Price Shocks, Fertility Drops: Unexpected Inflation and Fertility Rates in the United States, 2003-2023

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Abstract

This paper examines the impact of unexpected inflation on the total fertility rate in the United States. Using state-level data from 2003–2023, we employ four approaches—survey-based inflation expectations, the Kalman filter, a particle filter, and a linear time-trend method—to extract the unexpected component of inflation. We then investigate how the experience of unexpected inflation affects the total fertility rate in the following year. Results consistently show that unexpected inflation has a negative and significant impact on the total fertility rate. A one percentage point increase in unexpected inflation is associated with a 0.2-0.3% decline in the average the total fertility rate (1.8), corresponding to roughly 3–5 fewer births per 1,000 women over the reproductive lifetime. Younger women (under age 25) are more likely to postpone or reduce births due in response to unanticipated inflation. Further analyses suggest that later catch-up fertility partly, but not fully, compensates for prior fertility delays.

Keywords: Inflation; Fertility; Economic Uncertainty; Inflation Expectations

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1 Introduction

Fertility decisions are forward-looking and sensitive to households' expectations of macroeconomic conditions. Fertility has been called a "leading indicator," as a decline the conception rate is apparent several quarters before a recession is underway (Buckles et al., 2021). One factor that could plausibly change a household's fertility plans is an unexpected increase in the rate of inflation.

When inflation rates are close to expectations, households do not face a strong incentive to deviate from their existing fertility plans. In contrast, when inflation exceeds expectations, households face more uncertainty about future wages, prices, and borrowing conditions. Higher-than-expected inflation could erode real purchasing power and increase the immediate cost of raising a child. As such, households may prioritize precautionary savings, reduce discretionary spending, and delay childbearing.

Many papers have identified the significant role that economic uncertainty plays in contemporary fertility declines (Adsera, 2011; Adsera and Menendez, 2011; Comolli, 2017; Chabé-Ferret and Gobbi, 2018; Gozgor et al., 2021). Some of these papers find little effect of actual inflation rates on fertility. However, this is not surprising. Households would not necessarily be expected to change their fertility plans in response to inflation, since, so long as any changes were anticipated, they could adjust to predictable inflation through savings and consumption smoothing. But *unexpected* inflation plausibly affects long-term planning, including fertility decisions. For instance, Wu (2024) finds that emerging economies with central banks committed to inflation targeting experienced a smaller reduction in fertility rates compared to those without inflation targeting, suggesting that household fertility choices respond positively to price stability. To our knowledge, no paper has yet investigated the role of unexpected inflation in contemporary fertility decline.

More generally, this paper contributes to the growing literature on families and macroeconomics (Doepke and Tertilt, 2016). While much attention has been devoted to the impact of various fiscal policies on household fertility decisions (e.g., childcare subsidies), the relationship between monetary policy and fertility remains underexplored

(Cumming and Dettling (2023) is a notable exception). For instance, when inflation is high and above expectations, the central bank may raise nominal interest rates. This increases borrowing costs, reduces housing affordability, and could prompt households to postpone childbearing decisions. Meanwhile, a monetary policy that anchors inflation expectations and promotes price stability benefits households and may encourage them to have more children. Hence, understanding the effect of unexpected inflation on fertility rate provides insight into the demographic consequences of monetary policy.

The paper proceeds as follows. First, we discuss related research and justify the basic economic intuition that an unexpected increase in inflation could cause a household to adjust its fertility plans. Next, we describe our panel dataset (2003–2023), which combines state-level estimates of unexpected inflation—constructed using survey-based inflation expectations, the Kalman filter, a particle filter, and a linear time-trend method—with age-specific fertility rates (ASFRs) obtained from the U.S. Centers for Disease Control and Prevention (CDC). Our survey-based measures of inflation expectations are obtained from the New York Fed Survey of Consumer Expectations (SCE). We estimate whether lagged unexpected inflation rates can explain variation in both ASFRs and total fertility rates (TFRs) across the United States, employing state and year fixed effects along with standard controls for marriage, female labor-force participation rates, and other variables. As a robustness check, we also compute unexpected inflation using annual time-series data on personal consumption expenditure (PCE) inflation and survey-based inflation expectations from the University of Michigan (UMich) Survey of Consumers. This allows us to verify that the results are not sensitive to a particular measurement approach.

We find that higher rates of unexpected inflation are statistically significantly associated with lower total fertility rates. Specifically, a one percentage-point increase in unexpected inflation yields a decline in 3-5 fewer births per 1,000 reproductive-aged women. Younger women (under age 25) seem to be the most responsive, suggesting that they postpone childbearing because they are more financially constrained and/or have more flexibility in adjusting the timing of births. Employing a cumulative impulse response function, evidence suggests that catch-up fertility only partially compensates for

the observed decline in ASFRs that we observe for women under 25 years of age.

The magnitude of these results is modest compared to the effects of more targeted interventions but economically meaningful. For instance, Kearney and Levine (2009) found that income-based waivers for Medicaid family planning services reduced births by about 1.5 births per 1,000 women per year. In the other direction, Golightly and Meyerhofer (2022) studies the impact of California's paid family leave program, finding an increase by 2.1 births per 1,000 women aged 20-39 per year. As the United States recorded its lowest fertility rate of 1.6 in 2024, price stability may be an underrated strategy for helping households complete their fertility plans– especially as the fertility desires of reproductive-aged women currently sit well above the observed TFR (Piano and Stone, 2025).

2 Background

Becker (1960) viewed children as durable goods, stating that increases in income or a decline in the price of childbearing would increase the quantity (or quality) of children demanded. Since then, many studies have sought to estimate how changes in income (for instance, Black et al. (2013)) or the direct costs of raising a child (as an early example, see Blau and Robins 1989) or the opportunity cost (as another early example, see Cramer 1979) might explain fertility rates. One drawback of this approach is that couples can respond strategically to price changes of specific commodities (e.g., formal childcare services) by finding lower-cost substitutes (e.g., care from grandparents). Our focus on unexpected inflation allows us to estimate the effects of price shocks on fertility with more precision.

From a macroeconomic perspective, many studies (Kiser and Whelpton, 1953; Morgan, 1991; Neels, 2010; Koech and García, 2010; Kreyenfeld, 2010) find that fertility is pro-cyclical, responding to the business cycle's ups and downs. Economic recessions and high unemployment often lead to a postponement of childbearing, especially for first births (Adsera, 2011; Adsera and Menendez, 2011; Schaller, 2016; Comolli, 2017).

More recently, research has paid attention to the role that monetary policy plays, such as by increasing household disposable income through lower mortgage rates (Cumming and Dettling, 2023) or by encouraging price stability by targeting inflation (Wu, 2024). We contribute to this literature by incorporating inflation expectations to examine how unexpected inflation influences fertility outcomes in the United States.[2]

While many factors influence fertility decisions, age has been increasingly discussed as the median age at first birth continues to rise (Tsai, 2025; Kearney and Levine, 2015). Since the redistributional effects of inflation tend to vary by age group (Doepke and Schneider, 2006) and the ability to delay childbearing also differs by age, we further investigate the role of unexpected inflation by exploiting differences across age-specific fertility rates. These effects may work in opposite directions. Insofar as younger women are net borrowers, they are relatively better off if inflation is higher than expected because the real value of their debts (assuming nominal contracts) has decreased. This may yield an increase in disposable income and thus in the fertility rate for this age group. On the other hand, younger women have more reproductive years ahead of them and therefore face a relatively lower cost of delaying fertility for a year or two. For young women who are not net borrowers (e.g., do not yet have a mortgage), only the lower cost of delaying fertility remains. It is plausible to assume that the psychological costs of economic uncertainty (triggered by unexpected inflation) would be similar across age groups of women.

Inflation expectations play a role in household plans for the future (Binder and Brunet, 2022), and central banks are often concerned with managing them. Recent work emphasizes how households vary systematically in their expectations based on which prices they are often exposed to (CITE) and how they might adjust their inflation expectations upon receiving new information about inflation rates from the news (Binder et al., 2025) and exhibit learning by participating in surveys more than once (CITE). We contribute to this growing literature by focusing on the role that unexpected changes in inflation have for the fertility decisions of women at different points in their reproductive careers.

[2]A related paper (Chang et al., 2013) models the effects of monetary policy with endogenous fertility, finding that "the superneutrality of money does not hold in the presence of endogenous fertility."

3 Data and Methodology

To estimate the relationship between unexpected inflation and the total fertility rate, we construct alternative measures of unexpected inflation using four approaches: the Kalman filter, the particle filter, a linear time-trend method, and survey-based inflation expectations from the New York Fed Survey of Consumer Expectations. We then calculate state-level TFRs for each year using CDC data. The resulting dataset is a panel of the fifty U.S. states covering the period from 2003 to 2023.

3.1 Unexpected Inflation

To estimate actual inflation, we use state-level panel data on annual inflation, which is measured with the percentage change in the GDP deflator.[3] The dataset covers the 50 U.S. states over the years 2003 to 2023. Nominal and real GDP data are sourced from the United States Bureau of Economic Analysis (BEA) and used to construct the GDP deflator. The percentage change in personal consumption expenditure (PCE) index is also used as an alternative measure of inflation, which we source from FRED.

To decompose actual inflation into expected and unexpected components, we use four approaches to measure inflation expectations and, consequently, compute unexpected inflation. We begin with inflation expectation data from the New York Fed Survey of Consumer Expectations (2013-2023) and employ the University of Michigan Consumer Survey (1990-2023) as a robustness check.[4] We refine our SCE sample to include only individuals below the age of 60 and those who have taken the survey more than once, since lifetime experience and survey experience matters systematically for respondents' expectations (D'Acunto et al., 2023; Kim and Binder, 2023). We also include both men and women in our sample, since fertility tends to be a joint decision (Doepke and Kindermann, 2019). In addition to survey-based measures, we use the Kalman filter (KF), the Particle filter (PF), and the linear time-trend (LT) method to broaden the years in our

[3]Many other papers, for example Bianchi et al. (2023) and Asab (2025), also use the percentage change in GDP deflator to measure inflation.

[4]In the main results, we did not use the University of Michigan's survey-based inflation expectations to construct unexpected inflation because state-level panel data from the survey are not publicly available.

sample and to avoid criticisms of survey responses which may be sensitive to a variety of other factors.[5] In particular, the KF, PF, and LT methods are used to recover the trend (or expected components), which is subsequently subtracted from the observed inflation to obtain the unexpected inflation (or inflation gap). The functional specifications of the KF, PF, and LT can be found in the Appendix.

Table 1: Correlations Between Measures of Unexpected Inflation

	Linear Trend	Kalman Filter	Particle Filter	SCE
Linear Trend	1			
Kalman Filter	0.9179	1		
Particle Filter	0.9178	0.9877	1	
SCE	0.7717	0.7465	0.7469	1

In Table 1, we show the external validity for the model-based methods (LT, KF and PF). We find a high correlation (above 0.7) between unexpected inflation derived from the New York Survey of Consumer Expectations (SCE) and the estimate computed using other approaches. This provides further assurance that our results are not sensitive to a particular approach to measuring unanticipated deviations in inflation rates.

3.2 Fertility Rates

We construct state- and year-varying estimates for age-specific fertility rates (ASFRs) and the total fertility rate (TFR) in the United States over time. For both, we gather data on the total number of births and the female population aged 15-44, obtained from the US Center for Disease Control and Prevention (CDC). Birth counts are available from the CDC for the entire sample period (2003-2023), but female population data by age group are not available for all states between 2021 and 2023. Details of how female population counts were constructed for the missing years are provided in the Appendix.

Beginning with ASFRs, we first disaggregate the births and the female population data by age groups 15-19, 20-24, 25-29, 30-34, 35-39, and 40-44. We then estimate the age-specific fertility rate using the following formula:

[5] It is also important to note that while the SCE is a nationally-representative survey, it is not designed to be representative for each state-year cell, which is another reason why we combine different measures of expectations.

$$\text{ASFR}_{s,a,t} = \frac{\text{B}_{s,a,t}}{\text{N}_{s,a,t}} \tag{1}$$

where:

- $\text{ASFR}_{s,a,t}$ is the age-specific fertility rate for state s, age group a, in year t;
- $\text{B}_{s,a,t}$ is the number of births to women in age group a in state s in year t;
- $\text{N}_{s,a,t}$ is the number of women in age group a in state s in year t.

Finally, we estimate the total fertility rate (TFR) by taking the sum of the computed age-specific total fertility rates as shown below:

$$\text{TFR}_{s,t} = 5 * \sum_{a=15-19}^{40-44} \text{ASFR}_{s,a,t} \tag{2}$$

where:

- $\text{TFR}_{s,t}$ is the total fertility rate for state s in year t;
- the factor 5 reflects the five-year width of each age group (15–19, 20–24, . . . , 40–44).

Figure 1 describes the evolution of the average TFR across the U.S. states over time. This metric is a period measure of fertility, representing the number of children per woman we would expect to be born if age-specific fertility rates during that year remain constant. Our time frame captures important variation in the TFR, notably, when the U.S. TFR fell from replacement-level (about 2.05) to below replacement after the "baby boomlet" of the early 2000s. As of 2024, the TFR in the United States hit an all-time low of 1.6 children per woman.

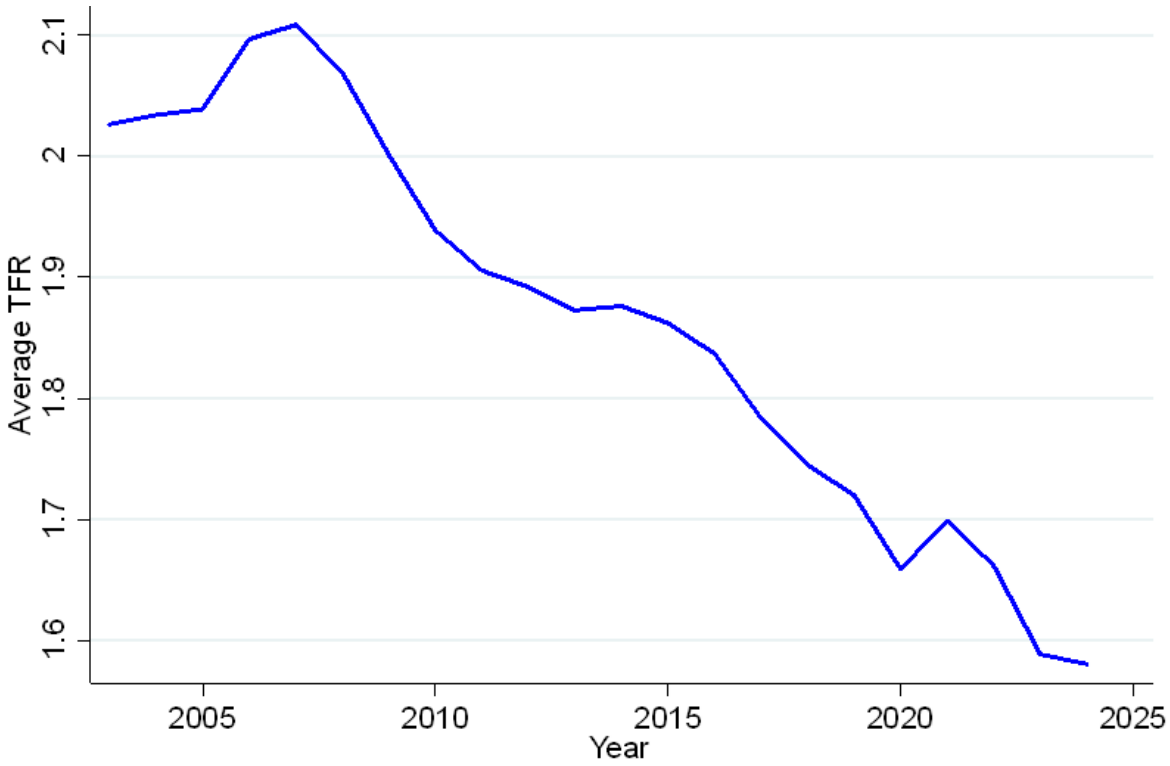


Figure 1: U.S. Total Fertility Rate (TFR), 2003-2023

3.3 Control Variables

We employ a battery of controls to isolate the effects of unexpected inflation on fertility rates apart from other causes of variation, such as the median age, gender composition, racial composition, female labor force participation rate, married women as a percentage of total population, educational attainment measured as the percentage of those with high school education and above, and percentage of women with health insurance coverage. All of these variables are sourced from the 5-year American Community Survey (ACS) for years 2003-2023.

Additionally, we use data on macroeconomic factors such as the state-level GDP per capita and the unemployment rate, which are obtained from Federal Reserve Economic Data (FRED). Finally, we assign dummy variables for abortion laws and political affiliation by state (red vs. blue), since these factors have been shown to influence fertility behavior.

3.4 Summary Statistics

Table 2 presents the summary statistics for the dependent, explanatory, and control variables in this paper.

Table 2: Summary Statistics

Variable	N	Mean	Std. Dev.	Min	Max
Expected Inflation (Kalman filter)	1,050	2.313	1.267	-2.424	9.212
Expected Inflation (Particle filter)	1,050	2.314	1.267	-2.408	9.160
Expected Inflation (SCE)	549	4.157	1.714	1.282	11.667
Expected Inflation (Time trend)	1,050	2.475	0.629	0.534	4.718
GDP Deflator Inflation	1,050	2.475	2.447	-17.501	16.418
Unexpected Inflation (Kalman filter)	1,000	0.170	1.685	-16.467	9.013
Unexpected Inflation (Particle filter)	1,000	0.176	1.693	-16.675	9.032
Unexpected Inflation (NY Fed SCE)	549	-1.479	2.316	-13.965	12.632
Unexpected Inflation (Time Trend)	1,050	0.000	2.365	-21.121	13.250
Age-Specific Fertility Rate (15–19)	1,050	0.027	0.013	0.004	0.070
Age-Specific Fertility Rate (20–24)	1,050	0.085	0.026	0.025	0.148
Age-Specific Fertility Rate (25–29)	1,050	0.113	0.019	0.059	0.184
Age-Specific Fertility Rate (30–34)	1,050	0.098	0.013	0.066	0.146
Age-Specific Fertility Rate (35–39)	1,050	0.046	0.009	0.025	0.072
Age-Specific Fertility Rate (40–44)	1,050	0.009	0.003	0.004	0.018
Total Fertility Rate (TFR)	1,050	1.885	0.228	1.312	2.679
Median Age	1,050	32.219	1.822	26.000	39.000
Female Labor Force Participation (%)	1,050	62.290	4.079	49.515	77.966
Married Women (%)	1,050	34.987	5.037	22.024	55.840
Education (%)	1,050	85.909	3.760	74.653	94.398
Health Insurance Coverage (%)	1,050	10.354	8.164	0.000	30.260
Female Share of Population (%)	1,050	50.076	1.691	41.448	56.701
Unemployment Rate (%)	1,050	5.447	2.099	1.800	13.670

Data Sources: CDC (2003-2023), ACS (2003-2023), FRED (2003-2023), and SCE (2013-2023).

Between the period of 2003 and 2023, the average GDP deflator inflation in the United States was 2.475%. This differs slightly from the expected inflation component derived using the Kalman filter (2.313%) and particle filter (2.314%) but matches the time trend (2.475%) over the same time period. Using the SCE measure of inflation expectations from the years 2013-2023, the average was 4.157% for this time period. The unexpected component of our first three measures of inflation has a mean at zero or close to zero (0.17%) and a standard deviation between 1.6-2.3, indicating some cross-state variation.

The unexpected component of inflation based on the SCE from 2013-2023 has a mean of -1.479% and standard variation of 2.316.

The average U.S. state TFR from 2003-2023 was 1.89 children per woman. Moreover, there is substantial cross-state variation in TFR, ranging from a minimum of 1.31 children to a maximum of 2.68 children over the sample period.

3.5 Descriptive Evidence

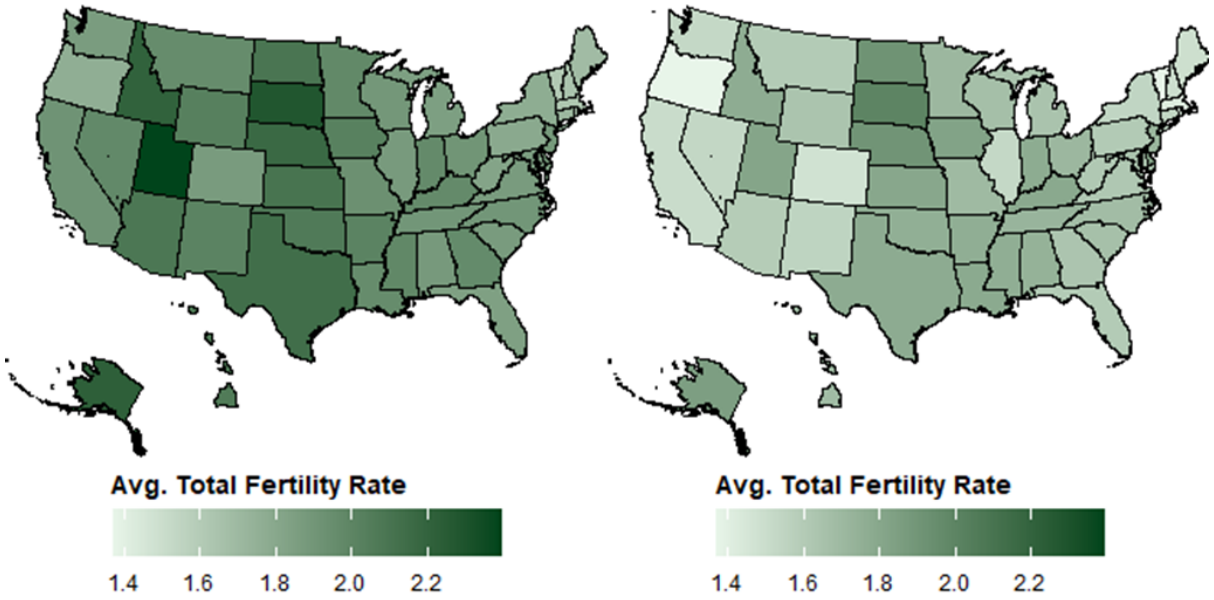
Figure 2 presents the geographical distribution of the total fertility rate and unexpected inflation in the United States. In particular, panel (a) shows the distribution of average TFR for two sub-periods, 2003-2019 (left) and 2020-2023 (right). Panel (b) displays the geographical distribution of average unexpected inflation for the same two sub-periods.

Inflation is relatively low (1.98%) and unexpected inflation is negative (-0.07%) in the first sub-period (2003-2019). In contrast, inflation is higher (4.52%) and unexpected inflation is positive (1.13%) in the second sub-period (2020-2023). In this context, we refer to the first sub-period as a low-inflation regime and the second sub-period as a high-inflation regime.

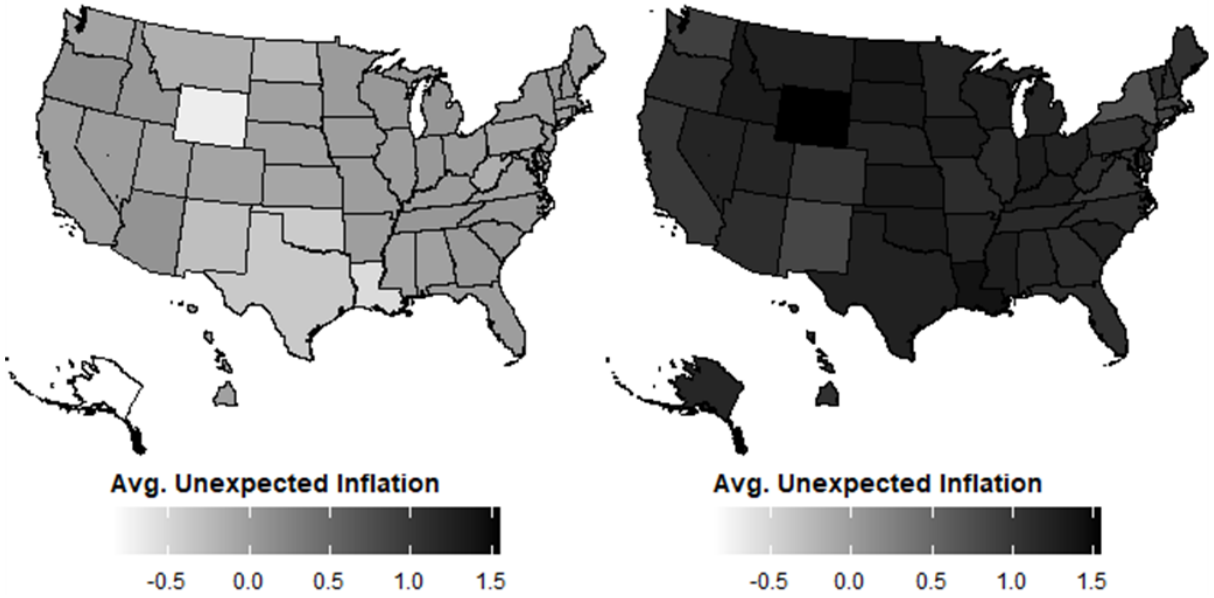
From the maps, the average TFR is relatively high across most states in the low-inflation regime. At the same time, unexpected inflation is low, with almost all states falling within the lighter grey region in panel (b). In the high-inflation regime, states are in the lighter green region in panel (a), indicating lower TFR. This coincides with periods of relatively high unexpected inflation, as indicated by the dark grey of the map.

It is important to note that the descriptive patterns in Figure 2 do not establish a causal relationship between unexpected inflation and fertility. Rather, the direction of both unexpected inflation and TFR reflects their trend over time.

In the next sections, we introduce the empirical model and present results that identify the effect of unexpected inflation on the total fertility rate in the US.



(a) Total Fertility Rate by State



(b) Unexpected Inflation by State

Figure 2: Geographic Distribution of Fertility and Unexpected Inflation Rates

3.6 Model

To investigate the effect of unexpected inflation on fertility in the United States, we estimate the following regression model:

$$Y_{s,t} = \beta_1 U_{s,t-1} + \mathbf{X}_{s,t} + \alpha_s + \lambda_t + \varepsilon_{s,t}, \tag{3}$$

where $Y_{s,t}$ represents the total fertility rate (TFR) or age specific fertility rate (ASFR) of state s at time t. $U_{s,t-1}$ is the one-period lag of unexpected inflation. A one-period lag is used because it takes at least 9-12 months for households to have a child. $\mathbf{X}_{s,t}$ represents the control variables, which are gender composition, racial composition, educational attainment, marital status, female labor force participation, median age, log of GDP per capita, unemployment rate, dummy for abortion law, dummy for political affiliation (red vs blue state) and health insurance coverage. α_s and λ_t are state and year fixed effects respectively. $\varepsilon_{s,t}$ is the error term.

4 Results

In this section, we present various estimates of the impact of unexpected inflation on fertility in the United States. We provide TWFE estimates in Table 3 (full sample, 2003-2023) as well as Table 4 (low inflation vs. high inflation regimes) to demonstrate that our results are not sensitive to these particular years. We then present heterogeneous effects for different age groups of women. Our results suggest that young women are the most responsive to unexpected inflation, which leads us to investigate whether or not we find evidence of catch-up fertility. We conclude with a series of robustness checks, varying our survey-based estimates of unexpected inflation and measure of fertility.

4.1 Baseline Results of Unexpected Inflation on Fertility Rates

The baseline results in Table 3 are estimated using the full sample period from 2003 to 2023. We compute unexpected inflation using several alternative methods, as reported in Columns (1)–(4). In Column (1), unexpected inflation is constructed as the difference between the SCE inflation expectations and the realized GDP deflator inflation rate.[6] In Columns (2)–(4), we estimate unexpected inflation using three alternative approaches: a Kalman filter, a particle filter, and a linear time trend. These methods estimate unex-

[6]We use GDP deflator inflation in this case because state-level data for personal consumption expenditure (PCE) or consumer price index (CPI) inflation are not available for the full sample period (2003–2023).

pected inflation as the gap between inflation and its trend component.

Table 3: Effects of Unexpected Inflation on TFR (2003–2023)

	SCE (1)	Kalman Filter (2)	Particle Filter (3)	Linear Trend (4)
Unexpected inflation$_{t-1}$	-0.0038***	-0.00529***	-0.00532***	-0.0036***
	(0.0011)	(0.0012)	(0.0013)	(0.0007)
Observations	498	950	950	1000
Number of states	50	50	50	50
R-squared	0.798	0.865	0.865	0.862
State fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes	Yes
Macroeconomic controls	Yes	Yes	Yes	Yes

Robust standard errors clustered at the state level in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1.

Across all specifications in columns (1)-(4), we find that unanticipated inflation has a negative and significant impact on the total fertility rate.[7] Notably, model-based results are similar to those of the survey in terms of sign and significance. This indicates that a one percentage point increase in unexpected inflation is associated with a reduction in the U.S. total fertility rate of .19-.28% (given the average TFR of 1.89 during this period). Roughly, this implies 3-5 fewer births per 1,000 women over their reproductive lifetimes. If observed inflation exceeds expected inflation by at least 4 percentage points, as in the post-COVID period, households would be predicted to reduce births by around 12-20 children per 1,000 women.

In Table 4, we split the full sample into two subsamples: 2003-2019 and 2020-2023. On average, inflation was 1.97% in 2003-2019 ("low inflation regime") and 4.52% in 2020-2023. We do this for two reasons: 1) household fertility behavior might respond differently to small variations in unexpected inflation than to relatively larger price shocks, and 2), there is concern that the COVID pandemic could confound the estimate of the full-sample result. Having these two different subsamples allows us to assess whether the results in the previous section are stable across different subperiods.

Across the two sub-periods, unexpected inflation continues to exert a negative and

[7] A table that includes coefficients for all our control variables can be viewed in our Appendix (Table 10.

Table 4: Effects of Unexpected Inflation on TFR Across Inflation Regimes

	SCE	Kalman Filter	Particle Filter	Linear Trend
Low inflation regime (2003–2019)	-0.0038*	-0.0034**	-0.0034**	-0.0020**
	(0.0019)	(0.0015)	(0.0015)	(0.0009)
High inflation regime (2020–2023)	-0.0059***	-0.0110**	-0.0112**	-0.0074***
	(0.0015)	(0.0043)	(0.0044)	(0.0026)
Observations	498	950	950	1000
Number of states	50	50	50	50
R-squared	0.800	0.866	0.866	0.862
State fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes

Robust standard errors clustered at the state level are in parentheses.
***p < 0.01, **p < 0.05, *p < 0.1.

statistically significant impact on the total fertility rate in the U.S. Notably, the effect was about three times relatively larger in the sub-sample of high inflation (2020-2023). In a high inflation regime, a one percentage-point increase in unexpected inflation is associated with a decline in the total fertility rate between 0.34-0.68% (given average TFR of 1.65 during this period). This roughly corresponds to 5-11 fewer children per 1,000 women over their reproductive lives.

Our results show that the negative and significant relationship between unexpected inflation and the total fertility rate holds both when inflation is low and when it is high. Overall, our baseline findings are consistent with the argument that substantial increases in unexpected inflation could prompt households to postpone or revise their childbearing decisions, leading to a reduction in fertility rate.

4.1.1 Age-Specific Effects of Unexpected Inflation on Fertility

To investigate heterogeneity across our baseline result, we focus on variation by age groups. The economic intuition behind this is straightforward: different ages of women may face different wealth redistribution effects from unexpected inflation as well as different costs in postponing fertility. Typically, any inflation redistributes resources away from net lenders (which tend to be older households) and toward net borrowers (which tend to be middle-aged households with mortgage debt) (Doepke and Schneider, 2006).

This wealth redistribution would exert a positive effect on the fertility of net borrowers and negative effect on the fertility of net lenders (Cumming and Dettling, 2023). However, middle-aged and younger women have more reproductive years ahead of them than relatively older women and thus face a lower cost of adjusting their fertility plans. Since we focus on reproductive-aged women (15-45), our sample would be biased toward net borrowers, likely those above the age of 29 as the median age of first home buyer has risen over time, rather than net lenders.

Figure 3 presents the estimated effects of unexpected inflation on age-specific fertility rates across different age groups. We use the same TWFE regression specification as in the main empirical results. The results show that the youngest women (aged 15-24) are more responsive to unanticipated changes in inflation compared to older women (above age 25) who exhibit muted or null effects.

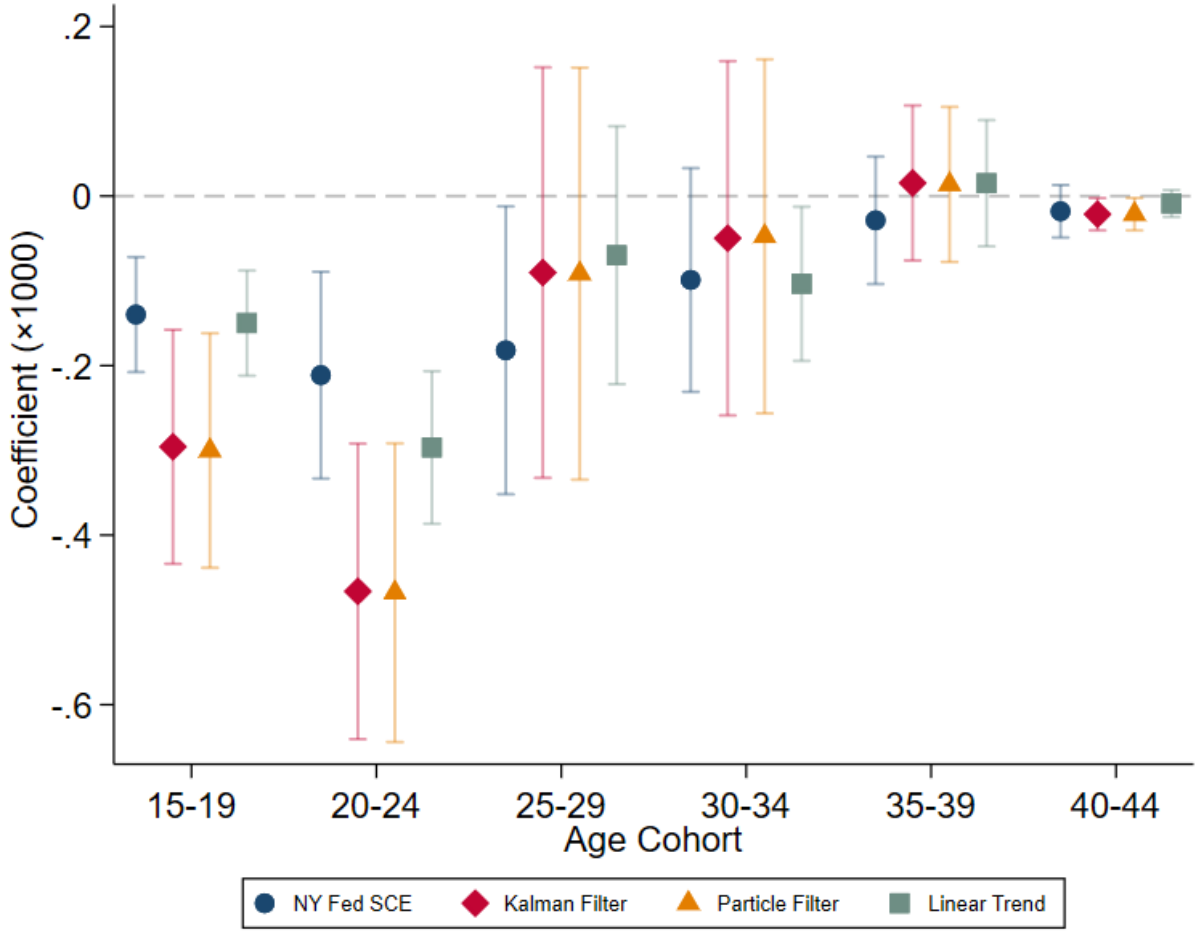


Figure 3: Effects of Unexpected Inflation on ASFRs Using Different Measures

Since women under the age of 25 are not likely to have a mortgage yet, we are plausibly

capturing the full effect of unexpected changes in inflation on economic uncertainty for this group. They do not face a high penalty to postponing births for a year or two and thus are more likely to adjust their fertility plans in response to inflation. As we move into relatively older age cohorts of women aged 25-29, 30-34, and 35-40, these households may be net borrowers and thus the impact of unexpected inflation on fertility will be confounded by potential wealth effects. Many women in the older age groups (35-39 or 40-44) may already have their desired children. Hence, if there is any unanticipated inflation, it does not affect their childbearing decisions.

It is important to note that because we cannot observe completed fertility rates for all age groups (which won't be possible until the 2040s at least), we do not know whether unexpected inflation is associated with actually lower fertility or postponed fertility. We turn to this question in the next section.

4.2 Are There Signs of Catch-Up Fertility?

In the previous section, we established that unexpected inflation leads to lower age-specific fertility rates, especially among very young women (under 25). This finding raises an important follow-up question: Are these delayed births permanently forgone, or are they eventually realized at later ages?

To address the question of catch-up fertility given our current data constraints, we estimate a smooth panel data local projections (SPLP) model following the approach of Barnichon and Brownlees (2019); Hartley and Mejia (2025). The SPLP helps with lumpy impulse response and reduces estimation noise relative to the standard local projections, especially in finite samples. With this, we can track the dynamic responses of TFR to an unexpected inflation shock. The SPLP model is specified thus:

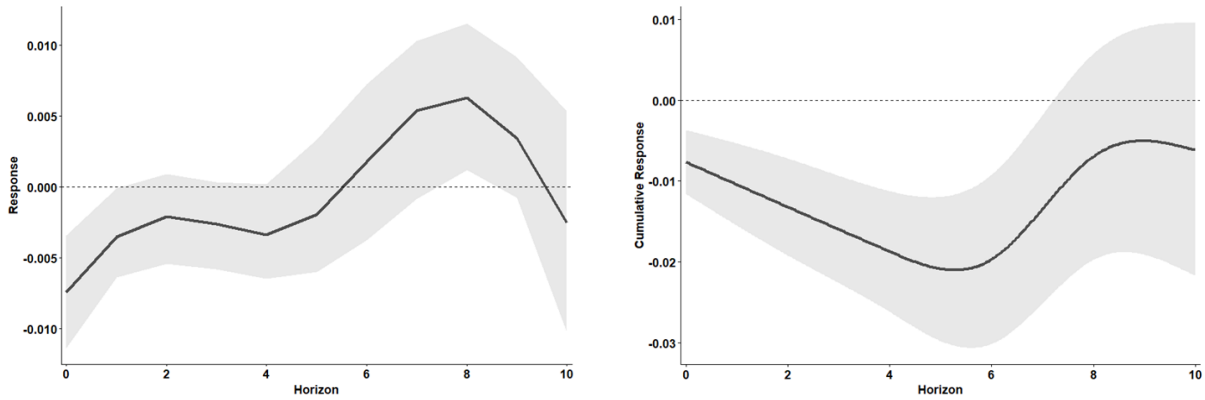
$$\mathrm{TFR}_{i,t+h} = \beta_h \,\mathrm{UINF}_{i,t} + \sum_{p=1}^{2} \phi_{h,p} \,\mathrm{TFR}_{i,t-p} + \sum_{p=1}^{2} \gamma_{h,p} \,\mathrm{UINF}_{i,t-p} + \sum_{p=1}^{2} \boldsymbol{\delta}'_{h,p} \mathbf{X}_{i,t-p} + \alpha_i + \lambda_t + \varepsilon_{i,t+h}, \tag{4}$$

The SPLP imposes this smoothness restriction using B-splines basis function:

$$\beta_h = \sum_{k=1}^{K} b_k \, B_k(h) \tag{5}$$

where $UINF_{i,t}$ denotes unexpected inflation, $X_{i,t-p}$ is a vector of control variables as we use in the panel fixed effects model, α_i captures state fixed effects, and λ_t captures year fixed effects. The coefficient β_h traces out the impulse response of fertility at horizon h. $B_k(h)$ denotes the k-th B-spline basis function evaluated at horizon h, b_k represents the associated spline coefficient to be estimated. K is the number of spline basis functions and is determined by the SPLP algorithm based on the number of horizon and polynomial order r (3 in this case). The standard errors are clustered using a wild cluster bootstrap.

In Figure 4, we present the results of the local projections model. Figure 4a is the impulse response of the total fertility rate to a 1 standard deviation increase in unexpected inflation across ten horizons (years), while Figure 4b is the cumulative response. In summary, we find evidence that a given unexpected inflation shock has an initial negative impact on fertility, followed by a catch-up effect after about 6-9 years. However, despite some catch-up, we find suggestive evidence that not all postponed fertility would be realized in later years.



(a) Impulse Response Function

(b) Cumulative Impulse Response

Figure 4: Dynamic response of the Total Fertility Rate to an unexpected inflation shock. The left panel presents the impulse response function, while the right panel reports the cumulative response. Shaded areas denote 90% confidence intervals. Horizon is in years.

On impact, the impulse response shows that the total fertility rate (TFR) responds

negatively following an increase in unexpected inflation. This suggests that households postpone births in response to unexpected inflation, consistent with the panel fixed-effects results. The magnitude of the decline slows after about two years, but the negative response persists for up to five years. This pattern may reflect households' adjustment and planning behavior following an unexpected inflation shock. Notably, the results show catch-up fertility beginning around the sixth year and persisting through the ninth year. This suggests that, although households initially postpone births due to unexpected inflation, some of the delayed births are eventually realized later.

Is some or all of the catch-up fertility realized? We provide an answer to this with the cumulative response of TFR to unexpected inflation, as shown in Figure 4b. The cumulative response remains negative even after ten years, indicating that the catch-up fertility does not fully compensate for the initial postponement of births.

Overall, the results suggest that when households face economic uncertainty that affects their fertility decisions, some births may be permanently forgone rather than merely delayed. Consequently, macroeconomic shocks such as unexpected inflation can have long-term demographic consequences.

4.3 Robustness Checks

In this section, we present robustness check using alternative measures of unexpected inflation and fertility.

4.3.1 Unexpected Inflation Using Annual PCE Inflation and Survey Inflation Expectations

In Table 5, we use annual time-series data on median inflation expectations from the New York Fed Survey of Consumer Expectations (NY SCE) and the University of Michigan (UMich) survey to construct unexpected inflation. The NY SCE data cover the period 2013–2023, while the University of Michigan (UMich) survey data span 1990–2023. We compare this to the data on personal consumption expenditure (PCE) inflation to derive unexpected inflation.

Table 5: Effect of Unexpected Inflation on Total Fertility Rate

	NY Fed CES	UMich Yearly Avg
Unexpected Inflation$_{t-1}$	-0.0297***	-0.0282***
	(2.13)	(2.34)
Observations	10	33
R-squared	0.9946	0.9000
Time trend	Yes	Yes
Robust SE	Yes	Yes
PCE Inflation	Yes	Yes

T-statistics are reported in parentheses since the sample size for the time series is small.

This serves as a robustness check to confirm that the baseline findings are not sensitive to the use of the state-level model-based measures and GDP deflator inflation to construct unexpected inflation. Then, we re-estimate the impact of the new unexpected inflation measures on the total fertility rate in the U.S. The results in Table 5 show that unexpected inflation has a negative and statistically significant impact on the total fertility rate in the U.S., consistent with the findings reported in the previous section.

4.3.2 Unexpected Inflation and Crude Birth Rates

In Table 6, we present estimates of the impact of unexpected inflation on crude birth rates in the United States.[8] This serves as a robustness check to ensure that our findings are not driven by using the TFR as the measure of fertility. Across all specifications in Table 6, the negative and statistically significant impact of unexpected inflation on fertility persists. The estimates imply that a five percentage-point increase in unexpected inflation reduces the crude birth rate by about 1-1.5 births per 10,000 people. These results reinforce the findings from the previous section, showing that deviations of observed inflation from expectations have demographic consequences.

[8]Crude birth rate is total births per 1000 people

Table 6: Effect of Unexpected Inflation on the Crude Birth Rate

	Survey	Kalman Filter	Particle Filter	Linear Trend
Full Sample				
Unexpected inflation$_{t-1}$	-0.0313^{***}	-0.0318^{***}	-0.0320^{***}	-0.0230^{***}
	(0.00670)	(0.00744)	(0.00750)	(0.00524)
Observations	498	950	950	1000
R-squared	0.886	0.864	0.864	0.860
Number of states	50	50	50	50
State FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Pre-COVID				
Unexpected inflation$_{t-1}$	-0.0232^{***}	-0.0230^{***}	-0.0229^{***}	-0.0190^{***}
	(0.00750)	(0.00647)	(0.00651)	(0.00632)
Observations	298	750	750	800
R-squared	0.866	0.821	0.821	0.815
Number of states	50	50	50	50
State FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Robust standard errors clustered at the state level are in parentheses.
$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

5 Conclusion

In this paper, we examine the impact of unanticipated inflation on the total fertility rate in the United States. We use the variation in total fertility rates across fifty U.S. states to identify the impact of unexpected inflation on fertility, employing a panel fixed-effects model and four approaches to construct unexpected inflation.

The main empirical result shows that an increase in unanticipated inflation is associated with a significant reduction in the total fertility rate in the U.S. The age-specific estimates indicate that the negative effect is mostly driven by younger women, producing the intuitive result that younger women are most likely (and able) to postpone childbearing decisions in response to unexpected inflation.

We conduct several robustness checks to assess the consistency of the baseline result. First, we use an alternative approach to construct unexpected inflation by using PCE inflation and survey inflation expectations, and the results remain consistent. Second, we re-estimate the model using crude birth rate as an alternative measure of fertility, and the

negative effect persists. Finally, we assess the stability of the baseline estimates across subperiods by separately estimating the model for the pre-COVID and post-COVID periods. With this, the negative relationship between unexpected inflation and fertility holds in both subperiods. Overall, the results indicate that significant unanticipated inflation has demographic consequences in the United States. Unanticipated inflation could be a factor that causes women to postpone childbearing, thereby driving the decline in TFR in recent years.

This paper is important considering that the U.S. fertility rate in every state is not only currently below the rate of population replacement but also well below the fertility desires reported by individual women in those states (Piano and Stone, 2025). In the short- to medium-run, low fertility will shrink the labor force, increase the old-age dependency ratio, and pose a fiscal challenge for the social security system (Sobotka et al., 2011). Hence, persistent economic uncertainty due to high unexpected inflation may accelerate population aging and negatively impact economic growth in the long run.

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APPENDIX

A Full Model Specification

We begin by using the Kalman filter (KF) within a local-level state-space model to decompose inflation into a trend and a transitory component (Everaert and Dossche, 2005; Mertens, 2016). However, the KF assumes a Gaussian distribution and a linear state-space model, which may not necessarily hold.

To address these concerns, we use the particle filter, which does not rely on linearity or Gaussian-distribution assumptions (Johannes and Polson, 2009; Cogley et al., 2010; Nason and Smith, 2021). We also use the linear trend method as further robustness to the estimates of unexpected inflation from the PF and KF.

To assess the external validity of the KF, PF and LT approaches, we first construct an alternative measure of unexpected inflation using the national monthly data on inflation expectations from the University of Michigan (UMich). In this case, unexpected inflation is defined as the difference between observed monthly consumer price index (CPI) inflation and the UMich inflation expectation[9].

Then the Kalman filter is used to compute unexpected inflation using the national monthly CPI inflation [10]. Finally, we compare the estimated measure of unexpected inflation derived from the Kalman filter with the one constructed using the UMich's inflation expectations.

[9]We source the national monthly data on the University of Michigan's inflation expectation and CPI inflation rate from the Federal Reserve Economic Data (FRED).

[10]We use the CPI inflation rate to test external validity of the Kalman filter method because the UMich survey is monthly and consumer-based. This alignment is important to ensure that the unexpected inflation estimated using the Kalman filter is comparable to the measure constructed from the University of Michigan's inflation expectations.

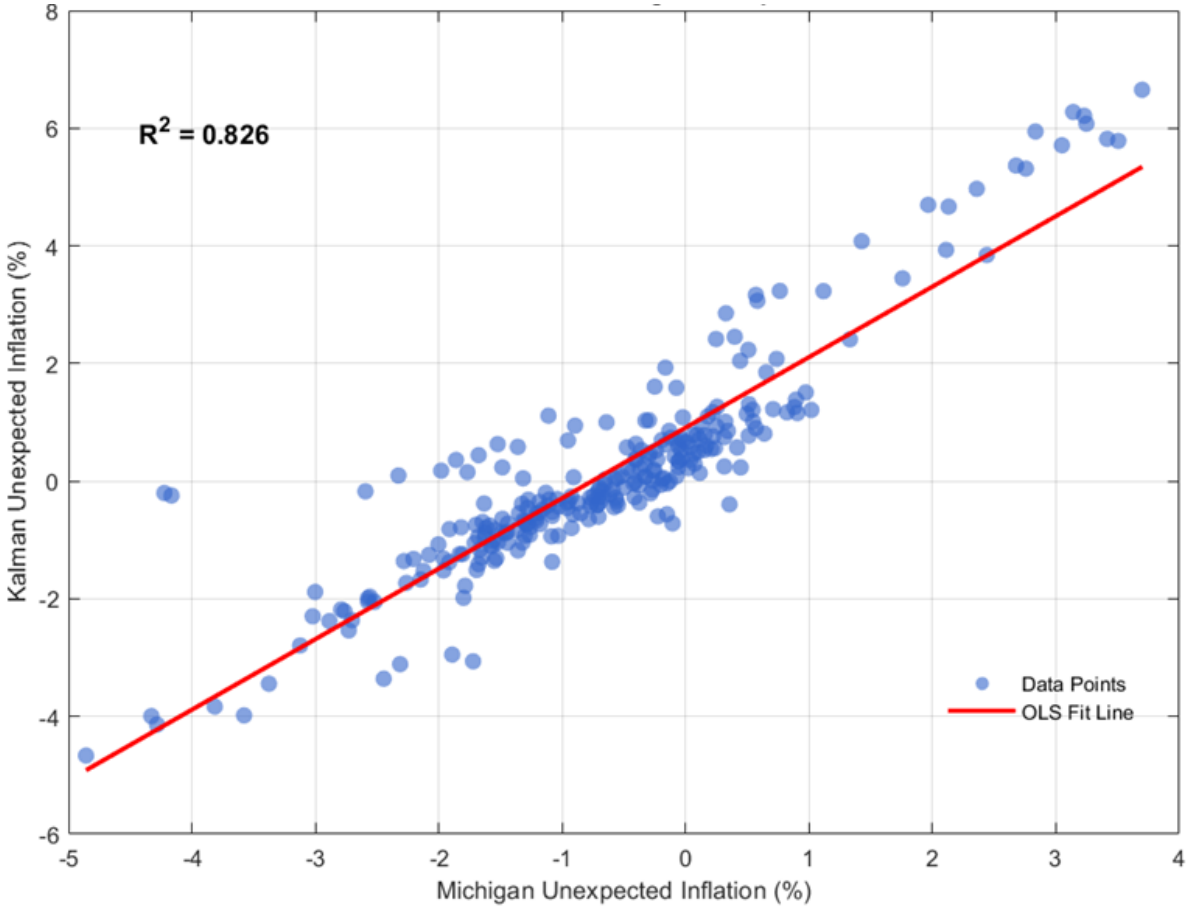


Figure 5: Comparing the Kalman Filter and University of Michigan's Survey Approach to Unexpected Inflation

The estimated unexpected inflation from the Kalman filter closely tracks that derived using the University of Michigan's inflation expectation, as shown in Figure 5. Both measures of unexpected inflation are strongly and positively correlated, with an R-square of 0.826. This provides an external validation for the use of the Kalman filter to extract unexpected inflation from the observed inflation data.

A.1 Kalman and Particle Filter

To decompose observed inflation into its expected and unexpected components, inflation in state s at time t is modeled as the sum of a latent trend and a transitory shock. This decomposition is shown in Equation 6.

Measurement equation:

$$\pi_{s,t} = \mu_{s,t} + \varepsilon_{s,t}, \tag{6}$$

Hence, we have that;

$$\mu_{s,t} = E_{t-1}(\pi_{s,t}), \qquad \varepsilon_{s,t} = \pi_{s,t} - E_{t-1}(\pi_{s,t}). \tag{7}$$

Equation 6 can be respecified as:

$$\pi_{s,t} = \mathbb{E}_{t-1}(\pi_{s,t}) + (\pi_{s,t} - \mathbb{E}_{t-1}(\pi_{s,t})). \tag{8}$$

where $\pi_{s,t}$ denotes observed inflation, $\mu_{s,t}$ represents expected inflation (the latent trend). $\varepsilon_{s,t}$ is the transitory component, which we use to measure unexpected inflation.

The latent trend component is not directly observable. Therefore, we estimate it using the Kalman filter (KF) and particle filter (PF) within a state-space model. The Kalman filter computes the optimal estimate analytically under the assumption that the model is linear and Gaussian. In contrast, the particle filter approximates the filtering distribution using Monte Carlo simulation of many possible state paths (particles). Then, expected inflation is obtained as the weighted average of the simulated states.

State-space model:

For the state space model, we allow the latent trend component to follow two time series processes (random walk and AR(1)). This is to ensure that our results are not driven by a particular specification of the latent trend process. The random walk is a nonstationary time-series process, whereas the autoregressive process of order 1 (AR(1)) is a stationary process because it allows for mean reversion. The functional specifications for the two processes are as follows.

Random-walk specification: $\mu_{s,t} = \mu_{s,t-1} + \eta_{s,t}$ (9)

AR(1) specification: $\mu_{s,t} = \rho_s \mu_{s,t-1} + \eta_{s,t}, \qquad 0 < \rho_s < 1$ (10)

Under both specifications, the shocks satisfy

$$\eta_{s,t} \sim N(0, Q_s), \qquad \varepsilon_{s,t} \sim N(0, R_s), \tag{11}$$

where Q_s denotes the variance of innovations to the latent inflation trend and R_s represents the variance of transitory inflation shocks. The variance parameters (Q_s and R_s) as well as ρ_s are allowed to vary across states.

Finally, the unexpected inflation is derived as the deviation of observed inflation ($\pi_{s,t}$) from the estimated latent trend ($\hat{\mu}_{s,t}$) in Equation 12:

$$u_{s,t} = \pi_{s,t} - \hat{\mu}_{s,t}. \tag{12}$$

A.2 Linear Trend Specification

As an additional robustness, we estimate expected inflation using a deterministic linear trend model. In this specification, inflation in state s at time t is decomposed into a deterministic time trend and a transitory component:

$$\pi_{s,t} = \alpha_s + \beta_s t + \varepsilon_{s,t}, \tag{13}$$

where α_s is a state-specific intercept, β_s captures the deterministic linear trend in inflation, and $\varepsilon_{s,t}$ represents transitory deviations from the trend.

Expected inflation is therefore given by the fitted deterministic trend:

$$\mu_{s,t} = \alpha_s + \beta_s t, \tag{14}$$

and unexpected inflation is defined as the deviation of observed inflation from this estimated trend:

$$u_{s,t} = \pi_{s,t} - \hat{\mu}_{s,t}. \tag{15}$$

This specification provides a simple benchmark for expected inflation that does not rely on the state-space structure used in the Kalman and particle filter approaches.

B Female Population (2021-2023)

To construct the female population estimate between 2021 and 2023, I first compute the share of the female population in each age group as a percentage of the total female population for the years in which data is available. Then, I estimate an age-specific quadratic trend regression of the share of the population as specified below:

$$\text{Share}_{s,a,t} = \alpha_a + \beta_{1a}\text{trend} + \beta_{2a}\text{trend}^2 + \mu_s + \varepsilon_{s,a,t} \tag{16}$$

where:

- $\text{Share}_{s,a,t}$ is the share of the female population in age group a relative to the total female population in state s in year t;
- α_a is an age-group–specific intercept;
- β_{1a} and β_{2a} capture the age-group–specific linear and quadratic time trends;
- μ_s are state fixed effects that control for time-invariant differences across states;
- $\varepsilon_{s,a,t}$ is an idiosyncratic error term.

After estimating the above, I use the fitted values to extrapolate population shares for the missing years (2021-2023). These predicted age-group shares are multiplied by the total female population counts to obtain age-specific female population counts.

As shown in Figure 6, there is a strong correlation between the predicted and actual shares of the age-specific female population as a percentage of the total female population for the years in which data is available (2003-2020). Hence, this validates that the predicted female proportion for the missing years is consistent with the observed data.

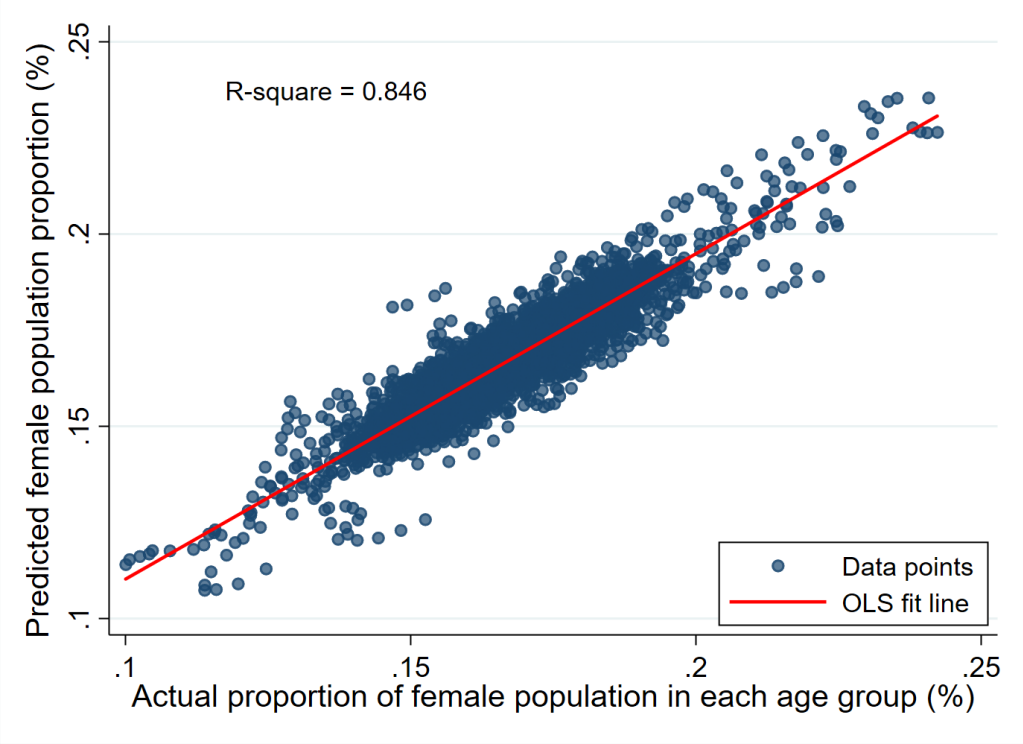


Figure 6: Scatter plot of actual and predicted female population (2021-2023)

C Kalman Filter vs University of Michigan's survey

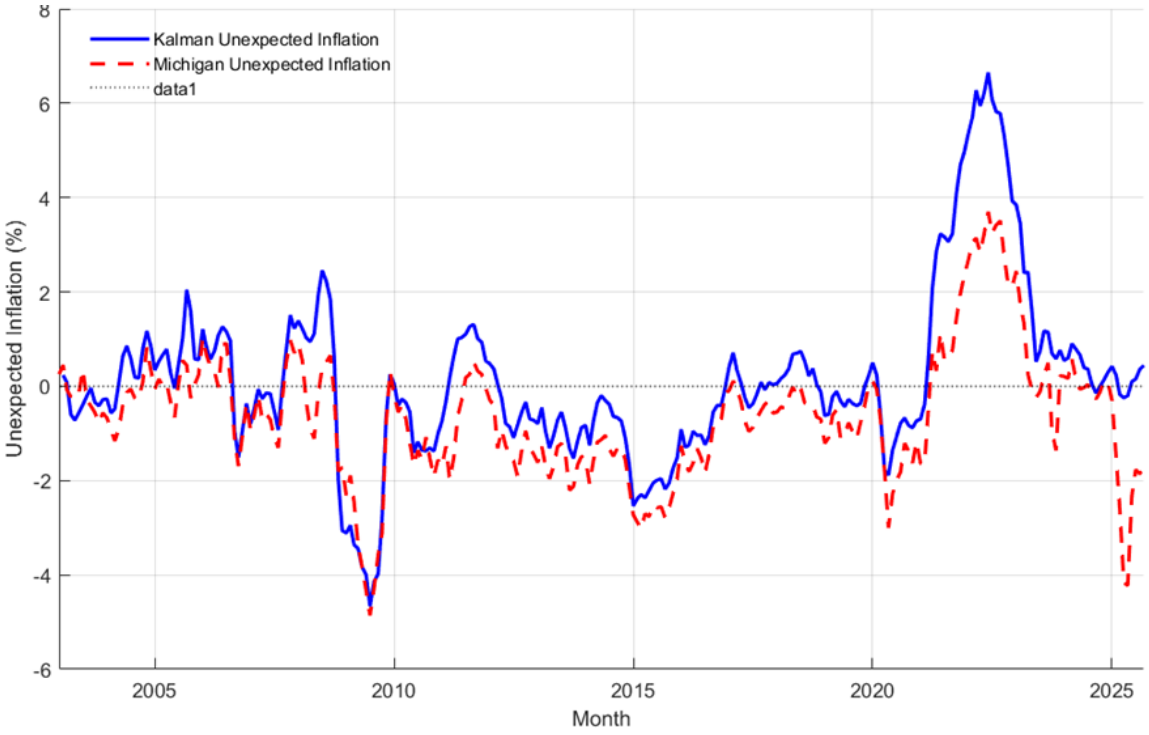


Figure 7: Monthly unexpected inflation using Kalman filter and Michigan's survey

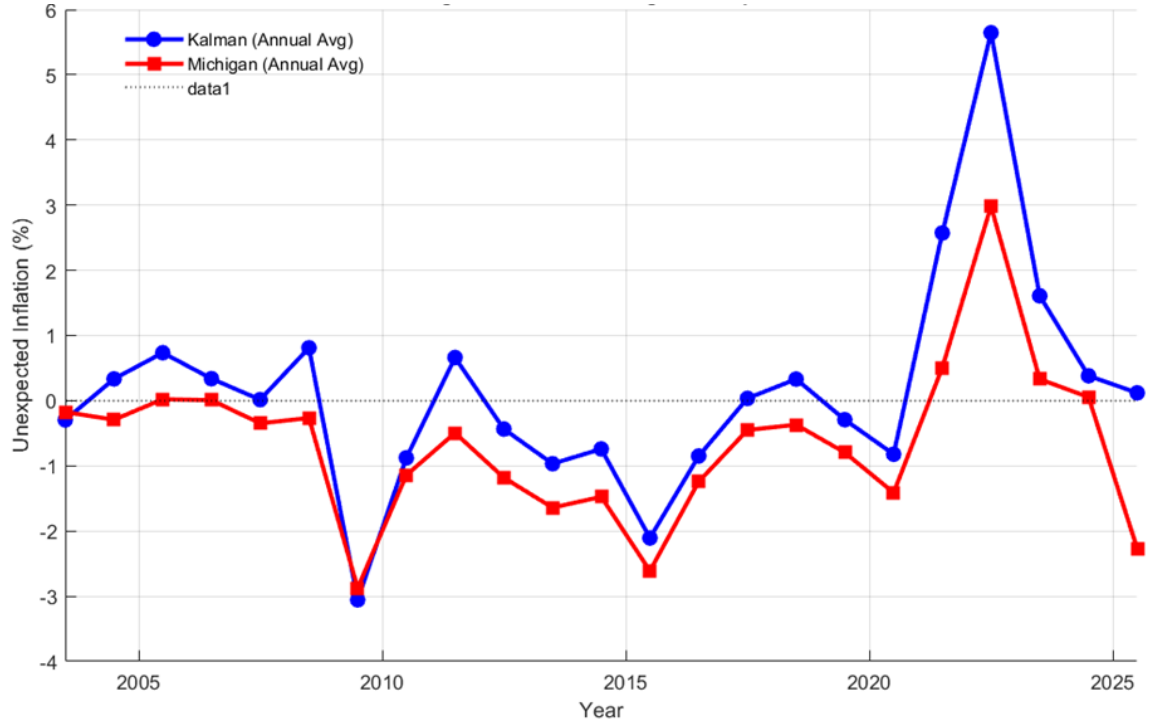


Figure 8: Annual average unexpected inflation using Kalman filter and Michigan's survey

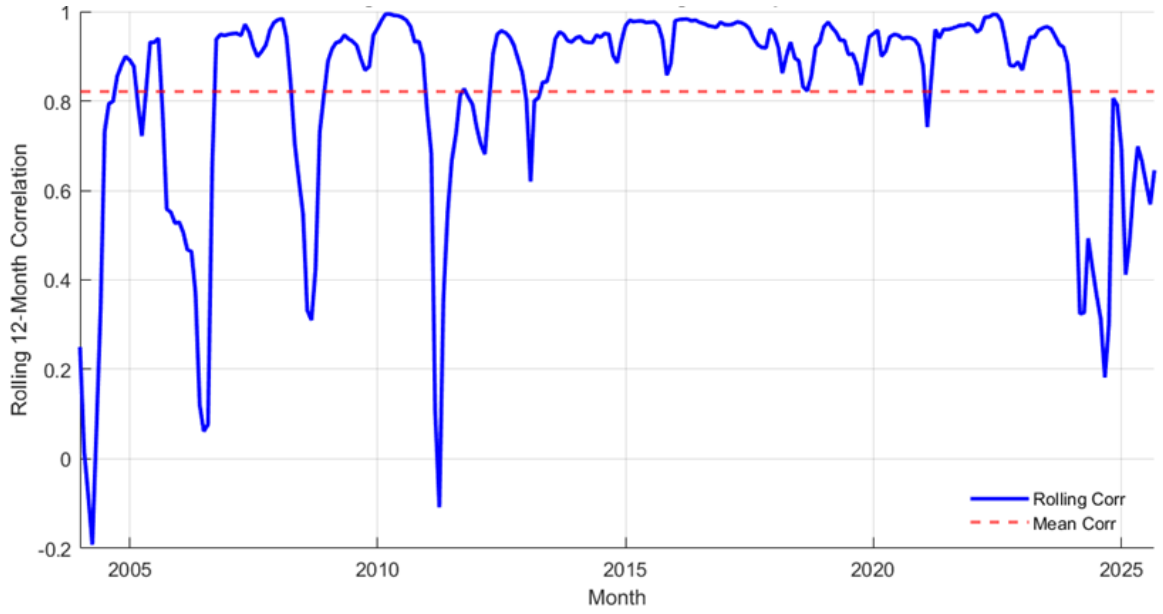


Figure 9: Rolling correlation between Kalman filter and Michigan's unexpected inflation

D Average unexpected inflation

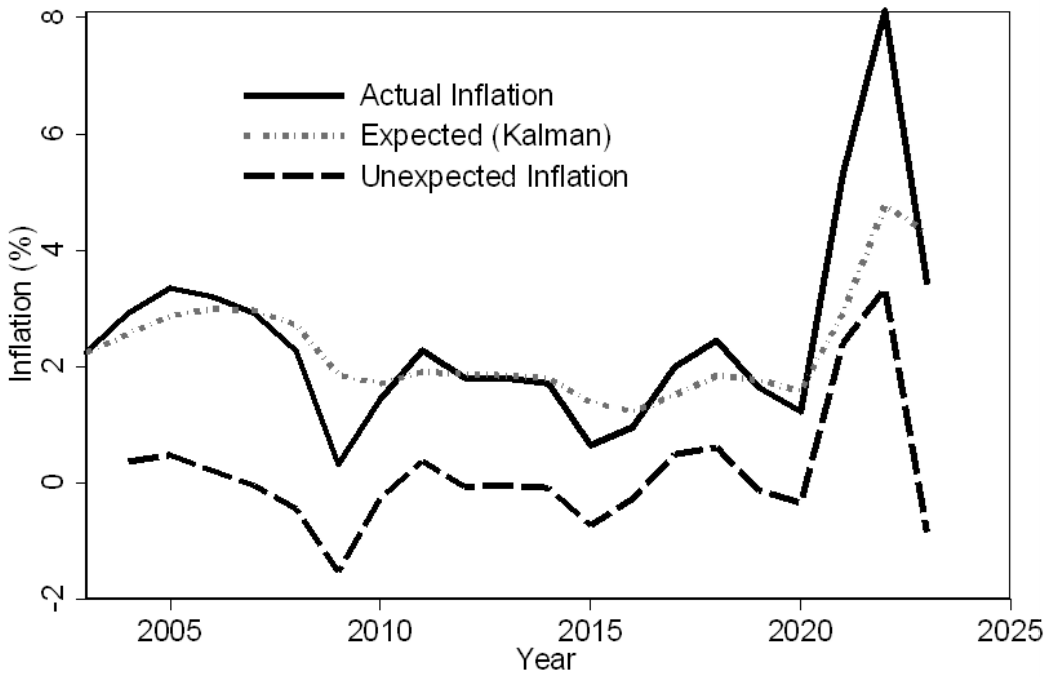


Figure 10: Actual, expected and Kalman's unexpected inflation

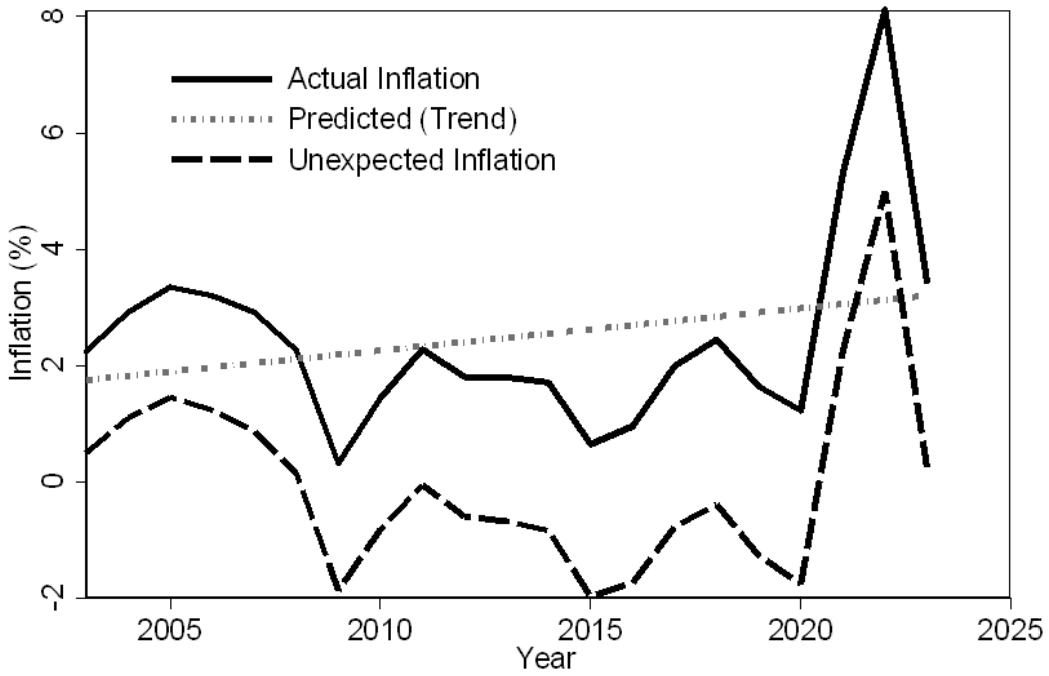


Figure 11: Actual, expected and time trend's unexpected inflation

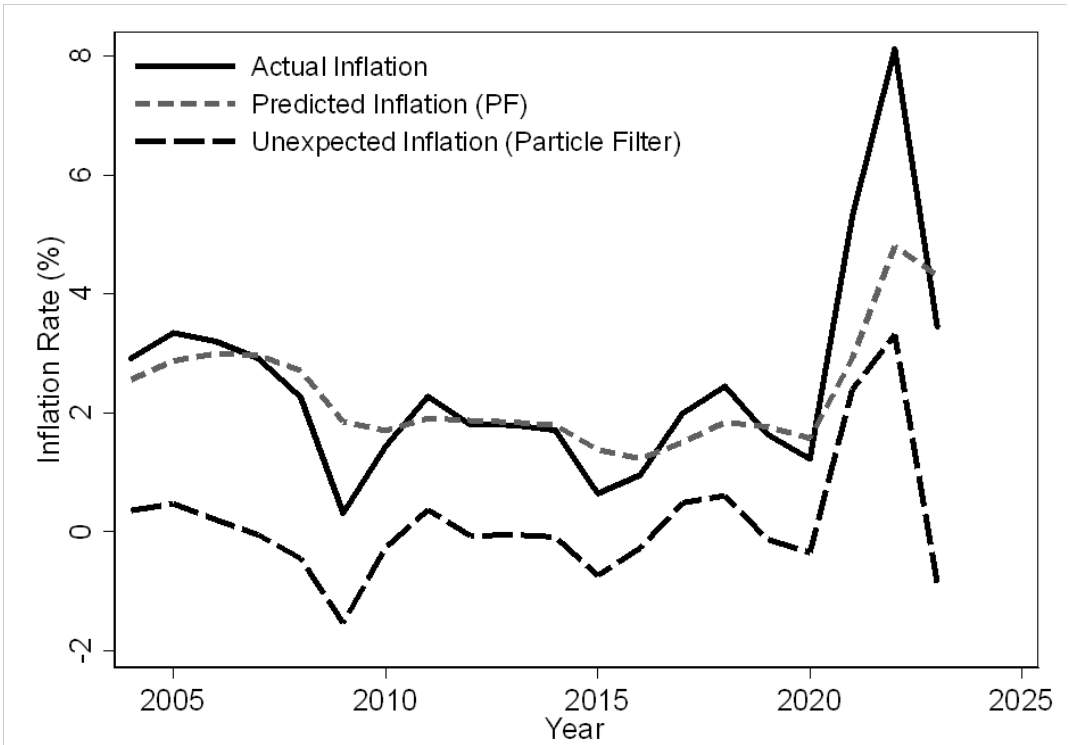


Figure 12: Actual, expected and Particle filter's unexpected inflation

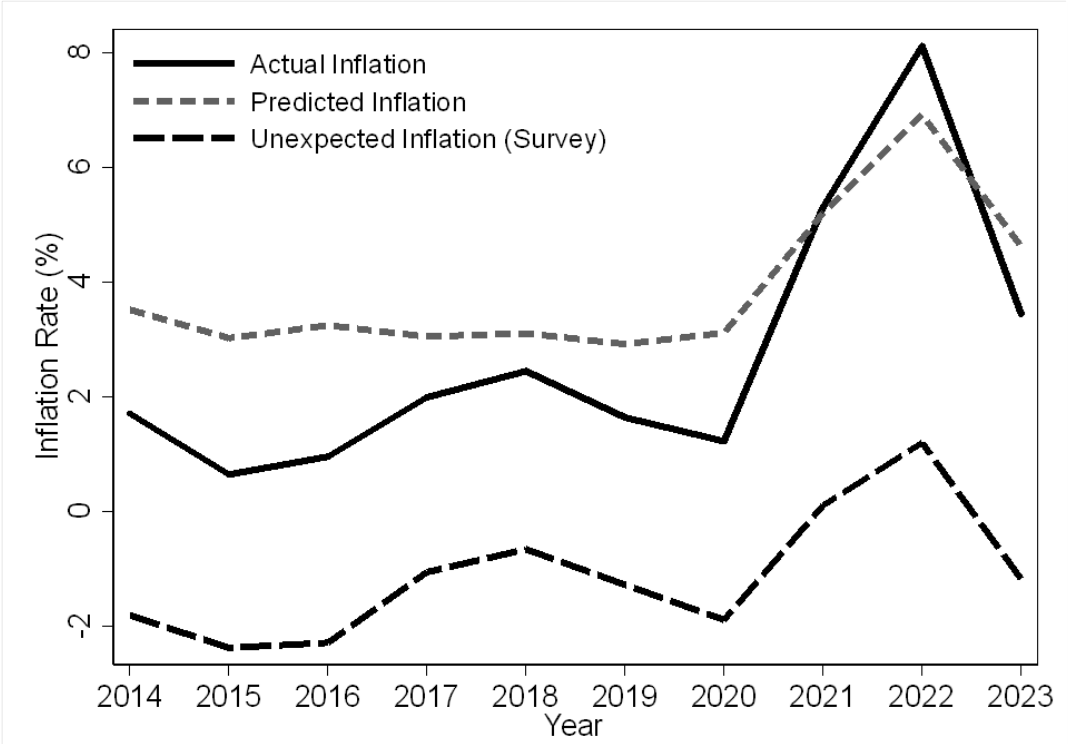


Figure 13: Actual, expected and UMich survey's unexpected inflation

E Diagnostics for the unexpected inflation measure

E.1 Testing if unexpected inflation is correlated with expected inflation

Table 7: Effect of Lagged Expected Inflation on Unexpected Inflation

	(1) Particle Filter	(2) Kalman Filter	(3) Survey
E_{t-1} Inflation	-0.088	-0.080	-0.021
	(0.135)	(0.138)	(0.174)
E_{t-2} Inflation	0.033	0.025	0.022
	(0.113)	(0.115)	(0.158)
Observations	950	950	447
Joint F-statistic	1.58	1.65	0.01
Joint p-value	0.216	0.202	0.986
Clusters	State	State	State

E.2 Mean-Zero Test for the Kalman Filter Unexpected Inflation

Table 8: Mean Test for Unexpected Inflation Across States

State	Mean	t-stat	p-value	State	Mean	t-stat	p-value
1	0.203	1.01	0.326	26	0.121	0.35	0.731
2	-0.438	-0.35	0.730	27	0.198	0.92	0.368
3	0.289	1.71	0.103	28	0.238	1.07	0.296
4	0.231	1.03	0.317	29	0.262	1.71	0.104
5	0.178	1.11	0.281	30	0.204	1.26	0.223
6	0.144	0.52	0.607	31	-0.076	-0.14	0.894
7	0.169	1.34	0.195	32	0.163	1.19	0.250
8	0.143	0.64	0.531	33	0.255	1.60	0.126
9	0.213	1.29	0.212	34	0.091	0.11	0.914
10	0.250	1.45	0.165	35	0.252	1.18	0.253
11	0.182	0.96	0.347	36	-0.069	-0.08	0.938
12	0.301	1.40	0.177	37	0.299	2.07	0.052*
13	0.230	1.20	0.246	38	0.179	0.92	0.369
14	0.278	1.25	0.228	39	0.202	0.79	0.440
15	0.249	1.17	0.255	40	0.287	1.49	0.152
16	0.196	0.83	0.417	41	0.233	0.61	0.548
17	0.257	1.34	0.196	42	0.274	1.56	0.134
18	-0.153	-0.23	0.822	43	-0.065	-0.09	0.926
19	0.213	1.36	0.190	44	0.202	0.79	0.440
20	0.186	1.19	0.247	45	0.271	1.80	0.088*
21	0.227	1.68	0.109	46	0.183	1.23	0.232
22	0.281	1.40	0.177	47	0.136	0.92	0.369
23	0.250	1.28	0.216	48	0.107	0.21	0.837
24	0.208	0.77	0.451	49	0.284	1.53	0.143
25	0.224	1.36	0.189	50	-0.245	-0.23	0.822

E.3 Mean Zero Test for the Particle Filter Unexpected Inflation

Table 9: Mean Test for Unexpected Inflation Across States

State	Mean	t-stat	p-value	State	Mean	t-stat	p-value
1	0.208	1.02	0.321	26	0.127	0.37	0.719
2	-0.402	-0.33	0.748	27	0.200	0.93	0.366
3	0.288	1.71	0.103	28	0.250	1.11	0.281
4	0.220	0.98	0.339	29	0.265	1.73	0.101
5	0.181	1.12	0.275	30	0.203	1.25	0.225
6	0.149	0.54	0.597	31	-0.068	-0.12	0.905
7	0.164	1.31	0.205	32	0.161	1.17	0.255
8	0.148	0.66	0.519	33	0.255	1.59	0.129
9	0.218	1.30	0.209	34	0.111	0.13	0.896
10	0.253	1.46	0.162	35	0.235	1.14	0.267
11	0.182	0.96	0.347	36	-0.060	-0.07	0.947
12	0.293	1.38	0.184	37	0.304	2.08	0.052*
13	0.221	1.16	0.259	38	0.163	0.86	0.398
14	0.281	1.25	0.228	39	0.197	1.37	0.187
15	0.238	1.14	0.268	40	0.291	1.50	0.150
16	0.191	0.81	0.427	41	0.228	0.60	0.556
17	0.249	1.31	0.205	42	0.273	1.57	0.133
18	-0.184	-0.28	0.786	43	-0.053	-0.08	0.941
19	0.212	1.36	0.189	44	0.198	0.77	0.448
20	0.183	1.16	0.260	45	0.273	1.81	0.087*
21	0.221	1.65	0.116	46	0.184	1.23	0.232
22	0.282	1.41	0.176	47	0.133	0.91	0.376
23	0.247	1.28	0.215	48	0.080	0.16	0.876
24	0.214	0.79	0.440	49	0.274	1.51	0.148
25	0.216	1.35	0.194	50	-0.270	-0.25	0.804

F Full Regression Results

F.1 Unexpected Inflation and Total Fertility Rate

Table 10: Unexpected Inflation and Fertility (Full-Sample)

	(1) Survey	(2) Kalman Filter	(3) Particle Filter	(4) Linear Trend
Unexpected Inflation$_{t-1}$	-0.003760***	-0.005286***	-0.005323***	-0.003627***
	(0.001060)	(0.001203)	(0.001221)	(0.000667)
Median age	-0.002344	-0.005785	-0.005780	-0.004653
	(0.002967)	(0.004008)	(0.004009)	(0.004012)
Female labor force participation	-0.004697**	-0.005251**	-0.005253**	-0.005822**
	(0.002000)	(0.002443)	(0.002443)	(0.002465)
Married	0.005900***	0.008005***	0.007999***	0.006636**
	(0.002066)	(0.002908)	(0.002908)	(0.002990)
Education	0.008156**	-0.000605	-0.000602	0.002005
	(0.003727)	(0.004754)	(0.004754)	(0.004400)
Insurance	0.001513	-0.000792	-0.000792	-0.001178
	(0.002301)	(0.001367)	(0.001367)	(0.001333)
Race	-0.005942*	-0.006737**	-0.006733**	-0.004433
	(0.003138)	(0.003029)	(0.003030)	(0.002806)
Gender	-0.001155	-0.003883	-0.003876	-0.004304
	(0.002150)	(0.003156)	(0.003156)	(0.003061)
Unemployment	-0.004564	-0.007224*	-0.007231*	-0.006801
	(0.003854)	(0.004244)	(0.004246)	(0.004327)
Blue state	-0.028287**	-0.065631***	-0.065629***	-0.068436***
	(0.013441)	(0.017169)	(0.017169)	(0.018802)
Log income	-0.056594	-0.062343	-0.062317	-0.045073
	(0.076762)	(0.080928)	(0.080900)	(0.083179)
Constant	2.1071**	3.3118***	3.3111***	2.9584***
	(1.0284)	(1.0875)	(1.0872)	(1.0819)
State Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Clustered SE	State	State	State	State
Observations	498	950	950	1000
States	50	50	50	50
Within R^2	0.7976	0.8655	0.8655	0.8618

Notes: All specifications include state and year fixed effects. Robust standard errors clustered at the state level are reported in parentheses.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 11: Unexpected Inflation and TotalFertility (Pre-COVID Sample)

	(1) Survey	(2) Kalman Filter	(3) Particle Filter	(4) Linear Trend
Unexpected Inflation$_{t-1}$	-0.001777*	-0.003154***	-0.003137***	-0.002062***
	(0.000969)	(0.001135)	(0.001145)	(0.000698)
Median age	-0.000439	-0.005011	-0.005018	-0.003248
	(0.002702)	(0.004500)	(0.004499)	(0.004304)
Female labor force participation	-0.001869	-0.002698	-0.002699	-0.003751*
	(0.001765)	(0.001860)	(0.001860)	(0.001897)
Married	0.002314	0.004760	0.004758	0.003893
	(0.001466)	(0.002961)	(0.002961)	(0.002979)
Education	0.003967	-0.005134	-0.005131	-0.001548
	(0.002825)	(0.003680)	(0.003680)	(0.003455)
Insurance	0.002402	-0.001514	-0.001513	-0.001537
	(0.001845)	(0.001093)	(0.001093)	(0.001091)
Race	-0.006168***	-0.005099*	-0.005095*	-0.002348
	(0.002045)	(0.003010)	(0.003012)	(0.002728)
Gender	-0.001602	-0.006120**	-0.006118**	-0.006860**
	(0.002931)	(0.003049)	(0.003050)	(0.002768)
Unemployment	-0.024819***	-0.010627**	-0.010638**	-0.009851*
	(0.006196)	(0.004967)	(0.004971)	(0.005115)
Blue state	-0.027152***	-0.046777***	-0.046778***	-0.047823***
	(0.009050)	(0.016176)	(0.016178)	(0.017579)
Log income	-0.012809	0.037526	0.037453	0.067699
	(0.056874)	(0.067776)	(0.067771)	(0.071749)
Constant	1.9995***	2.6335***	2.6344***	2.0567**
	(0.7142)	(0.7846)	(0.7843)	(0.8182)
State Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Clustered SE	State	State	State	State
Observations	298	750	750	800
States	50	50	50	50
Within R^2	0.8470	0.8574	0.8574	0.8493

Notes: Sample restricted to the pre-COVID period (year < 2020). All specifications include state and year fixed effects. Robust standard errors clustered at the state level are reported in parentheses.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

F.2 Age Specific Effect of Unexpected Inflation

Table 12: Effect of Unexpected Inflation on Age-Specific Fertility (15–19)

	Survey	Kalman Filter	Particle Filter	Linear Trend
Unexpected Inflation$_{t-1}$	-0.000140***	-0.000296***	-0.000300***	-0.000150***
	(0.000035)	(0.000070)	(0.000071)	(0.000032)
Female labor force participation	-0.000041	-0.000014	-0.000014	-0.000035
	(0.000047)	(0.000064)	(0.000064)	(0.000067)
Median age	-0.000126	-0.000534**	-0.000533**	-0.000475**
	(0.000082)	(0.000240)	(0.000240)	(0.000228)
Married	0.000167***	0.000607***	0.000607***	0.000522***
	(0.000045)	(0.000113)	(0.000113)	(0.000098)
Education	-0.000041	-0.000802***	-0.000802***	-0.000698***
	(0.000089)	(0.000178)	(0.000178)	(0.000167)
Insurance	0.000138*	-0.000108	-0.000108	-0.000159*
	(0.000071)	(0.000084)	(0.000084)	(0.000087)
Race	-0.000090	0.000006	0.000006	0.000021
	(0.000078)	(0.000122)	(0.000122)	(0.000113)
Gender	0.000032	0.000287**	0.000288**	0.000297**
	(0.000063)	(0.000115)	(0.000115)	(0.000112)
Unemployment	0.000010	-0.000308	-0.000308	-0.000296
	(0.000110)	(0.000218)	(0.000218)	(0.000218)
Blue state	-0.000777*	-0.002105**	-0.002105**	-0.002231**
	(0.000388)	(0.000908)	(0.000908)	(0.001035)
Log income	0.002400	0.005060	0.005060	0.006253
	(0.002131)	(0.004021)	(0.004019)	(0.004029)
Constant	-0.000372	0.029525	0.029502	0.010707
	(0.026545)	(0.052204)	(0.052171)	(0.051028)
State Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	498	950	950	1000
States	50	50	50	50
Within R^2	0.9048	0.9313	0.9313	0.9284

Notes: Robust standard errors clustered at the state level are reported in parentheses.
***p < 0.01, **p < 0.05, *p < 0.10.

Table 13: Effect of Unexpected Inflation on Age-Specific Fertility (20–24)

	Survey	Kalman Filter	Particle Filter	Linear Trend
Unexpected Inflation$_{t-1}$	-0.000211***	-0.000466***	-0.000468***	-0.000297***
	(0.000062)	(0.000089)	(0.000090)	(0.000046)
Female labor force participation	-0.000087	-0.000197	-0.000197	-0.000238*
	(0.000095)	(0.000133)	(0.000133)	(0.000139)
Median age	-0.000273	-0.000655*	-0.000655*	-0.000580
	(0.000208)	(0.000344)	(0.000344)	(0.000348)
Married	0.000449***	0.000639***	0.000638***	0.000529**
	(0.000142)	(0.000198)	(0.000198)	(0.000200)
Education	0.000240	-0.000029	-0.000028	0.000181
	(0.000163)	(0.000269)	(0.000270)	(0.000264)
Insurance	0.000350**	-0.000276***	-0.000276***	-0.000299***
	(0.000165)	(0.000099)	(0.000099)	(0.000093)
Race	-0.000240	-0.000243	-0.000243	-0.000088
	(0.000181)	(0.000174)	(0.000174)	(0.000166)
Gender	0.000030	-0.000059	-0.000058	-0.000128
	(0.000114)	(0.000189)	(0.000189)	(0.000181)
Unemployment	0.000065	-0.000574*	-0.000574*	-0.000543*
	(0.000255)	(0.000319)	(0.000319)	(0.000323)
Blue state	-0.000707	-0.003019***	-0.003019***	-0.003279***
	(0.000834)	(0.001053)	(0.001053)	(0.001166)
Log income	-0.000879	-0.002110	-0.002106	-0.000801
	(0.003252)	(0.005130)	(0.005127)	(0.005292)
Constant	0.066256	0.145482**	0.145402**	0.120530*
	(0.042572)	(0.061689)	(0.061660)	(0.062826)
State Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	498	950	950	1000
States	50	50	50	50
Within R^2	0.9218	0.9450	0.9450	0.9430

Notes: Robust standard errors clustered at the state level are reported in parentheses.
$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$.

Table 14: Effect of Unexpected Inflation on Age-Specific Fertility (25–29)

	Survey	Kalman Filter	Particle Filter	Linear Trend
Unexpected Inflation$_{t-1}$	-0.000182**	-0.000090	-0.000092	-0.000070
	(0.000087)	(0.000124)	(0.000124)	(0.000078)
Female labor force participation	-0.000310*	-0.000351*	-0.000351*	-0.000393**
	(0.000161)	(0.000177)	(0.000177)	(0.000176)
Median age	0.000084	0.000118	0.000118	0.000151
	(0.000252)	(0.000227)	(0.000227)	(0.000237)
Married	-0.000013	-0.000220	-0.000220	-0.000242
	(0.000122)	(0.000185)	(0.000185)	(0.000184)
Education	0.000873***	0.000848***	0.000848***	0.000936***
	(0.000256)	(0.000269)	(0.000269)	(0.000246)
Insurance	-0.000197	0.000101	0.000101	0.000118
	(0.000159)	(0.000097)	(0.000097)	(0.000094)
Race	-0.000567**	-0.000638***	-0.000638***	-0.000509***
	(0.000233)	(0.000202)	(0.000202)	(0.000185)
Gender	-0.000497**	-0.000860***	-0.000860***	-0.000912***
	(0.000208)	(0.000203)	(0.000203)	(0.000206)
Unemployment	-0.000690*	-0.000041	-0.000041	-0.000030
	(0.000384)	(0.000256)	(0.000256)	(0.000261)
Blue state	-0.001214	-0.002820***	-0.002820***	-0.002938***
	(0.000766)	(0.000850)	(0.000850)	(0.000907)
Log income	-0.006270	-0.012211**	-0.012211**	-0.012221**
	(0.005166)	(0.004936)	(0.004936)	(0.004873)
Constant	0.161741**	0.267333***	0.267325***	0.264126***
	(0.065933)	(0.066713)	(0.066715)	(0.065666)
State Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	498	950	950	1000
States	50	50	50	50
Within R^2	0.7046	0.7581	0.7581	0.7615

Notes: Robust standard errors clustered at the state level are reported in parentheses.
$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$.

Table 15: Effect of Unexpected Inflation on Age-Specific Fertility (30–34)

	Survey	Kalman Filter	Particle Filter	Linear Trend
Unexpected Inflation$_{t-1}$	-0.000099	-0.000050	-0.000048	-0.000104**
	(0.000067)	(0.000107)	(0.000107)	(0.000046)
Female labor force participation	-0.000399***	-0.000419***	-0.000419***	-0.000427***
	(0.000127)	(0.000137)	(0.000137)	(0.000131)
Median age	-0.000003	0.000116	0.000116	0.000216
	(0.000247)	(0.000259)	(0.000259)	(0.000268)
Married	0.000395**	0.000258	0.000258	0.000208
	(0.000159)	(0.000194)	(0.000194)	(0.000192)
Education	0.000499*	-0.000018	-0.000018	0.000090
	(0.000261)	(0.000283)	(0.000283)	(0.000260)
Insurance	-0.000007	0.000103	0.000104	0.000108
	(0.000145)	(0.000082)	(0.000082)	(0.000077)
Race	-0.000386	-0.000389*	-0.000389*	-0.000287
	(0.000231)	(0.000208)	(0.000208)	(0.000198)
Gender	0.000108	-0.000300*	-0.000300*	-0.000271*
	(0.000109)	(0.000165)	(0.000165)	(0.000159)
Unemployment	-0.000211	-0.000439*	-0.000440*	-0.000432*
	(0.000243)	(0.000228)	(0.000228)	(0.000233)
Blue state	-0.001839**	-0.003529***	-0.003529***	-0.003551***
	(0.000752)	(0.000807)	(0.000807)	(0.000840)
Log income	-0.007244	-0.004017	-0.004015	-0.003238
	(0.005544)	(0.004901)	(0.004901)	(0.004979)
Constant	0.149930**	0.176159***	0.176131***	0.155537**
	(0.071640)	(0.063497)	(0.063506)	(0.063025)
State Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	498	950	950	1000
States	50	50	50	50
Within R^2	0.4421	0.4363	0.4363	0.4516

Notes: Robust standard errors clustered at the state level are reported in parentheses.
$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$.

Table 16: Effect of Unexpected Inflation on Age-Specific Fertility (35–39)

	Survey	Kalman Filter	Particle Filter	Linear Trend
Unexpected Inflation$_{t-1}$	-0.000029	0.000016	0.000014	0.000015
	(0.000038)	(0.000047)	(0.000047)	(0.000038)
Female labor force participation	-0.000117	-0.000097	-0.000097	-0.000101
	(0.000070)	(0.000065)	(0.000065)	(0.000065)
Median age	-0.000034	-0.000067	-0.000067	-0.000090
	(0.000090)	(0.000105)	(0.000105)	(0.000103)
Married	0.000086	0.000168***	0.000168***	0.000167**
	(0.000077)	(0.000063)	(0.000063)	(0.000066)
Education	0.000127	-0.000016	-0.000016	0.000003
	(0.000115)	(0.000118)	(0.000118)	(0.000104)
Insurance	-0.000083	0.000008	0.000008	-0.000002
	(0.000071)	(0.000034)	(0.000034)	(0.000033)
Race	-0.000037	-0.000155	-0.000155	-0.000101
	(0.000096)	(0.000096)	(0.000096)	(0.000090)
Gender	0.000001	0.000017	0.000017	0.000018
	(0.000067)	(0.000069)	(0.000069)	(0.000072)
Unemployment	-0.000209*	-0.000121	-0.000121	-0.000099
	(0.000118)	(0.000108)	(0.000108)	(0.000108)
Blue state	-0.001115**	-0.001480***	-0.001480***	-0.001508***
	(0.000546)	(0.000450)	(0.000450)	(0.000467)
Log income	-0.001236	-0.000966	-0.000968	-0.000680
	(0.002605)	(0.001985)	(0.001985)	(0.002005)
Constant	0.058754*	0.058310**	0.058327**	0.052943*
	(0.032517)	(0.028562)	(0.028560)	(0.027635)
State Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	498	950	950	1000
States	50	50	50	50
Within R^2	0.1943	0.6976	0.6976	0.7121

Notes: Robust standard errors clustered at the state level are reported in parentheses.
$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$.

Table 17: Effect of Unexpected Inflation on Age-Specific Fertility (40–44)

	Survey	Kalman Filter	Particle Filter	Linear Trend
Unexpected Inflation$_{t-1}$	-0.000018	-0.000021*	-0.000021*	-0.000009
	(0.000016)	(0.000010)	(0.000010)	(0.000008)
Female labor force participation	-0.000040***	-0.000007	-0.000007	-0.000007
	(0.000014)	(0.000014)	(0.000014)	(0.000013)
Median age	-0.000034	-0.000031	-0.000031	-0.000047
	(0.000037)	(0.000036)	(0.000036)	(0.000035)
Married	-0.000023	0.000015	0.000015	0.000021
	(0.000020)	(0.000016)	(0.000016)	(0.000015)
Education	0.000082***	0.000019	0.000019	0.000009
	(0.000027)	(0.000033)	(0.000033)	(0.000030)
Insurance	-0.000026	0.000002	0.000002	0.000001
	(0.000026)	(0.000011)	(0.000011)	(0.000010)
Race	-0.000014	-0.000050***	-0.000050***	-0.000044***
	(0.000023)	(0.000017)	(0.000017)	(0.000015)
Gender	-0.000032	0.000013	0.000013	0.000008
	(0.000032)	(0.000025)	(0.000025)	(0.000024)
Unemployment	-0.000100***	-0.000005	-0.000005	-0.000004
	(0.000036)	(0.000038)	(0.000038)	(0.000037)
Blue state	-0.000269**	-0.000213*	-0.000213*	-0.000217*
	(0.000121)	(0.000115)	(0.000115)	(0.000125)
Log income	0.000031	0.000636	0.000637	0.000579
	(0.000669)	(0.000470)	(0.000470)	(0.000467)
Constant	0.009027	0.000174	0.000169	0.001886
	(0.008839)	(0.007251)	(0.007251)	(0.006951)
State Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	498	950	950	1000
States	50	50	50	50
Within R^2	0.4617	0.6695	0.6695	0.6961

Notes: Robust standard errors clustered at the state level are reported in parentheses.
$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$.

F.3 Effect of Unexpected Inflation on TFR by Inflation Regime

Table 18: Effect of Unexpected Inflation on Total Fertility Rate Across Inflation Regimes

	Survey	Kalman Filter	Particle Filter	Linear Trend
Low inflation regime (2003–2019)	-0.0038*	-0.0034**	-0.0034**	-0.0020**
	(0.0019)	(0.0015)	(0.0015)	(0.0009)
High inflation regime (2020–2023)	-0.0059***	-0.0110**	-0.0112**	-0.0074***
	(0.0015)	(0.0043)	(0.0044)	(0.0026)
Female labor force participation	-0.0049**	-0.0054**	-0.0054**	-0.0060**
	(0.0020)	(0.0025)	(0.0025)	(0.0025)
Median age	-0.0020	-0.0058	-0.0058	-0.0046
	(0.0029)	(0.0040)	(0.0040)	(0.0040)
Married	0.0060***	0.0080***	0.0079***	0.0066**
	(0.0020)	(0.0029)	(0.0029)	(0.0030)
Education	0.0083**	-0.0007	-0.0007	0.0019
	(0.0037)	(0.0047)	(0.0047)	(0.0044)
Insurance	0.0011	-0.0009	-0.0009	-0.0012
	(0.0023)	(0.0014)	(0.0014)	(0.0013)
Race	-0.0060*	-0.0067**	-0.0067**	-0.0045
	(0.0031)	(0.0031)	(0.0031)	(0.0029)
Gender	-0.0006	-0.0036	-0.0036	-0.0041
	(0.0022)	(0.0032)	(0.0032)	(0.0031)
Blue state	-0.0294**	-0.0661***	-0.0661***	-0.0689***
	(0.0135)	(0.0172)	(0.0172)	(0.0188)
Unemployment	-0.0042	-0.0069	-0.0069	-0.0064
	(0.0038)	(0.0042)	(0.0042)	(0.0043)
Log income	-0.0554	-0.0585	-0.0581	-0.0426
	(0.0777)	(0.0813)	(0.0813)	(0.0833)
Constant	2.0541*	3.2700***	3.2653***	2.9358***
	(1.0375)	(1.0965)	(1.0967)	(1.0822)
Observations	498	950	950	1000
Number of states	50	50	50	50
R-squared	0.800	0.866	0.866	0.862

All specifications include state and year fixed effects. Robust standard errors clustered at the state level are reported in parentheses.
***p < 0.01, **p < 0.05, *p < 0.1.

F.4 Birth Rates and Unexpected Inflation

Table 19: Effect of Unexpected Inflation on Birth Rate: Full Sample (2003-2023)

	Survey	Kalman Filter	Particle Filter	Linear Trend
Unexpected Inflation$_{t-1}$	-0.0313***	-0.0318***	-0.0320***	-0.0230***
	(0.00670)	(0.00744)	(0.00750)	(0.00524)
Married	0.0463***	0.0795***	0.0795***	0.0744**
	(0.0139)	(0.0271)	(0.0271)	(0.0280)
Education	0.0414**	-0.0349	-0.0349	-0.0199
	(0.0181)	(0.0368)	(0.0368)	(0.0344)
Race (Black)	-0.0443***	-0.0367*	-0.0367*	-0.0223
	(0.0156)	(0.0201)	(0.0201)	(0.0199)
Gender	-0.0223	-0.0364	-0.0364	-0.0403
	(0.0145)	(0.0245)	(0.0245)	(0.0243)
Median income (log)	-0.3800	-0.1447	-0.1445	0.0356
	(0.4800)	(0.6154)	(0.6153)	(0.6405)
Blue state	-0.1923***	-0.4463***	-0.4463***	-0.4550***
	(0.0465)	(0.1076)	(0.1076)	(0.1200)
Unemployment	-0.0639***	-0.0742**	-0.0742**	-0.0701**
	(0.0153)	(0.0301)	(0.0301)	(0.0325)
Median age	-0.0241	-0.0621**	-0.0621**	-0.0545*
	(0.0237)	(0.0284)	(0.0284)	(0.0295)
Female labor force participation rate	-0.0308**	-0.0421*	-0.0422*	-0.0481*
	(0.0137)	(0.0244)	(0.0244)	(0.0245)
Health Insurance	0.0040	-0.0119	-0.0119	-0.0140
	(0.0129)	(0.0102)	(0.0102)	(0.0105)
Constant	16.1416***	22.4626***	22.4577***	19.6987**
	(5.7769)	(7.0696)	(7.0675)	(7.4307)
Observations	498	950	950	1000
R-squared	0.886	0.864	0.864	0.860
Number of states	50	50	50	50
State FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Robust standard errors clustered at the state level are reported in parentheses.
***p < 0.01, **p < 0.05, *p < 0.1.

Table 20: Effect of Unexpected Inflation on Birth Rate: Pre-COVID (2003–2019)

	Survey	Kalman Filter	Particle Filter	Linear Trend
Unexpected Inflation$_{t-1}$	-0.0232***	-0.0230***	-0.0229***	-0.0190***
	(0.0075)	(0.0065)	(0.0065)	(0.0063)
Married	0.0271**	0.0623**	0.0623**	0.0600**
	(0.0114)	(0.0263)	(0.0263)	(0.0273)
Education	0.0215	-0.0600*	-0.0599*	-0.0383
	(0.0209)	(0.0361)	(0.0361)	(0.0318)
Race (Black)	-0.0282*	-0.0235	-0.0235	-0.0061
	(0.0151)	(0.0235)	(0.0235)	(0.0228)
Gender	-0.0110	-0.0424	-0.0424	-0.0490**
	(0.0184)	(0.0258)	(0.0258)	(0.0237)
Median income (log)	-0.0564	0.7467	0.7461	1.0251
	(0.4111)	(0.5995)	(0.5996)	(0.6484)
Blue state	-0.2860***	-0.3529***	-0.3529***	-0.3450**
	(0.0790)	(0.1206)	(0.1206)	(0.1322)
Unemployment	-0.1989***	-0.0887**	-0.0888**	-0.0824**
	(0.0484)	(0.0371)	(0.0371)	(0.0396)
Median age	-0.0071	-0.0572	-0.0572	-0.0456
	(0.0182)	(0.0355)	(0.0355)	(0.0354)
Female labor force participation rate	-0.0105	-0.0244	-0.0244	-0.0347*
	(0.0142)	(0.0190)	(0.0190)	(0.0192)
Health Insurance	0.0194**	-0.0156	-0.0156	-0.0158
	(0.0092)	(0.0095)	(0.0095)	(0.0099)
Constant	13.0083**	14.2514**	14.2593**	9.9881
	(5.2094)	(6.4190)	(6.4180)	(6.9424)
Observations	298	750	750	800
R-squared	0.866	0.821	0.821	0.815
Number of states	50	50	50	50
State FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Robust standard errors clustered at the state level are reported in parentheses.
***p $<$ 0.01, **p $<$ 0.05, *p $<$ 0.1.

G Other robustness checks

G.1 Using alternative specification of the state space model

Table 21: Unexpected Inflation and Fertility: AR(1) Expectation Specification

	(1) Kalman Filter (AR1)	(2) Particle Filter (AR1)
Unexpected Inflation$_{t-1}$	-0.002372**	-0.002366**
	(0.000968)	(0.000968)
Median Age	-0.005073	-0.005074
	(0.004461)	(0.004461)
Female Labor Force Participation	-0.002722	-0.002722
	(0.001844)	(0.001844)
Married	0.004727	0.004727
	(0.002945)	(0.002944)
Education	-0.005093	-0.005093
	(0.003696)	(0.003696)
Insurance	-0.001605	-0.001605
	(0.001104)	(0.001104)
Race	-0.004929	-0.004931
	(0.003044)	(0.003044)
Gender	-0.006080*	-0.006080*
	(0.003070)	(0.003071)
Unemployment	-0.010986**	-0.010986**
	(0.004948)	(0.004948)
Blue state	-0.046957***	-0.046959***
	(0.016223)	(0.016223)
Log income	0.037999	0.038027
	(0.067389)	(0.067387)
Constant	2.629***	2.629***
	(0.7876)	(0.7876)
Observations	750	750
States	50	50
Within R^2	0.857	0.857
State Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Clustered SE	State	State

The dependent variable is the total fertility rate (TFR). Unexpected inflation is constructed using Kalman and particle filters assuming an AR(1) process for expected inflation. Standard errors clustered at the state level are reported in parentheses.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

G.2 Unexpected Inflation and Fertility using Differenced TFR

Table 22: Unexpected Inflation and Fertility Growth (Full Sample)

	(1) Survey	(2) Kalman Filter	(3) Particle Filter	(4) Linear Trend
Unexpected Inflation$_{t-1}$	-0.000140*	-0.003303**	-0.003328**	-0.002188**
	(0.000085)	(0.001427)	(0.001454)	(0.000835)
Median age	0.000859	0.001539	0.001545	0.000672
	(0.004659)	(0.002146)	(0.002147)	(0.002070)
Female labor force participation	-0.000820	-0.004409***	-0.004409***	-0.004011***
	(0.001088)	(0.000849)	(0.000849)	(0.000777)
Married	0.006856***	0.000954	0.000950	0.000615
	(0.001560)	(0.000812)	(0.000811)	(0.000702)
Education	0.005191*	0.001578	0.001576	0.001346
	(0.002724)	(0.001459)	(0.001459)	(0.001126)
Insurance	0.002194	-0.002200***	-0.002200***	-0.002204***
	(0.002297)	(0.000243)	(0.000244)	(0.000240)
Race	0.002314	0.001506	0.001506	0.001969
	(0.003742)	(0.001638)	(0.001638)	(0.001530)
Gender	0.004931**	0.001757	0.001763	0.001429
	(0.002105)	(0.001361)	(0.001361)	(0.001236)
Unemployment	0.004165**	-0.003991***	-0.003996***	-0.004235***
	(0.002011)	(0.001069)	(0.001068)	(0.001000)
Blue state	0.014878***	0.006846	0.006852	0.006364
	(0.005233)	(0.004273)	(0.004273)	(0.004291)
Log income	0.007710	-0.029452*	-0.029455*	-0.027556
	(0.033710)	(0.017704)	(0.017719)	(0.017654)
Constant	3.5125	6.4416***	6.4405***	6.5093***
	(2.8774)	(1.2118)	(1.2143)	(1.0464)
State Fixed Effects	Yes	Yes	Yes	Yes
Year Trend	Yes	Yes	Yes	Yes
Clustered SE	State	State	State	State
Observations	499	950	950	1000
States	50	50	50	50
Within R^2	0.0916	0.2215	0.2215	0.2272

Notes: The dependent variable is the first difference of the total fertility rate, ΔTFR. All specifications include state fixed effects and a linear time trend. Robust standard errors clustered at the state level are reported in parentheses.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

G.3 Leave-one-state-out

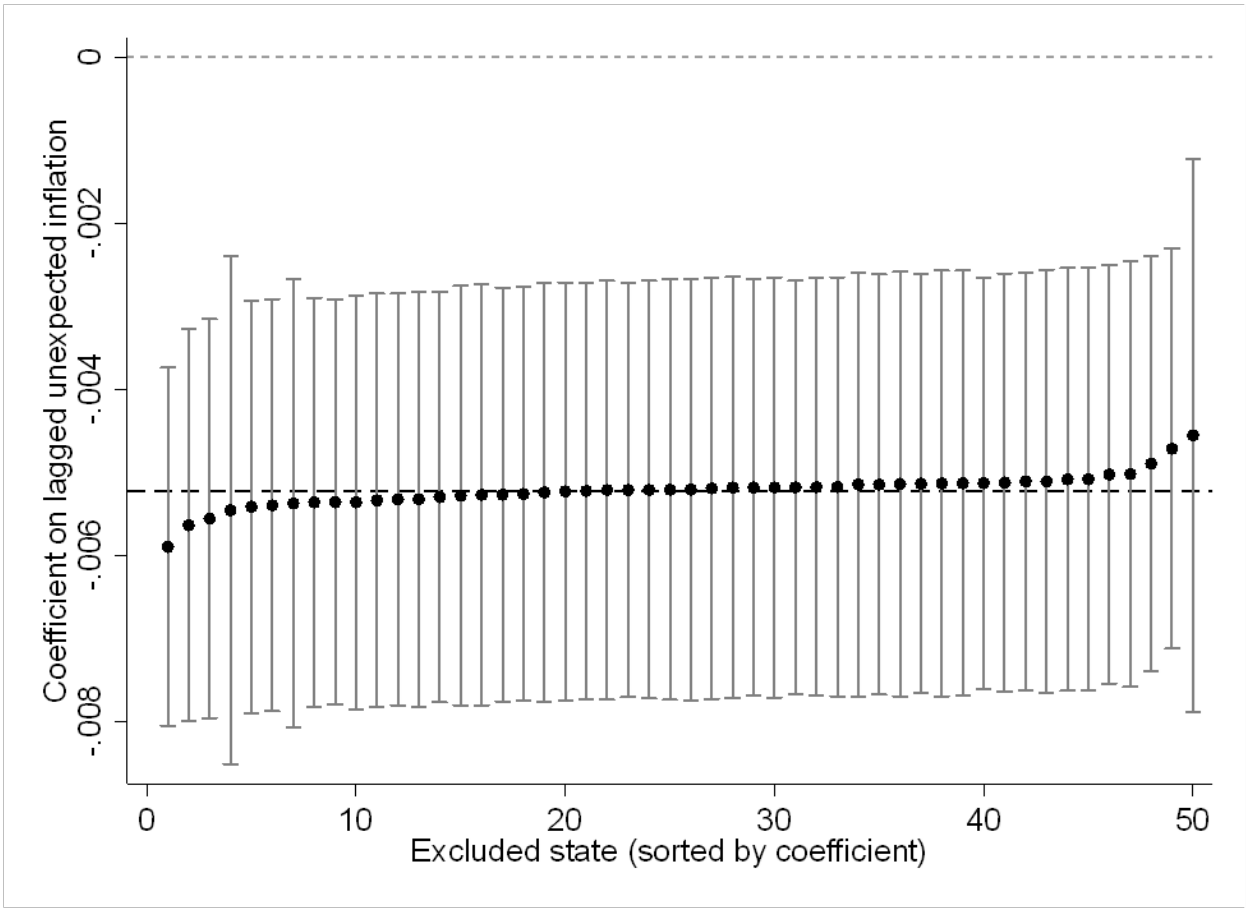


Figure 14: Coefficients of unexpected inflation from leaving one state out

G.4 General Fertility Rate and Unexpected Inflation

Table 23: Effect of Unexpected Inflation on General Fertility Rate (GFR): Full Sample (2003–2023)

	Survey	Kalman Filter	Particle Filter	Linear Trend
Unexpected Inflation$_{t-1}$	-0.1533***	-0.2132***	-0.2149***	-0.1494***
	(0.0409)	(0.0383)	(0.0388)	(0.0285)
Married	0.2413***	0.4036***	0.4034***	0.3716***
	(0.0743)	(0.1247)	(0.1247)	(0.1281)
Education	0.3414***	0.0101	0.0102	0.0775
	(0.1203)	(0.1819)	(0.1819)	(0.1660)
Race	-0.2732**	-0.2808***	-0.2806***	-0.2046**
	(0.1121)	(0.1039)	(0.1039)	(0.0976)
Gender	-0.0970	-0.1281	-0.1278	-0.1455
	(0.0820)	(0.1284)	(0.1284)	(0.1275)
Median income (log)	-0.4936	-1.6320	-1.6311	-0.9128
	(2.4654)	(3.1447)	(3.1436)	(3.2509)
Blue state	-1.0098***	-2.1683***	-2.1682***	-2.2376***
	(0.3004)	(0.5959)	(0.5958)	(0.6755)
Unemployment	-0.1371	-0.3331*	-0.3334*	-0.3183*
	(0.1316)	(0.1678)	(0.1679)	(0.1770)
Median age	-0.1498	-0.2818*	-0.2816*	-0.2465
	(0.1210)	(0.1605)	(0.1605)	(0.1593)
Female labor force participation rate	-0.1549**	-0.2202*	-0.2203*	-0.2560**
	(0.0708)	(0.1118)	(0.1118)	(0.1131)
Health Insurance	0.0433	-0.0521	-0.0521	-0.0691
	(0.0802)	(0.0538)	(0.0538)	(0.0535)
Constant	54.1175	101.7783**	101.7495**	90.6335**
	(32.9594)	(40.5699)	(40.5558)	(41.0603)
Observations	498	950	950	1000
R-squared	0.830	0.798	0.798	0.787
Number of states	50	50	50	50
State FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Robust standard errors clustered at the state level are reported in parentheses. GFR is births per 1000 reproductive women.
***p < 0.01, **p < 0.05, *p < 0.1.

Table 24: Effect of Unexpected Inflation on General Fertility Rate (GFR): Pre-COVID (2003–2019)

	Survey	Kalman Filter	Particle Filter	Linear Trend
Unexpected Inflation$_{t-1}$	-0.1192***	-0.1245***	-0.1245***	-0.0898**
	(0.0345)	(0.0367)	(0.0370)	(0.0365)
Married	0.1315**	0.2969**	0.2968**	0.2844**
	(0.0593)	(0.1192)	(0.1192)	(0.1232)
Education	0.1315	-0.2126	-0.2125	-0.1012
	(0.1118)	(0.1678)	(0.1678)	(0.1481)
Race	-0.2031**	-0.1954*	-0.1953*	-0.1035
	(0.0785)	(0.1058)	(0.1059)	(0.1013)
Gender	-0.0712	-0.1840	-0.1840	-0.2170*
	(0.1063)	(0.1238)	(0.1238)	(0.1149)
Median income (log)	0.0787	2.0883	2.0845	3.3829
	(2.0455)	(2.8235)	(2.8236)	(3.0296)
Blue state	-1.1997***	-1.6315**	-1.6315**	-1.6203**
	(0.3982)	(0.6355)	(0.6355)	(0.6981)
Unemployment	-1.2264***	-0.5534***	-0.5538***	-0.5200**
	(0.2242)	(0.1876)	(0.1877)	(0.1998)
Median age	-0.0387	-0.2501	-0.2503	-0.1880
	(0.1082)	(0.1855)	(0.1855)	(0.1805)
Female labor force participation rate	-0.0640	-0.1273	-0.1273	-0.1873**
	(0.0698)	(0.0892)	(0.0892)	(0.0905)
Health Insurance	0.1127*	-0.0695	-0.0695	-0.0736
	(0.0588)	(0.0469)	(0.0470)	(0.0476)
Constant	63.8126**	79.3745**	79.4218**	58.6873*
	(25.9517)	(32.3631)	(32.3572)	(34.1994)
Observations	298	750	750	800
R-squared	0.820	0.707	0.707	0.686
Number of states	50	50	50	50
State FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Robust standard errors clustered at the state level are reported in parentheses. GFR is births per 1000 reproductive women.
***p $<$ 0.01, **p $<$ 0.05, *p $<$ 0.1.