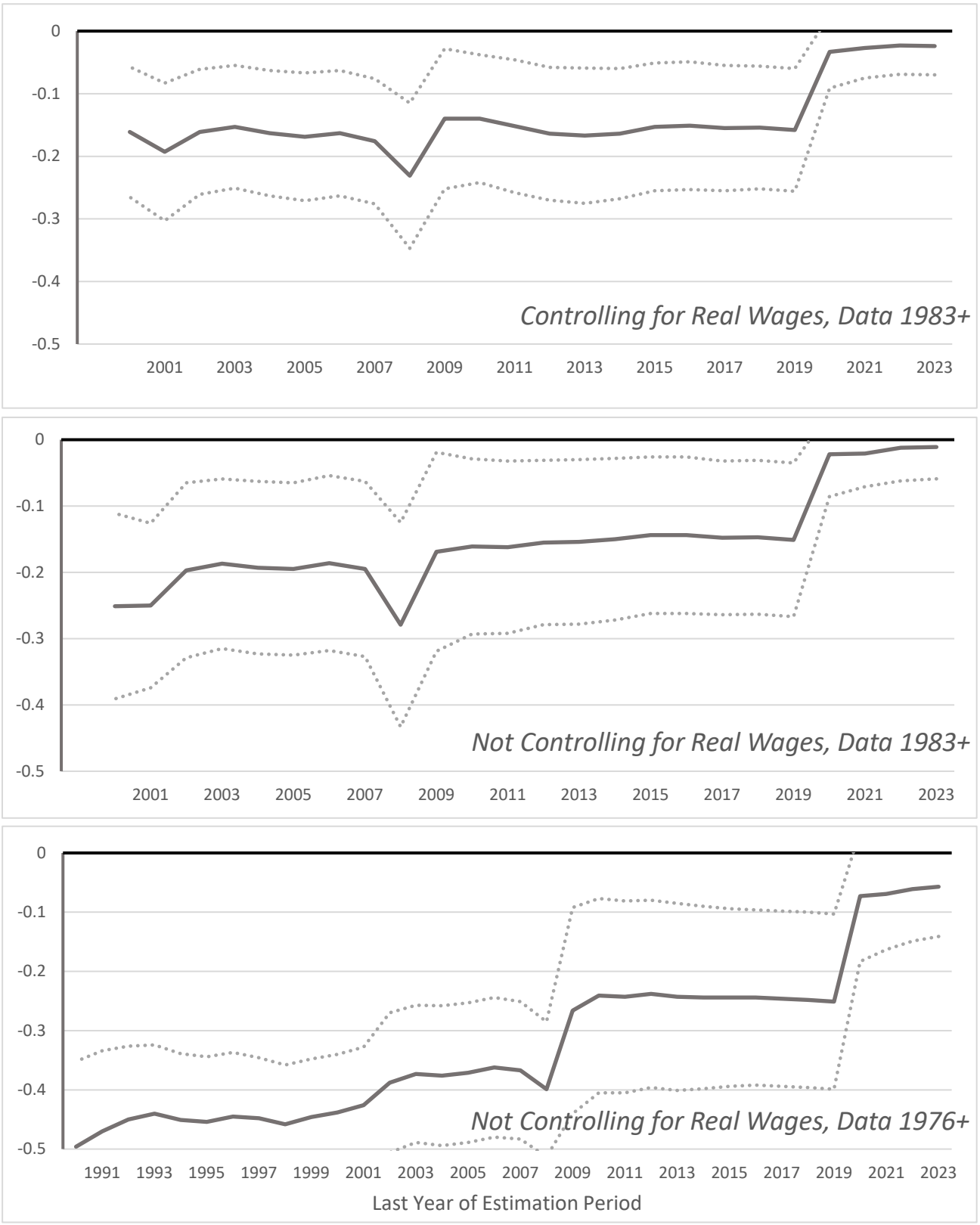
Figure 5. Real Wages and Index Values.





Note: In the top graph, the residuals are those in Figure 4, averaged by year. Annual wage growth is adjusted for inflation using the CPI. The bottom graph presents an eight month, backward difference of the Good Economy index. All predictions are formed from the pre-Covid estimates given in the third column of Table 2.

Figure 6. Unemployment Coefficient Estimates, Better/Worse Index, Rolling Estimation Windows (with 95% confidence intervals).



Appendix A. Construction of Indexes.

Data. Tables A1 and A2 describe all American "Good Economy" (GE) and "Better/Worse" (BW) surveys with any material temporal coverage, all of which are employed here. Grant (2014) utilized a subset of this data through 2010; here it has been expanded and updated through early 2024 (but all regressions end in 2023). Each survey typically contains about one thousand respondents in each month that it is conducted, so little variation comes from sampling error.

While any given GE survey has significant temporal gaps, these are largely filled in by other surveys. Only nine of the 457 months from Dec. 1985 to Dec. 2023 are left uncovered. Larger gaps occur for the BW surveys. Of the 571 months from June 1976 to Dec. 2023, 146 are uncovered, mostly in the earlier years of this period. After 2000, only two months are not covered. Furthermore, every year of the sample period has at least three months of data, enough to detect changes in sentiment over the business cycle.

Methods. For each question type (GE, BW), we wish to amalgamate the information from all surveys, accounting for the differences in phrasing (and associated differences in response frequencies) noted in Tables A1 and A2, and allowing for the temporal gaps in each survey. Since each survey–Gallup, the *Washington Post*, and so on–measures the same construct, their responses should and do have a strong underlying commonality. This commonality is expressed as a latent variable and estimated nonparametrically.

We let each individual's survey response be governed by three terms: a time-varying latent variable, L, common to all respondents of all surveys (within a class); a random variate, α, that generates cross-section variation in individual responses at any given point in time; and a time-invariant, survey-specific set of thresholds, μ, that distinguish an "excellent" response from a "good" response, and so on. One can treat L as a scalar index of perceived macroeconomic conditions.

The latent variable and associated thresholds are estimated by relating all surveys' responses nonparametrically to time. This is done by expressing time as a series of splines, which are used as independent variables in an ordered probit model in which the response is the dependent variable. Applying the estimated coefficients to the splines yields a smoothed, amalgamated, unrestricted estimate of the latent variable that extends for the full time span of that class of surveys, filling in any survey-less months.

Following Grant (2014), this model is formally stated as follows. Let j index individuals, t time in months, s splines, and z surveys (within a class). For each survey z, the individual-level latent variable, I, governing each individual's response equals the sum of L and α, as follows:

$$I_{j,t} = L_t+\alpha_{j,t} = \sum_s \beta_s S_{s,t}+\alpha_{j,t} \quad , \quad with \quad \sum_s S_{s,t}=1 \ \forall t \quad and \quad \alpha_j \sim N(0,1) \ \forall t$$

$$Least\ Favorable\ Response\ iff\ I_{j,t}<\mu_0^z$$

$$Next\ More\ Favorable\ Response\ iff\ \mu_1^z > I_{j,t} \geq \mu_0^z$$

.....

$$Most\ Favorable\ Response\ iff\ I_{j,t} \geq \mu_{MAX}^z$$

$$\mu_0^1=0$$

where S is a set of "B-splines," determined according to the method of deBoor (1978), which sum to one at each point in time, and the μ's are the thresholds that $I_{j,t}$ must exceed in order for that

respondent to report that economic conditions are "excellent" instead of "good," and so on.[14] The predicted value of L at any time T is $\Sigma\hat{\beta}_s S_{s,T}$.

This ordered probit model is applied separately to each question type (GE, BW), and an associated latent variable estimated for each. Each latent variable amalgamates the information contained in that set of surveys into a single time series, which serves as the summary index of economic perceptions for that question type, and is referred to as the "index" in the text. Each latent variable's units are defined by the standard probit identification condition that the errors have unit variance, and thus have no intrinsic meaning.

[14] Following the original study, about 2.5 splines per year are employed, in order to preserve all but the highest frequency variation. For simplicity, 1,000 people are assumed to respond to any given survey in any given month (to which the reported percentages responding "excellent," etc., are applied). This is generally accurate (and an understatement otherwise).

Table A1. Survey Details: "Good Economy" Questions.

Survey Organization / Sponsor	Question Asked of Respondents	Temporal Span	Observations / Months in Survey Period
ABC News / *Washington Post*	"Would you describe the state of the nation's economy these days as excellent, good, not so good, or poor?"	Monthly, Dec. 1985 - Feb. 2010, and irregularly thereafter up to the present.	320 obs. in the 461 months from Dec. 1985 to Apr. 2024
CBS News / *New York Times*	"How would you rate the condition of the national economy these days? Is it very good, fairly good, fairly bad, or very bad?"	Oct. 1986 - Jan. 2015, at irregular intervals.	208 obs. in the 340 months from Oct. 1986 to Jan. 2015
Gallup / *USA Today*	"How would you rate economic conditions in this country today–as excellent, good, only fair, or poor?"	Feb. 1997 - present, at irregular intervals, with monthly coverage since Dec. 2017.	221 obs. in the 388 months from Jan. 1997 to Apr. 2024
Quinnipiac University	"Would you describe the state of the nation's economy these days as excellent, good, not so good, or poor?"	Dec. 2001 - present, at irregular intervals.	93 obs. in the 268 months from Dec. 2001 to Apr. 2024
Pew Research	"How would you rate economic conditions in this country today–as excellent, good, only fair, or poor?"	Feb. 2004 - present, at irregular intervals.	102 obs. in the 243 months from Feb. 2004 to Apr. 2024
CNN	"How would you rate the economic conditions in the country today–as very good, somewhat good, somewhat poor, or very poor?	Aug. 1997 - present, at irregular intervals.	128 obs. in the 381 months from Aug. 1997 to Apr. 2024

Table A2. Survey Details, Better/Worse Questions.

Survey Organization / Sponsor	Question Asked of Respondents	Temporal Span	Observations / Months in Survey Period
ABC News / *Washington Post*	"Do you think the national economy is getting better, getting worse, or staying about the same?"	Reported in 49 of the 110 months between Sept. 1981 and Oct. 1990, and sporadically afterward through Oct. 2010.	62 of the 350 months from Sept. 1981 - Oct. 2010
New York Times / CBS News	"Do you think the economy is getting better, getting worse, or staying about the same?"	June 1976 - Jan. 2015, at irregular intervals.	207 of the 464 months from June 1976 to Jan. 2015
USA Today / Gallup	"Right now, do you think that economic conditions in the country as a whole are getting better or getting worse?" (the percent *volunteering* the response "same" also reported)	July 1991 - present, at irregular intervals, with monthly coverage since Dec. 2017.	202 of the 394 months from July 1991 to Apr. 2024
YouGov / *The Economist*	"Overall, do you think the economy is getting better or worse?" ("same" also offered as a response option)	Monthly from Dec. 2009 to the present.	173 of the 173 months from Dec. 2009 to Apr. 2024

Appendix B. Examination of Other Factors.

Beyond the real wages presented in the text, four other possible explanatory factors were considered. In each case, we explored whether that factor exhibited a material correlation with the pre-Covid, Section II residual in either index.[15]

Gas Prices. One possibility is that high gas prices increase pessimism, beyond their contribution to general inflation, because of their visibility. This factor has been examined in the literature, though inadequately for our purposes.[16] However, relating the twelve month percentage change in gas prices to our two residuals, each correlation is, perversely, positive (though small).

Mismeasurement of Labor Market Slack. Another possibility is that headline unemployment doesn't adequately reflect the state of the labor market, perhaps because of changes in labor force participation. However, there is no evidence for this. Except for early 2020, the six unemployment measures created by the Bureau of Labor Statistics, U1-U6, move in concert during the Covid era. Establishment-level data indicates slightly *more* job creation than the household survey on which the unemployment rate is calculated. (In a similar vein, Gross National Income has risen more than GDP.) Pre-Covid changes in the labor force participation rate are weakly related to the GE and BW residuals, with correlations below 0.10 in magnitude.

Political Partisanship. The public may be viewing the economy through a partisan lens, "irrationally" generating pessimism. In fact, a sizeable political science literature has shown that assessments of the current economy are formed through a partisan lens. (See Gerber and Huber, 2010, and the references therein; the associated economic literature focuses on future expectations instead.) However, this work is conducted at the individual level. When party preferences are nearly evenly split, as they are in the U.S., individual-level partisan influence need not have aggregate-level effects, much less the particular signature noted in Section I: increasing pessimism over time, reflected in both the GE and BW indexes.

With one exception, our GE and BW indices show no sign of perturbations associated with federal elections or a change in presidents. To probe further for aggregate-level effects, we use Fair's (2018) analysis of economic factors on electoral outcomes. We took the pre-election (October) residuals from all three of his specifications (President, Congress in presidential election years, Congress in off-years) and related them (independently) to both indices and their residuals. The resulting correlations were small and dispersed around zero. The evidence for a causal link from *national-level* political sentiment to consumer perceptions is tenuous at best.

Media Coverage. Overly negative media coverage, beyond that justified by fundamentals, could be driving optimism down. To investigate, we related the "News Sentiment Index" (NSI) of Shapiro, Sudhof, and Wilson (2022) to the GE and BW residuals. There was a sizeable positive

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[15] Gas prices begin in 1991, when the data become available from the Federal Reserve Bank of St. Louis; labor force participation begins in 1983; both are graphed in Figure B1. The news sentiment index begins in 1980. All correlations end in Dec. 2019, in order to predate Covid.

[16] Edelstein and Kilian (2009) and Johnson and Lamdin (2012) examine how gas prices affect the Index of Consumer Sentiment, controlling for purchasing power and real consumption in the former paper and for income in the latter paper. This index is a combination of current and future conditions–the former paper is especially expectations-focused–and subject to the limitations pointed out in the introduction. Furthermore, neither study accounts for unemployment, the most important control of all. Under these circumstances their findings have limited applicability here.

correlation with the BW residual and the change in the NSI (but not its level) has a positive, significant coefficient when added to our pre-Covid BW regressions.

However, the *change* in the NSI was not overly negative post-Covid, so it cannot explain overly negative perceptions during that period. Adding the change in the NSI to the pre-Covid, real wages regression in the sixth column of Table 2 had a *deleterious* effect on post-Covid predictions of the BW index. The mean residual from 2021-2023 was unchanged, while the residual variance increased by about 20%.

Figure B1. Graphs of Explanatory Variables.