Extending the Range of Robust PCE Inflation Measures*

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Abstract

Economists aiming to understand the behavior of trend inflation often rely on *robust* measures of inflation, which exclude expenditure categories from headline inflation. We evaluate the forecasting performance of a wide set of such measures between 1960 and 2024, including core, median, and trimmed-mean personal-consumption-expenditure (PCE) inflation. Core inflation performs significantly worse than median and trimmed-mean inflation. Excluding expenditure categories with the highest and lowest inflation rates yields optimal trim points that vary widely across periods of high and low inflation, and also depend on the choice of trend target. Surprisingly, there are no grounds to select any single trim over others on the basis of forecasting performance: A wide range of trims has an average prediction error that makes them statistically indistinguishable from the best-performing trim. Despite indistinguishable average forecasting performance, different trims imply different predictions for trend inflation in any given month, within a range of 0.5 to 1 percentage points, suggesting the use of a set of near-optimal trims, that is, a *range* of robust inflation.

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1 Introduction

The return of high and volatile inflation after the 2020 pandemic has renewed attention toward measures of trend inflation that take out the movements of transitory and volatile individual inflation series, thereby promising a better indication of current and future levels of inflation. The three most common inflation measures used for this purpose are "core" personal consumption expenditure (PCE) inflation, trimmed-mean PCE inflation (Federal Reserve Bank of Dallas, 2021), and median PCE inflation (Federal Reserve Bank of Cleveland, 2021). Core inflation subtracts historically volatile categories such as food and energy from headline inflation, while the other two measures trim out expenditure categories with the highest and lowest inflation rates before computing mean inflation every month. These measures are referred to as *robust inflation measures* and are commonly used by central bankers to communicate the behavior of trend inflation to the public.[1]

Several insights emerge when we evaluate the forecasting performance of a wide set of such robust measures of inflation, including the three *official* measures used by central banks mentioned above, against measures of current and future trend inflation that economists use to gauge the behavior of inflation (see, for example, Dolmas, 2005). First, a somewhat surprising result given policy practices and public attention arises when evaluating the performance of the three official robust inflation series as captured by their root-mean-square error (RMSE) against trend inflation: Trimmed mean and median inflation clearly outperform core inflation.[2] This finding leads us to focus on the properties of these two measures in most of our subsequent analysis.

Among these two superior measures, the Dallas Fed's trimmed-mean inflation measure

[1]For instance, the president of the Federal Reserve Bank of Richmond has stated that "I want to see inflation, and median and trimmed mean, compellingly headed back to our target" (Torres, 2023a,b). Communication about inflation and inflation targets affects inflation expectations and monetary policy. See, for example, Coibion, Gorodnichenko, and Weber (2022), Handlan (2022), and Gorodnichenko, Pham, and Talavera (2023) for recent applications and Blinder, Ehrmann, Fratzscher, De Haan, and Jansen (2008) for a review of previous results.

[2]The RMSE of core inflation against current trend inflation is 21 to 65 percent higher than that of trimmed mean and median inflation.

slightly outperforms the Cleveland Fed's median inflation measure except for the higher-inflation period, 1970–1989. However, the difference between the RMSEs of the series is often not statistically significant. The official trimmed mean and median inflation series are markedly better at tracking trend inflation in the period after 2000 than in the earlier sample covering 1970–1989. Their RMSE is between 33 and 50 percent lower in the more recent period. This pattern repeats at the end of the sample when inflation rises following the onset of the 2020 pandemic. This speaks to the difficulty of these series in capturing changes in inflation trends.

A second set of results emerge when we construct alternative trimmed-mean inflation measures by varying the shares of expenditure with the highest- and lowest-inflation being excluded. We rank inflation series based on their forecasting performance and compare their RMSEs against current and future trend inflation. Our findings cast a nuanced picture: The best trims are not constant, but instead vary depending on the time period and whether the current or future inflation trend is targeted. For instance, when targeting future trend inflation, the optimal upper trim is 28 percent after 2000, close to the 31 percent used for constructing the Dallas Fed's trimmed mean inflation, but only 17 percent before 1990, reflecting the higher levels of inflation in the earlier period. Targeting current trend inflation implies optimal upper trims of 23 and 16 percent, respectively. Despite these differences, the official measures (with constant trims) perform nearly as well as the best of the alternative robust measures across periods and trend targets, with the difference in their RMSE being statistically insignificant even at the 5 percent level.

An important third insight emerges when we look beyond the predictive performance of the official robust inflation measures: The similarity in their predictive performance obscures economically significant differences in the behavior of the series in any given period and across time. The range between the *levels* of the official robust inflation series is wide, on average 0.48 percentage points before 2020, growing to 0.67 percentage points from 2020 onward. This finding implies that these measures often provide different signals about current and future inflation in any given month, while tracking the trend equally well on *average*.

This pattern also holds when we broaden the set of robust inflation measures to include alternative trimmed-mean measures chosen based on their average predictive performance. We find no grounds to select a single series based on their predictive performance—there is a wide range of trims with statistically the same performance. Moreover, the range of levels for the resulting robust inflation measures remains wide among the measures whose RMSEs against trend inflation are statistically equivalent to the RMSE of the best trims. The range between these measures is between 0.55 and 1.20 percentage points on average depending on the trend inflation series being targeted.

A fourth insight coming out of our analysis is that trimmed-mean measures are more informative about the state of *current* trend inflation than about future trend inflation. We find this for the two official robust inflation measures and the alternative trimmed-mean measures we construct. This finding suggests that robust inflation measures may be of more practical use for tracking and communicating current than future inflation trends. The RMSE of the best trimmed mean measure is at least twice as large when predicting future trend inflation, relative to current trend inflation. Moreover, during high inflation periods at the beginning and end of our sample, the set of best trimmed mean measures of inflation are slow to react and lag behind in their prediction of future trend inflation. This insight from our extended sample aligns with the finding that trimmed mean measures appear better at nowcasting than forecasting without further adjustments (Verbrugge and Zaman, 2024).

Overall, while our results may appear negative, in that *no single* best robust measure emerges, a positive and practically important message also arises: Economists trying to communicate inflation may prefer to rely on a set of trimmed-mean measures that provide a range of inflation, as there are no grounds to select a single series on the basis of predictive performance. In doing so, the *range* implied by the set of trimmed-mean measures with the lowest prediction errors provides a naturally interpretable picture of the implied behavior of trend inflation. Reporting this range provides an effective and credible way of communicating uncertainty about inflation predictions, especially in times of heightened volatility. Such an application of our results also aligns with the experimental findings of Kostyshyna and Petersen (2024) that communicating a range of inflation estimates anchors inflation expectations as much as communicating a single point estimate, while more effectively reducing the probability assigned by households to very-high and low inflation outcomes.

Finally, our analysis provides a public good by addressing a key data limitation economists face when evaluating these measures of robust inflation: The behavior of robust measures of inflation in high-inflation regimes is hard to gauge because official releases of the series only start in 1977, covering only one episode of high inflation before 2020. Our analysis contributes by extending the official trimmed-mean and median PCE inflation series back to 1960.[3] Doing so extends the sample size by over 40 percent, providing us with two additional episodes of rising inflation (1968 and 1973) and covering a total of 178 months of high inflation (inflation above 5 percent).[4] The extended series allow us to contrast the behavior of robust inflation measures with trend inflation over our extended sample (1960-2024), a restricted sample that captures times of high and volatile inflation (1970–1989), and a recent sample with overall low and stable inflation (2000–2024).

Relationship to the literature. Our analysis contributes to a large literature that focuses on which measures of inflation provide the best signal about the underlying inflation trend. We add to the literature in a simple but important way by extending robust PCE inflation measures to periods of high inflation and by focusing on the performance of a wide set of robust measures of inflation in this extended sample. Related work has focused on the

[3]By contrast, extending back in time the median and trimmed-mean Consumer Price Index series published by the Federal Reserve Bank of Cleveland is of limited use because the headline Consumer Price Index data are not revised when the methodology used to calculate inflation for individual components is changed. Changes in methodology can imply significant changes in the volatility of inflation as shown by Hazell, Herreño, Nakamura, and Steinsson (2022) and Bolhuis, Cramer, and Summers (2022).

[4]To construct the extended series, we use the underlying PCE data release from the Bureau of Economic Analysis (BEA) and replicate the methodologies of the Federal Reserve Banks of Dallas and Cleveland (see Bryan and Pike, 1991, Bryan and Cecchetti, 1994, Carroll and Verbrugge, 2019, and Dolmas, 2005). We make them publicly available for analysis at https://ocamp020.github.io/Robust_Inflation_Series.xlsx.

forecasting properties of different series, but has used samples in which inflation has been consistently low and stable (see, for example, Dolmas, 2005; Rich and Steindel, 2007; Crane, Khettry, Mester, and Novak, 2013).

Other robust measures of inflation have been proposed, such as median inflation excluding owners' equivalent rent (Carroll and Verbrugge, 2019) and a version of the Consumer Price Index (CPI) that excludes the eight most volatile components (Clark, 2001). Much research has focused on core inflation, as summarized in a report by the Bank for International Settlements (1999) and recently evaluated by Verbrugge (2022). Our analysis finds similar results regarding the limitations of core inflation in the context of tracking trend inflation.

Prominently, the Federal Reserve Bank of New York's measure of underlying inflation presents an alternative measure of trend inflation that takes into account the time-series dimension in the distribution of inflation rates based on a large dynamic factor model (Forni, Hallin, Lippi, and Reichlin, 2000). While such statistical measures of underlying inflation are not the focus of our analysis, Amstad, Potter, and Rich (2017) discuss them and their advantages relative to trimmed-mean measures of inflation, which we analyze based on a new, extended data set. In line with a stable time-series factor loading, our analysis shows that many identical components are consistently included across time in our robust measures of inflation.

2 Long Series for Robust Inflation Measures

This section details our computation of headline, core, median, and trimmed-mean PCE inflation series beginning in 1959 and ending in February 2024, extending the official median and trimmed-mean inflation series to cover 1960–77. This extension increases the number of months in the sample by almost 40 percent relative to the conventionally available official series published by the Federal Reserve Banks of Cleveland and Dallas.

Extending the official robust inflation measures to the 1960–77 period is of interest for two reasons: First, it is of independent interest because it provides a more consistent view of the patterns for these robust inflation measures in periods of rising and high inflation. The 1960–77 period provides us with two additional episodes of rising inflation (1968 and 1973), adding to the four episodes of rising inflation in the post-1977 period. There are only three episodes between 1960 and 2024 for which headline PCE inflation is above 5 percent, covering a total of 178 months, 44 of which are in the 1960–77 period. Second, we can use the data of the series as reference points when we evaluate the predictive performance of a wide set of inflation series in the next section.

2.1 PCE Inflation Data

Our analysis builds on the underlying data supplements of the National Income and Product Accounts PCE data release (Bureau of Economic Analysis, 2022) between January 1959 and February 2024 to construct series for robust inflation measures.[5] The PCE data provide disaggregated price indexes and expenditure weights that cover US consumer spending.

Two main issues accompany the use of these data and the replication of official robust inflation measures. First, new expenditure categories are introduced over time, as is the case with expenditure on personal computers, a category introduced in 1977. The changes in the set of expenditure categories are reflected in differences between the set of categories used in the construction of official trimmed-mean inflation and that used for median inflation. We harmonize the set of expenditure categories by establishing a consistent set of 182 series that are available either for the entire period or are available as soon as a new good is introduced.[6] Second, the price series for multiple expenditure categories were not updated on a monthly

[5]The main input for BEA price indexes is the CPI, but unlike the CPI, the PCE is revised for historical consistency when methods change.

[6]The set of 182 categories we use differs from the 177 categories used by the Dallas Fed and 200 categories used by the Cleveland Fed. When new expenditure categories are introduced, they often have almost-zero spending, as they represent new goods. In those cases, we assume that the goods they represent were not available before their introduction in the PCE, and we assign to them a retroactive weight of zero. The complete list of series included in each inflation measure can be found in `http://dominic-smith.com/data/category_definitions.xlsx`. In a previous version of this paper, we established that these differences do not impact the results (Ocampo, Schoenle, and Smith, 2022).

basis before 1970, including owner's equivalent rent, the category with the highest weight. Thus, measures of monthly inflation rates before 1970 contain multiple series with zero inflation. This issue is mostly reflected in the median inflation series as we show in Figure 1. We therefore focus most of our analysis on the 1970–2024 period.

2.2 Headline and Core PCE Inflation

Headline inflation is calculated as a Fisher index of the underlying inflation components at the lowest level of aggregation. A Fisher index is the geometric mean of a Laspeyres and a Paasche index, which are calculated respectively as

$$\pi_t^L = \frac{\sum_i p_t^i q_{t-1}^i}{\sum_i p_{t-1}^i q_{t-1}^i}; \quad \pi_t^P = \frac{\sum_i p_t^i q_t^i}{\sum_i p_{t-1}^i q_t^i}, \tag{1}$$

where p_t^i and q_t^i are, respectively, the price level and quantity of expenditure category i at time t. Core PCE inflation is computed in the same way but excludes all series under food and beverages purchased for off-premises consumption, gasoline and other energy goods, and electricity and gas. We take headline and core PCE inflation directly from the tables published by the BEA.[7]

2.3 Trimmed-Mean PCE Inflation Measures

Trimmed-mean PCE inflation measures select a sample of expenditure categories in each month by removing the categories with the lowest inflation rates accounting for α percent of expenditure and the categories with the highest inflation rates accounting for β percent of expenditure. The trimmed-mean measure is characterized by these cutoffs and not by the expenditures categories included. The categories included in a given month are assigned weights using an average of the expenditure on each category at current-period quantities and

[7] We use series DPCERG for headline inflation and series DPCCRG for core inflation (Bureau of Economic Analysis, 2022).

previous-period quantities, which approximates the weights used in the PCE index formula,

$$\omega_t^i = \frac{1}{2}\frac{p_{t-1}^i q_{t-1}^i}{\sum_i p_{t-1}^i q_{t-1}^i} + \frac{1}{2}\frac{p_{t-1}^i q_t^i}{\sum_i p_t^i q_t^i}. \tag{2}$$

The trimmed-mean inflation series is the expenditure-weighted mean across the selected categories, where the weights are adjusted to reflect the fact that $\alpha+\beta$ percent of expenditure has been trimmed out. Once the monthly rates, $\pi_t^{tm,mo}$, are constructed, they are chained to form a yearly inflation index,

$$\pi_t^{tm} = \prod_{s=0}^{11} \pi_{t-s}^{tm,mo}, \quad \pi_t^{tm,mo} = \sum_i \omega_t^i \frac{p_t^i}{p_{t-1}^i}. \tag{3}$$

The official trimmed-mean inflation measure sets $\alpha = 24$ and $\beta = 31$, it is published monthly by the Federal Reserve Bank of Dallas (Dolmas, 2005), and it is available from 1977 onward (Federal Reserve Bank of Dallas, 2021).

The median inflation series is calculated by trimming out all categories except the one with the median inflation rate in every month (that is, $\alpha = \beta = 50$). The chained index is

$$\pi_t^m = \prod_{s=0}^{11} \frac{p_{t-s}^{i(m,t-s)}}{p_{t-s-1}^{i(m,t-s)}}, \tag{4}$$

where $i(m, t-s)$ is the index of the series with the median inflation at time $t-s$. The official median PCE inflation is published monthly by the Federal Reserve Bank of Cleveland (Bryan and Pike, 1991; Bryan and Cecchetti, 1994; Carroll and Verbrugge, 2019) and is also available from 1977 onwards (Federal Reserve Bank of Cleveland, 2021).[8]

[8]The official series for median and trimmed-mean PCE differ in weights and categories. A previous version of this paper found those differences have small effects (Ocampo, Schoenle, and Smith, 2022).

2.4 Inflation Series

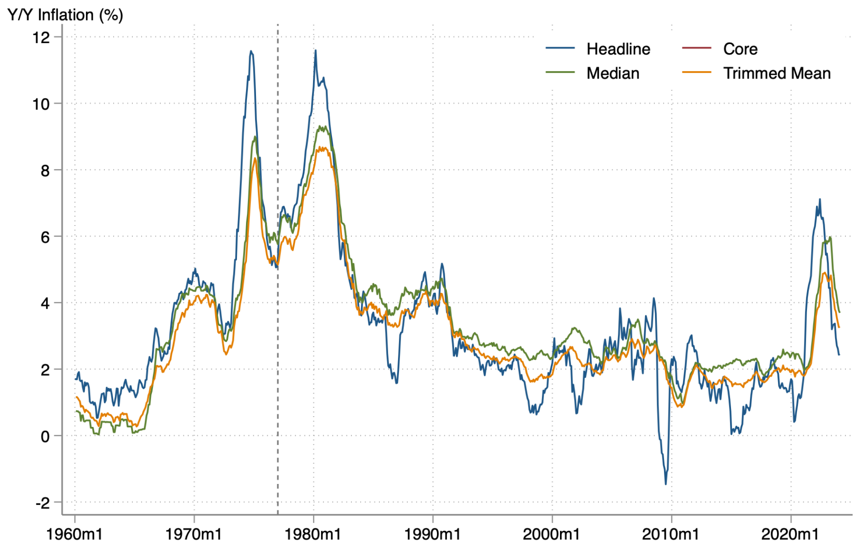
Figure 1 plots headline and core PCE inflation along with trimmed-mean and median inflation. Our analysis replicates the official trimmed-mean and median inflation series after 1977 while also extending them back to 1960 (see Figures A.1 and A.2 in Appendix A). These two extended robust inflation measures track the behavior of headline inflation despite significant disagreement between them, which translates into similar predictive performance as we show in the next section. The average range between the levels of the robust inflation series is 0.49 percentage points. These differences between the series increase at the end of the sample, with the average range growing to 0.70 percentage points between 2021 and 2024 (see Figure B.1 in Appendix B).[9] As the next section makes clear, this pattern of a similar predictive performance (over time) paired with economically significant differences in month-to-month levels is common across a wide range of trimmed-mean measures.

The differences between the inflation measures come from the underlying set of expenditure categories used to compute them. Trimming out categories narrows the range of inflation rates used to construct the robust inflation measures. Figure 2 illustrates this by plotting the 10th, 24th, 50th, 69th, and 90th percentiles of month-to-month inflation across expenditure categories. The 24th and 69th percentiles correspond to the trims of the official trimmed-mean inflation series, and the 50th percentile to the trim of the official mean inflation series.

The distribution of inflation rates across categories is remarkably wide, with a range between the 10th and 90th percentiles of 1.32 percentage points on average, which makes trimming consequential in many periods, particularly those with high headline inflation. Despite this, the distribution of month-to-month inflation rates is relatively concentrated around the median, as reflected by the interquartile range (the range between the 25th and

[9]There are other disagreements. For instance, the sign of the change (increasing or decreasing) of core PCE inflation matches that of headline PCE in 74 percent of the months in our sample; the values for median and trimmed-mean PCE inflation are 67 and 57 percent, respectively.

Figure 1: Robust Measures of Inflation, 1960–2024

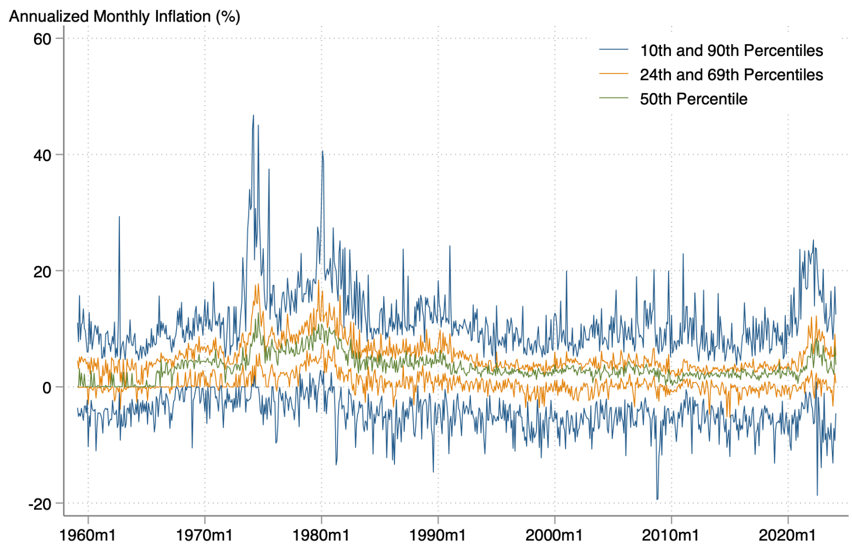


Notes: The figure shows trimmed-mean personal consumption expenditure (PCE) and median PCE as calculated by the authors using the methodologies of Federal Reserve Bank of Cleveland (2021) and Federal Reserve Bank of Dallas (2021). Appendix A shows that these measures match those produced by the relevant Federal Reserve Banks after 1977. The vertical line in January 1977 indicates that the official trimmed-mean and median measures are available starting in 1977. Headline and core inflation are taken directly from the PCE data published by the Bureau of Economic Analysis.

75th percentiles of the distribution), which is 0.45 percentage points on average. That most categories exhibit relatively small price changes and some categories exhibit large changes is reflected in the high kurtosis of price changes.

The set of categories which are included in the calculations varies over time, as it depends on the contemporaneous distribution of inflation across expenditure categories. However, there are certain regularities. The categories most commonly excluded from the construction of robust inflation measures are food and fuel categories (for example, eggs, vegetables, gasoline), which are the same categories excluded from core PCE. This set is much larger for median inflation. In fact, 62 of the 182 categories we consider never coincide with the median inflation category, while every category is included in the trimmed mean at some point. Table B.2 lists the categories most commonly excluded and included in the construction of median and trimmed-mean inflation.

Figure 2: Range of Underlying Inflation, 1960–2024



Notes: The figure shows the authors' calculations of the range of inflation series used for different inflation measures from 1960 to 2024. The lines correspond to the 10th and 90th percentiles of the cross section of monthly inflation rates in the 177 series considered for the trimmed-mean measure, the 24th and 69th percentiles of the PCE inflation series that correspond to the range used for trimmed-mean inflation, and the median inflation series. Percentiles are weighted using the average real expenditure on each category in months t and $t-1$.

3 Evaluating Official Robust Inflation Measures

How well do the official robust inflation measures perform in matching current and future inflation trends across multiple samples? Our analysis shows that trimmed-mean and median inflation outperform core inflation across all samples and objectives. Moreover, the performance of these two series is similar across the samples we consider, with the official trimmed-mean series slightly outperforming median inflation in terms of capturing current and future trend inflation. However, the similar performance of the series obscures significant differences in their monthly levels, which our analysis fully lays out in Section 4.

3.1 Evaluation Criteria

To evaluate the performance of inflation series, our analysis constructs ex-post measures of current and future trend inflation, which aim to smooth out the transitory components of inflation. Then, we compare each inflation measure to these target trend measures and calculate the root mean squared error (RMSE) over three different samples, following the criteria used by Dolmas (2005) to select the trimming cutoffs of the official trimmed mean inflation series. We consider a long sample (1970–2024), a restricted sample (1977–2000), and a recent sample (starting in 2000).[10]

Our main measure of current trend inflation is a 36-month centered moving average of headline inflation. Thus, it includes data from 18 months before to 18 months after the current period. This measure was proposed by Bryan, Cecchetti, and Wiggins (1997) and has been used as a benchmark since. It provides an ex-post proxy for what underlying inflation was at a point in time.

Our main measure of future trend inflation is constructed as a 12-month forward moving average of headline inflation that starts one year ahead of the current period. Thus, it includes data between 12 and 24 months in the future. Future trend inflation is particularly relevant as decision makers, like central bankers, are forward-looking and make decisions based on the expected behavior of inflation.

Our analysis also constructs an alternative measure of current trend inflation using the trend component of Christiano and Fitzgerald's (2003) band-pass filter (removing frequencies below 39 months) and an alternative measure of future trend inflation (constructed as the 24-month forward-looking average rate of inflation as in Dolmas, 2005).[11] We plot all these series in Figure B.3 of Appendix B.2, where we also provide the results of our evaluation of the official series against the alternative trend inflation measures.

[10] We conduct the exercise starting in 1970 to avoid the period in which the prices of several PCE categories were not regularly updated. See Figure A.4 in Appendix A.

[11] The trend component of the band pass filter removes high frequency movement in inflation. Dolmas (2005) found that removing frequencies below 29 months maximizes the correlation between the resulting trend series and the Federal Funds rate target set by the Federal Open Market Committee.

Given a target $\bar{\pi}$ (for current or future trend inflation), we evaluate how well an inflation measure π^i, $i \in \{\text{core, trimmed mean, median}\}$, tracks it over a given sample. We do so by calculating the RMSE for each candidate robust measure i as[12]

$$\text{RMSE}^i = \sqrt{\frac{1}{T}\sum_t (\pi_t^i - \bar{\pi}_t)^2}. \tag{5}$$

3.2 Performance of Official Measures

A clear result emerges from the comparison of the official robust inflation measures (core, trimmed-mean, and median) against current and future trend inflation, as defined above:[13] Trimmed-mean and median inflation outperform core inflation in all samples regardless of whether we compare them against current or future inflation trends, as Table 1 shows. For instance, the RMSE of trimmed-mean and median inflation is between 20 and 25 percent lower than that of core inflation when targeting current trend inflation in the 1970–2024 sample. Furthermore, these differences are always statistically significant, as we verify in the last column of Table 1 where we report the p-value of the Diebold and Mariano (1995) test under the null hypothesis of no difference in the prediction error between core inflation and the official trimmed-mean and median inflation series. While these results may be somewhat surprising given the attention core inflation receives in policy discussions and news coverage, they are in line with Verbrugge (2022) who also finds that core inflation is outperformed by trimmed mean measures using other targets and time periods.

An additional result arises when comparing these two superior trimmed-mean measures: The official trimmed-mean inflation series slightly outperforms the official median inflation

[12] We use the level of inflation π^i without transforming it. Transformations such as linear regressions improve the fit of robust inflation measures such as median inflation by removing a consistent bias in certain measures (Rich, Verbrugge, and Zaman, 2022); however, these measures are most often communicated and used without such transformations.

[13] We also compare the performance of robust inflation measures to the performance of headline PCE inflation. Headline inflation corresponds to the no-trimming limit. The RMSE that the official trimmed-mean and median inflation series produce is between 50 and 75 percent of the RMSE of headline inflation, verifying that trimming does improve the series' predictive performance.

Table 1: Predicting Performance of Official Measures

Target	Sample	PCE Inflation Measure RMSE			DM Test: Pr $(z > \|\text{DM}\|)$	
		Core	Trimmed Mean	Median	TM vs Med.	Core vs Other
Current Trend	1970-2024	1.47	1.11	1.18	0.015	0.000
	1970-1989	1.84	1.62	1.52	0.088	0.001
	2000-2024	1.34	0.81	1.02	0.000	0.004
Future Trend	1970-2024	2.45	2.14	2.17	0.197	0.000
	1970-1989	3.35	3.02	3.02	0.903	0.000
	2000-2024	1.99	1.66	1.71	0.161	0.019

Notes: The table presents the predictive performance of personal-consumption-expenditure (PCE) inflation measures with respect to different trend inflation targets for different samples. Performance is measured by the series' root-mean-square error (RMSE) with respect to trend inflation. The table reports the RMSEs for core, trimmed-mean, and median inflation. The last two columns report the p-value of the Diebold and Mariano (1995) test for the difference between the RMSEs of trimmed-mean and median inflation and the difference of the core inflation series and the best of the trimmed-mean and the median inflation series.

series in capturing the behavior of current and future trend inflation, except when targeting current trend inflation in the restricted sample (1970–89), when the pattern reverses. However, the RMSEs produced by the two official measures are not meaningfully different in most cases. We test the difference between the predictions of official series using Diebold and Mariano's (1995) test and report its p-value in the second-to-last column of Table 1. The differences between the performances of trimmed-mean and median inflation are higher when predicting current trend inflation than when predicting the future trend, but the null hypothesis is only strongly rejected for the recent sample (starting in 2000). These same patterns hold when looking at alternative trend inflation measures as we show in Table B.3 of Appendix B.2.

Despite the official trimmed-mean and median inflation series' similar prediction errors, their levels differ substantially in most months. The average range between the levels of these two series is 0.49 percentage points over our sample. This finding reflects a key insight from analyzing alternative robust measures as we do below; namely, relying on the average prediction performance of the series obscures underlying differences in their predictions for any given month and provides little guidance in judging these differences.

4 Optimal Trimmed-Mean Measures

The analysis in this section systematically varies the trim cutoffs used to construct trimmed-mean measures by considering all integer combinations of trims for $\alpha, \beta \in [0, 50]$. The resulting set of measures includes the official trimmed-mean, median, and headline inflation series as special cases. As before, we evaluate their performance based on their RMSEs against current and future trend inflation and contrast their predictive performances with differences in the levels of trend inflation implied by the different measures. Appendix B.3 extends the results to alternative measures of trend inflation.

Optimal trimming cutoffs Large differences arise between the optimal trimming cutoffs and the trims of the official measures ($\alpha = 24$ and $\beta = 36$, or $\alpha = \beta = 50$). The optimal cutoffs are almost symmetric, although they usually trim more at the top than the bottom ($\beta^\star > \alpha^\star$). More importantly, they vary significantly across targets and when comparing the most recent sample (2000–24) to the longer and older samples. When we target current trend inflation, the optimal trims have α be either 17 or 18 and β's be between 16 and 23, varying across the three sample periods we consider. When we target future trend inflation, the range of trims is higher, with α's between 15 and 35 and β's between 17 and 41. Table 2 presents the results.

However, our results also show that this large variation in the optimal trim points does not translate into a significantly lower RMSE. In fact, the official measures perform almost as well as those with the optimal trimming cutoffs. The RMSE of the optimal trims is at most 4 percent lower, and the differences are never statistically significant at the 5 percent level. The last column of Table 2 reports the p-value of the Diebold and Mariano (1995) test when comparing the predictive performance of the best trim with the better of the two official robust inflation measures (see Table 1).

Table 2: Best Trims for Trimmed-Mean Inflation

Target	Sample	Best Trims			Official Trims	DM Test
		Lower	Upper	RMSE	min(RMSE)	$\Pr(z > \lvert\text{DM}\rvert)$
Current Trend	1970-2024	17	19	1.08	1.11	0.065
	1970-1989	18	16	1.46	1.52	0.235
	2000-2024	18	23	0.80	0.81	0.403
Future Trend	1970-2024	35	41	2.11	2.14	0.213
	1970-1989	15	17	2.91	3.02	0.412
	2000-2024	24	28	1.63	1.66	0.288

Notes: The table reports the best trim as determined by the predictive performance across trims for different targets of trend inflation and different samples. The table also reports the root-mean-square error (RMSE) for the best trims and the lower RMSE of the official trimmed and median inflation series. The last column reports the p-value of the Diebold and Mariano (1995) test for the difference between these RMSEs.

No single optimal trim The similarity in the performance of the official robust inflation measures and the optimal trimmed measures is part of a larger pattern: for every target and sample, a wide set of trims has a similar forecasting performance. Figure 3 presents these results by plotting the RMSEs of all trim combinations for the two target trends and the three samples (relative to the lowest RMSE across all trim combinations).[14]

Moreover, there is a set of *near-optimal* trims whose RMSE is statistically indistinguishable from the RMSE of the best trim.[15] These near-optimal trims are slightly asymmetric—once again trimming more of the high-inflation categories, that is, $\beta > \alpha$—and the set of trims with similar prediction errors is much larger (and asymmetric) when targeting future trend inflation, reflecting in part the added difficulty of this exercise. We report these sets in Figures B.5 and B.6 of Appendix B.3, their shapes mirror the dark blue areas of Figure 3 where the RMSE is lowest.

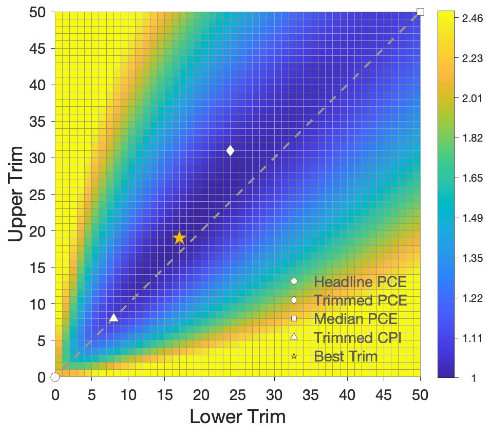
This pattern is explained by the effect of trimming on the underlying distribution of monthly inflation rates. As trimming cutoffs increase, the range of inflation rates taken into

[14]These results are consistent with previous work on the difference between trimmed-mean inflation series. See, for example, Meyer, Venkatu, and Zaman (2013).

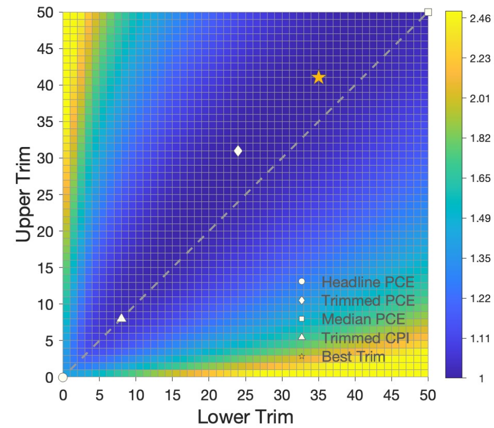
[15]We determine the set of statistically equivalent trims with the Diebold and Mariano (1995) test using a significance level of 5 percent.

Figure 3: RMSE across Trims

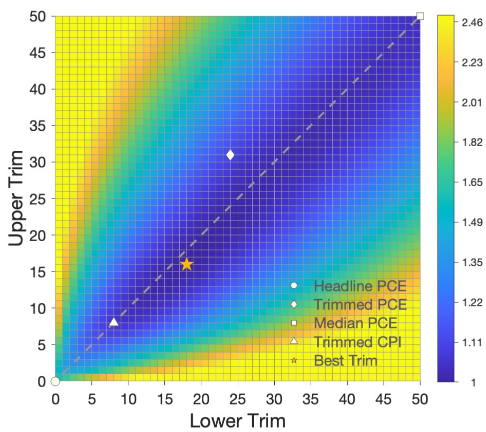
(a) Current Trend: 1970-2024



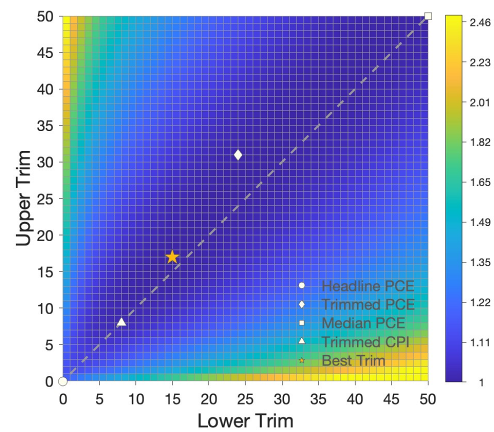
(b) Future Trend: 1970-2024



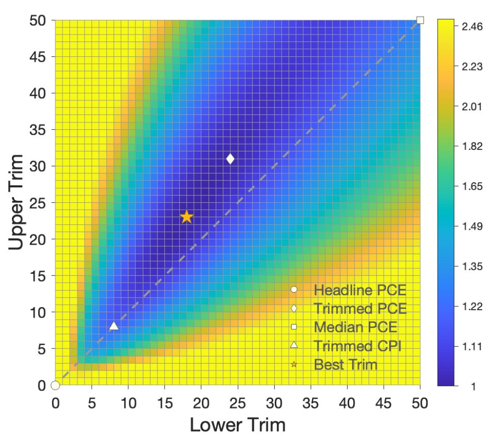
(c) Current Trend: 1970-1989



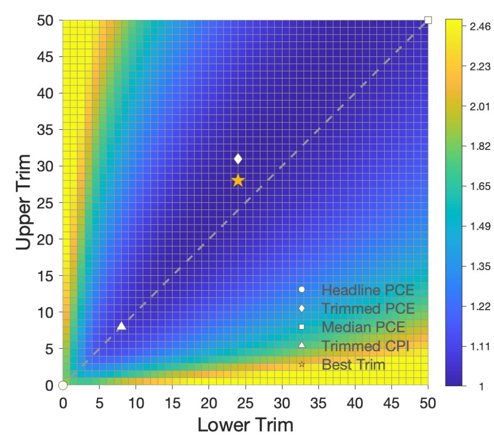
(d) Future Trend: 1970-1989



(e) Current Trend: 2000-2024



(f) Future Trend: 2000-2024



Notes: The figures show heat maps of the root-mean-square error (RMSE) when targeting current and future trend inflation with different trimmed-mean inflation measures. To ensure comparability across plots, the RMSEs are reported relative to the RMSE of the best trim reported in Table 2.

account is reduced, affecting the variability and the mean prediction of the resulting trimmed mean series. Take, for instance, an increase in the upper trim that eliminates more series with high inflation. This reduces the average and the standard deviation of the prediction implied by the trimmed mean series. However, the reduction in variability is empirically smaller than the reduction in the average prediction, actually making the trimmed mean series *relatively* more variable as the upper trim increases. In fact, the coefficient of variation (the ratio of the standard deviation to the mean) increases rapidly with the trimming cutoff, moving from 0.6 to 0.8. As a result, the RMSE of the resulting series does not change much, while, at the same time, similar RMSEs can be obtained from different trim combinations that imply different average predictions.[16]

Performance beyond prediction errors A naive reading of the results above might suggest that a wide range of trims is functionally equivalent, with the only difference given by the choice of trim points when targeting the behavior of current or future trend inflation. However, the small differences in the RMSEs of different trims hide significant variation in the prediction levels of the implied trimmed-mean series. This feature makes it complicated to select a single optimal series, as there are other near-optimal-series with different implications for trend inflation in any given month.

Consider, for instance, the level of trend inflation in February 2024 predicted by the set of near-optimal trims described above. The predictions for current trend inflation are between 3.05 and 3.55 percent, a range of 50 basis points. The range for future trend inflation is 1.11 percentage points.[17]

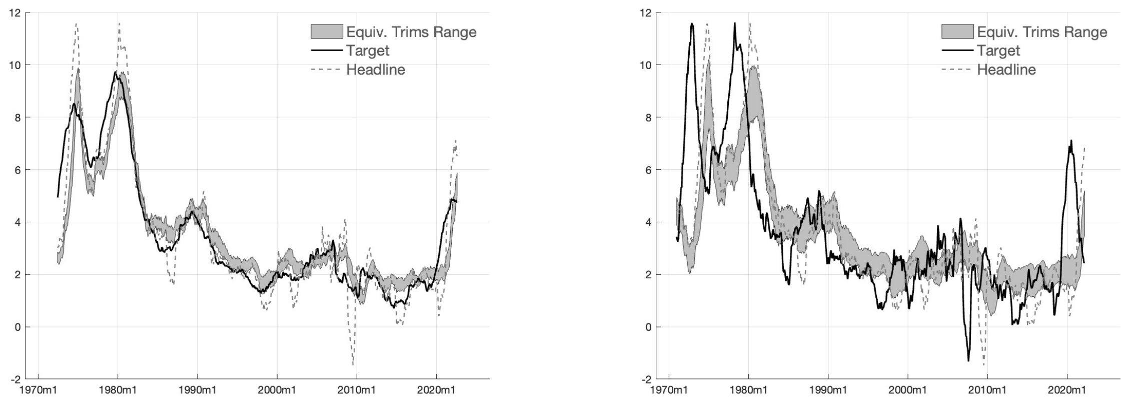
This pattern of large discrepancies between predictions holds throughout the sample and is even larger when targeting future trend inflation. Figure 4 plots the range of inflation implied by the sets of near-optimal trims for the 1970–2024 sample when targeting current

[16]Figure B.7 makes the effect of trimming precise by plotting the coefficient of variation and the RMSE for trimmed mean series that target current trend inflation. Near the optimal trim, the RMSE does not change much, but the slope of the coefficient of variation is positive.

[17]Figure B.8 plots the inflation predictions among the near-optimal trims in February 2024.

Figure 4: Prediction Range across Best Trims across Time

(a) Centered Trend (b) Future Trend



Notes: The figures plot the range of predictions for the current and future trends between 1970 and 2024 of the set of trimmed-mean measures of inflation that are statistically equivalent at the 5 percent level according to the Diebold and Mariano (1995) test of the difference of their root-mean-square errors (RMSEs) with respect to the RMSE of the best trim for each target (see Table 2). The start- and end-dates for each figure reflect the data requirements for the ex-post measures of trend inflation.

and future trend inflation.[18] The average range is 0.55 percentage points when targeting current trend inflation and 1.20 percentage points when targeting future trend inflation. Even when we restrict attention to the best 50 trims—those whose prediction error is closest to the error of the best trim—the average prediction range is 45 basis points between 1970 and 2024 when targeting current trend inflation.

Back to prediction Taken together, our results indicate that focusing on a set of trimmed-mean inflation measures, instead of selecting a single measure, may provide better information on the behavior of trend inflation. The near-optimal trims described above are natural candidates for this because they are all equally good on average at tracking trend inflation, and because the information they provide can be effectively communicated through their range of inflation predictions, as Figure 4 illustrates. Crucially, reporting a range of inflation also communicates the uncertainty over the selection of predictors.

[18]Figure B.9 plots the range between the lowest and highest predictions for the current and future trend between 1970 and 2024 for the set of near-optimal trims and the best 50 and 100 trims according to their RMSE. Figure B.10 complements this information by presenting the average range of inflation implied by each trim combination.

Moreover, the range of inflation implied by the set of near-optimal trims is a better predictor of the behavior of trend inflation than the point estimate of even the best trim combination. To gauge the range's predictive performance we compute its RMSE as the minimum distance between the value of the target trend measure and the range,

$$\text{RMSE}^{\text{range}} = \sqrt{\frac{1}{T}\sum_t \left(\max\left\{ \bar{\pi}_t - \max_{i\in\text{range}}\{\pi_t^i\}\ ,\ \min_{i\in\text{range}}\{\pi_t^i\} - \bar{\pi}_t\ ,\ 0 \right\}\right)^2}, \tag{6}$$

so that the error is zero in a month if the trend falls within the range and the distance to the nearest endpoint if the trend falls outside. For instance, the range in Figure 4a delivers a RMSE of 0.73 when tracking current trend inflation, well below the RMSE of the best trimmed-mean series (1.08, Table 2).

While a lower RMSE is to be expected when using a range of inflation instead of a point estimate, the gains in predictive performance do not come entirely from the width of the range. Two simple additional calculations help show this. First, there is information in the range beyond its width. Using the mid-point of the range as a point estimate for trend inflation and computing the RMSE as in equation (5) delivers a RMSE of 0.91. This is almost half of the difference between the RMSE of the range prediction and the point estimate of the best trim. Second, not all ranges are equally informative. Consider a range around the official trimmed-mean series of the same width as the range in Figure 4a. This new range delivers a RMSE of 0.90 (computed as in 6), virtually the same as using only the point estimate from the midpoint of the near-optimal trims' range.

Finally, our analysis also shows that measures of trimmed mean inflation have a hard time tracking changes in future trend inflation, instead lagging its movements, as Figure 4 makes clear. This is particularly evident in the two instances of high inflation in the pre-1977 sample—that we added to the official series—and at the end of the sample, when inflation rises again. In fact, the predicted range for future trend inflation does not start increasing until inflation has already peaked. By contrast, the range of trimmed mean inflation measures is more informative about the behavior of current trend inflation and noticeably less variable than the headline PCE inflation series. These results suggest that trimmed mean measures are best used to understand the current inflation situation, with other methods such as those in Verbrugge and Zaman (2024) better suited for predicting future inflation.

5 Conclusion

Economists often use robust inflation series such as core inflation or median inflation to communicate with the public and gauge the behavior of trend inflation. Our evaluation of the performance of the official series for various targets and across various samples shows them to be robust across time and comparable with the performance of the best trimmed-mean inflation measure, which selects trimming cutoffs to minimize prediction error.

Among the official robust measures, trimmed mean and median inflation clearly outperform core inflation, constituting a somewhat surprising result given policy practices and public attention to core inflation. However, a more consequential result concerning the choice of optimal robust measures emerges from our analysis. Results based on the average predictive performance of the series obscure an underlying pattern of trimmed-mean measures. A wide range of measures have the same predictive performance, but they produce substantially different predictions in any given month.

We conclude that following a set of trimmed-mean measures rather than a single series may provide additional insight about the behavior of inflation. This information can be effectively communicated by reporting the range of predictions from the set of measures with the best predictive performance, as we do in Figure 4. This range informs us about the behavior of trend inflation while indicating the uncertainty over the selection of predictors in a way that is easy to communicate to the public. It can also provide a more credible signal to households with more uncertainty about inflation, anchoring their inflation expectations as shown in Kostyshyna and Petersen (2024).

While we also explored alternative trimmed-mean measures not reported here, and found similar results,[19] future work may consider a twist to our analysis. Such work may consider evaluating the predictive power of robust measures of inflation for particular *alternative targets*—for example, current or future inflation rates relevant for different sub-groups of the US population. This differential evaluation may provide valuable new insights into robustness in the context of heterogeneous effects of monetary policy.

[19] In particular, we constructed trimmed-mean measures excluding housing, which is the single largest expenditure category and one of the series most commonly included in the official trimmed-mean and median inflation measures (see Table B.2). We found that housing does not play a large role in the behavior of trimmed-mean inflation measures. All of our results are preserved when excluding housing from the set of expenditure categories, as we show in Appendix B.4.

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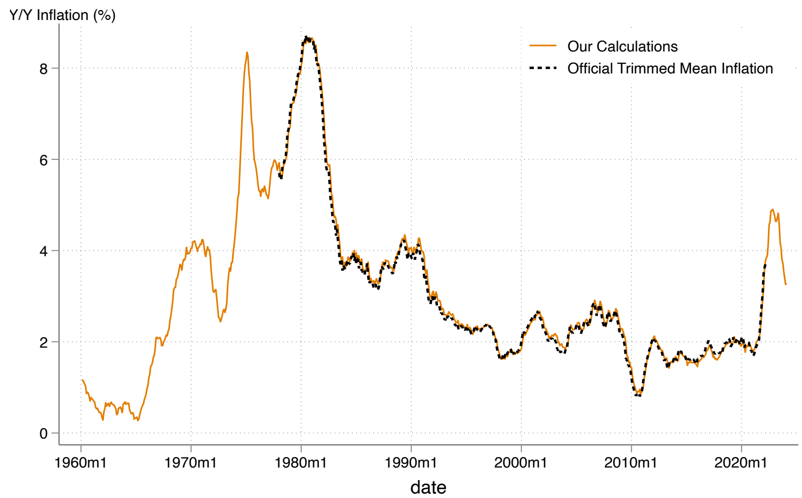
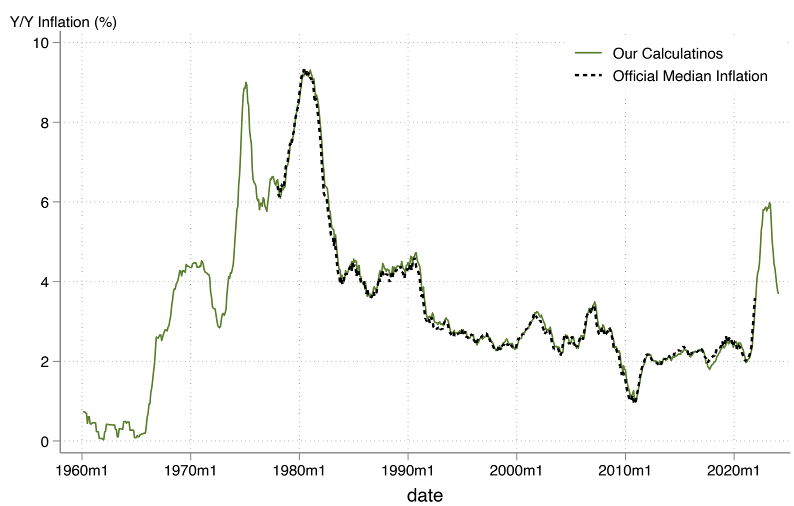
A Replication of Trimmed-Mean and Median PCE Inflation Series

Figure A.1: Replication of Trimmed-Mean PCE Inflation, 1960–2024



Notes: The figure shows the authors' calculation of trimmed-mean PCE inflation along with the official trimmed-mean PCE series.

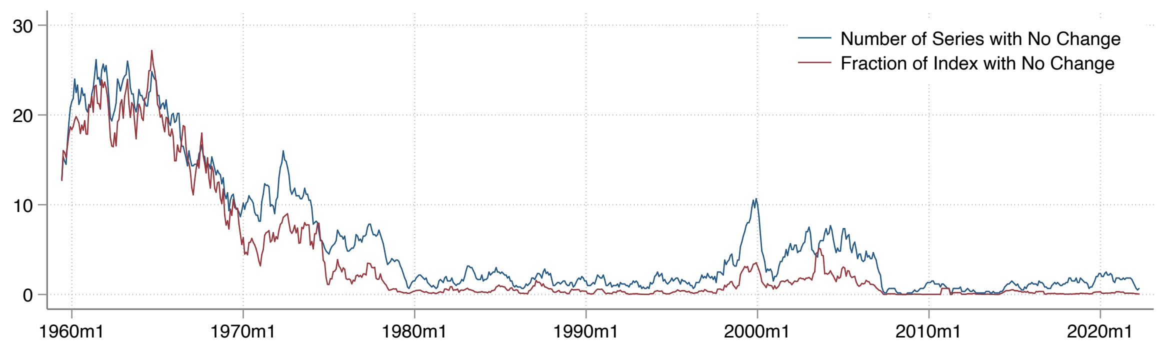
Figure A.2: Replication of Median PCE Inflation, 1960–2024



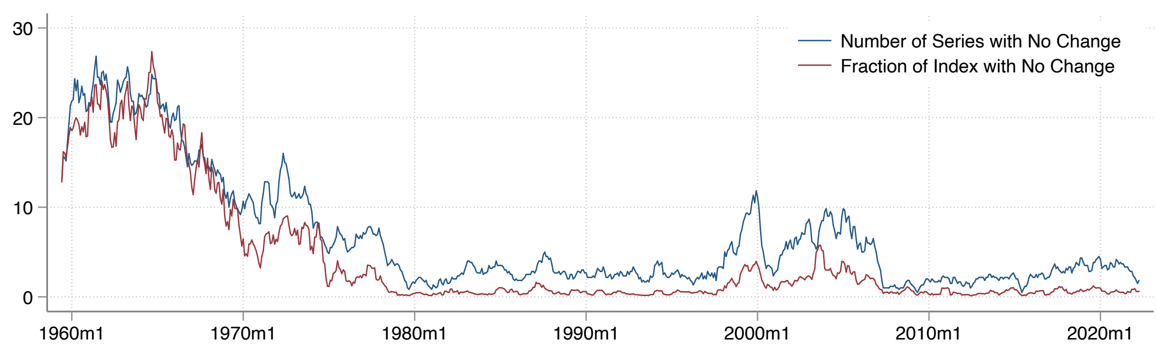
Notes: The figure shows the authors' calculation of median PCE inflation along with the official median PCE series.

Figure A.3: Number of Series with No Monthly Price Changes

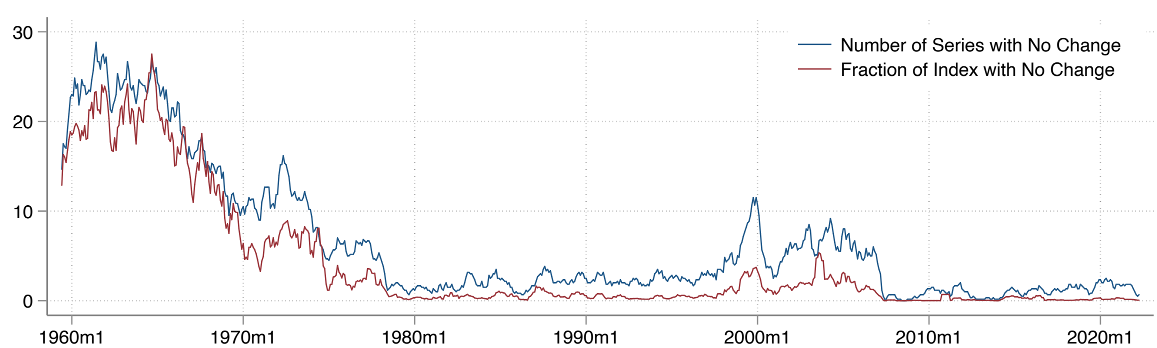
(a) Trimmed Mean



(b) Median



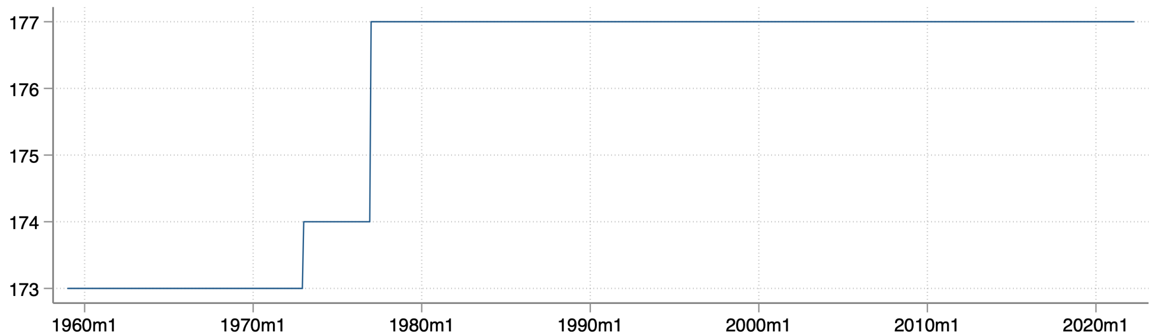
(c) Time Consistent



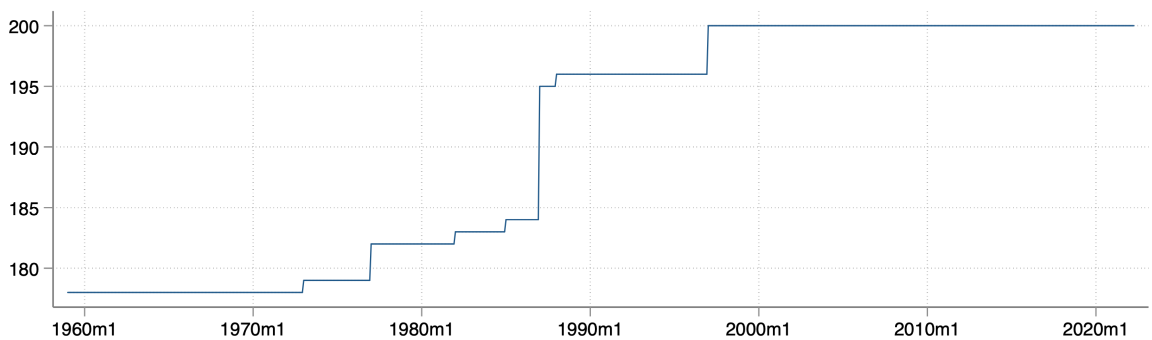
Notes: The lines plot the number of series and fraction of total expenditure (in percent) with no monthly price change for each of the three sets of series used in the paper.

Figure A.4: Number of Series with Positive Expenditure

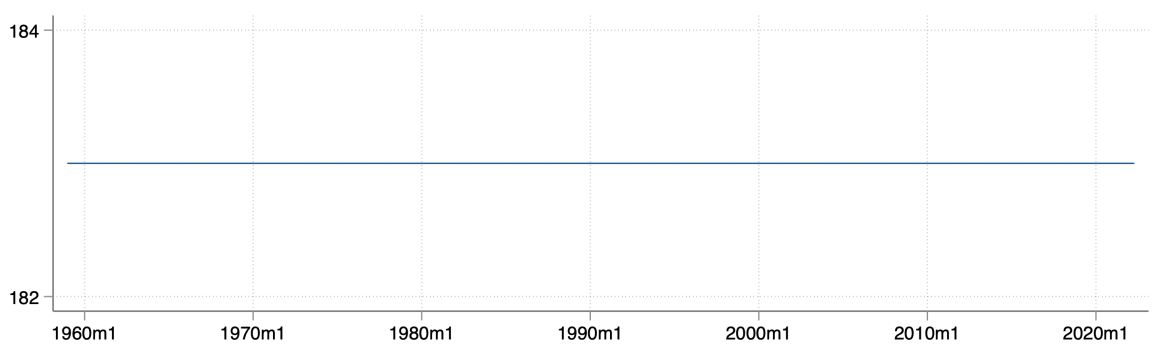
(a) Trimmed Mean



(b) Median



(c) Time Consistent



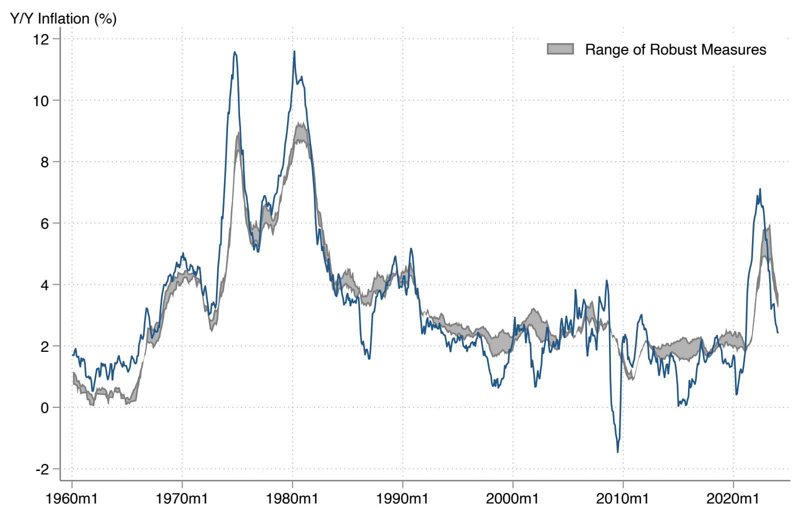
Notes: The lines plot the number of series with positive expenditure in the PCE series over time from the set of series considered by the trimmed-mean inflation, median inflation, and the time consistent set constructed in the paper.

B Additional Results

B.1 Time Series Properties

The level of agreement between the series is also captured by the range of values they cover, shown in Figure B.1 along with the level of headline PCE inflation. The range is 0.49 percentage points on average over the whole sample, 0.47 percentage points when inflation is less than 2.5 percent, and 0.54 percentage points when inflation is above 5 percent. Thus, the range values covered by robust inflation measures is disproportionately wider when inflation is low than when inflation is high. This again shows that there is substantially more agreement between the signals provided by the different inflation measures when inflation is high.

Figure B.1: Range of Robust Inflation Measures, 1960–2024



Notes: The figure shows the authors' calculations of the range of robust inflation measures (core inflation, median inflation, and trimmed-mean inflation) from 1960 to 2024. We report year-over-year inflation to smooth out variations in monthly inflation. The range is shown in the shaded area. The blue line corresponds to headline inflation.

The variability of the robust inflation measures is also higher during low-inflation episodes despite these measures being constructed to be less responsive to transitory movements in inflation. Even though the robust inflation measures are overall less volatile than headline inflation, this pattern does not hold throughout the whole sample. Table B.1 reports the mean, standard deviation, and coefficient of variation of the four inflation series for different samples that depend on the level of headline inflation, Figure B.2 plots the time series of the standard deviations.

When inflation is below 2.5 percent, median and trimmed mean inflation are more volatile than headline inflation, and when inflation is between 2.5 and 5 percent all three robust inflation measures are more variable than headline inflation. Moreover, the coefficient of variation is highest when headline inflation is below 2.5 percent. The robust

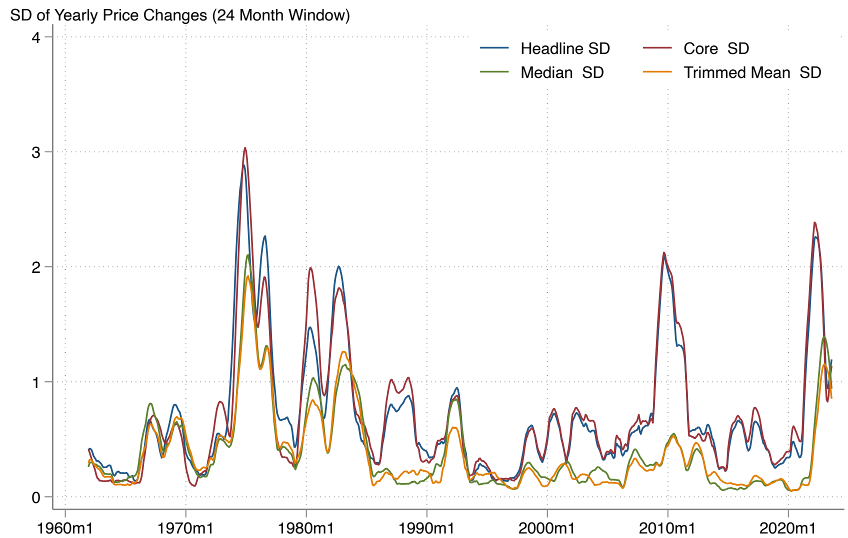
Table B.1: Summary Statistics: Inflation Measures

	Inflation Measures			
	Headline	Core	Median	Trimmed Mean
	Full Sample (748 months)			
Mean	3.27	3.21	3.33	2.96
Std. Dev.	2.42	2.13	2.01	1.86
Coeff. Var.	0.74	0.66	0.60	0.63
	$\pi < 2.5\%$ (373 months)			
Mean	1.55	1.73	2.01	1.72
Std. Dev.	0.67	0.53	0.95	0.70
Coeff. Var.	0.43	0.31	0.47	0.41
	$2.5\% \leq \pi < 5\%$ (252 months)			
Mean	3.61	3.51	3.55	3.17
Std. Dev.	0.71	1.06	0.84	0.77
Coeff. Var.	0.20	0.30	0.24	0.24
	$5\% \leq \pi$ (123 months)			
Mean	7.76	7.09	6.85	6.31
Std. Dev.	2.00	1.59	1.60	1.57
Coeff. Var.	0.26	0.22	0.23	0.25

Notes: The numbers are mean, standard deviation, and coefficient of variation of the different inflation measures for different samples determined by the level of PCE inflation. All numbers are in percentage points.

inflation measures also change their ranking in terms of how volatile they are. Core inflation is the most volatile in the complete sample, but median inflation is more volatile when inflation is low (below 2.5 percent) and trimmed mean inflation is more volatile when inflation is high (above 5 percent).

Figure B.2: Time-Series Variability of Measures of Inflation, 1960–2024



Notes: The figure shows the authors' calculations of the standard deviations of headline inflation, core inflation, median inflation, and trimmed-mean inflation for a rolling window of 24 months.

Table B.2: Most Commonly Excluded and Included Expenditure Categories

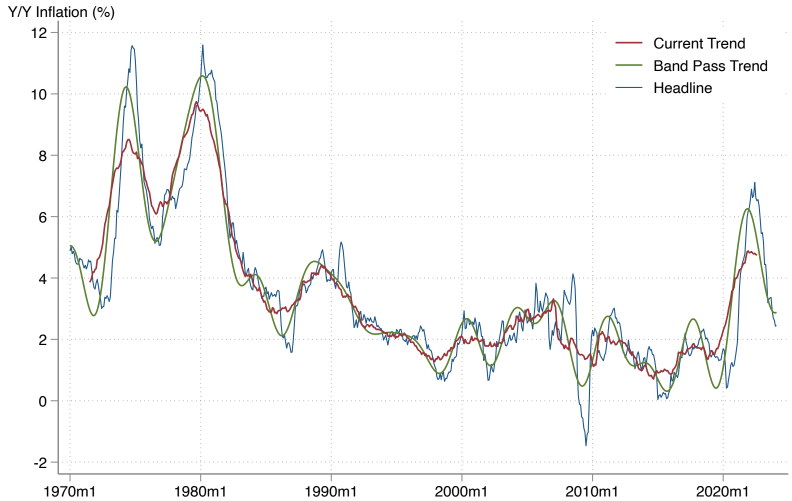
	Median	Trimmed Mean	Middle 80% (10, 10) Trim
		Most Commonly Excluded	
1		Eggs	Eggs
2	66 series are	Food on farms	Vegetables
3	never median	Vegetables	Food on farms
4		Fruit	Fuel Oil
5		Gasoline	Gasoline
		Most Commonly Included	
1	Owner-occ homes	Owner-occ homes	Owner-occ homes
2	Other purchased meals	Other purchased meals	Other purch meals
3	Tenant-occ homes	Casino gambling	Tenant-occ homes
4	Nonprofit hospitals	Owner-occ mobile homes	Casino gambling
5	Physician services	Tenant-occ homes	Lotteries

Notes: The table reports the five expenditure categories most commonly excluded and the five most commonly included when computing median and trimmed-mean inflation as well as those excluded and included when trimming the middle 90 percent of expenditure, setting trims to $\alpha = \beta = 10$, with a consistent set of inflation categories. All the results are from the authors' calculations of the series reported in Figure 1. In the case of median inflation (first column), all categories but one are included in a given month, so we report the number of series that are never included. A series is considered "included" if any of the weight of the series is used in the calculation.

B.2 Alternative Measures of Trend Inflation

Figure B.3: Time Series of Trend Inflation

(a) Measures of Current Trend Inflation



(b) Measures of Future Trend Inflation

Notes: The figures show the authors' calculations of two measures of trend inflation. The first panel presents two measures of current trend inflation, a 36-month centered inflation trend (current trend), and a band-pass filter trend (band-pass trend) as described in Section 3, together with the series of year-on-year headline PCE inflation. The second panel presents two measures of future trend inflation, a 12-month forward moving average of headline inflation with data between 12 and 24 months ahead (future trend), and a 24-month forward moving average (forward trend).

Table B.3: Ranking of Various Methods of Calculating Robust Measures

Target	Sample	PCE Inflation Measure RMSE			DM Test: $\Pr(z > \lvert\text{DM}\rvert)$	
		Core	Trimmed Mean	Median	TM vs Med.	Core vs Other
	1970-2024	1.47	1.11	1.18	0.015	0.000
Current	1970-1989	1.84	1.62	1.52	0.088	0.001
Trend	2000-2024	1.34	0.81	1.02	0.000	0.004
	1970-2024	1.50	1.27	1.34	0.011	0.001
Band-Pass	1970-1989	1.79	1.66	1.57	0.042	0.011
Trend	2000-2024	1.35	1.07	1.27	0.000	0.040
	1970-2024	2.45	2.14	2.17	0.197	0.000
Future	1970-1989	3.35	3.02	3.02	0.903	0.000
Trend	2000-2024	1.99	1.66	1.71	0.161	0.019
	1970-2024	1.96	1.67	1.71	0.104	0.000
Forward	1970-1989	2.68	2.39	2.36	0.614	0.001
Trend	2000-2024	1.56	1.26	1.36	0.001	0.052

Notes: The table presents the predictive performance of different PCE inflation measures with respect to different trend inflation targets in different samples. The performance is measured with the series' root-mean-square error (RMSE) with respect to trend inflation. The table reports the RMSEs for core, trimmed-mean, and median inflation. The last two columns report the p-value of the Diebold and Mariano (1995) test for the difference between the RMSEs of the trimmed-mean and median inflation series and the difference of the core inflation series and the best of the trimmed-mean and the median inflation series.

B.3 Alternative Trimmed Mean Measures of Inflation

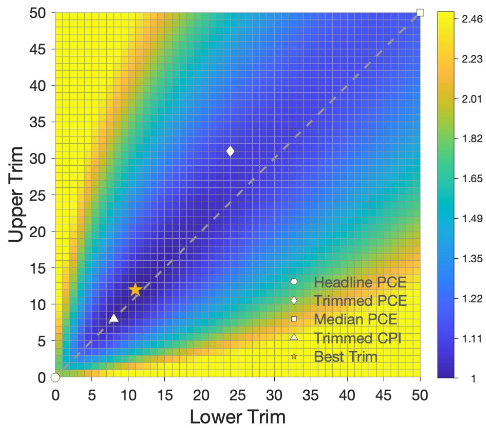
Table B.4: Best Trims for Trimmed-Mean Inflation

Target	Sample	Best Trims			Official Trims	DM Test
		Lower	Upper	RMSE	min(RMSE)	Pr $(z > \|DM\|)$
	1970-2024	17	19	1.08	1.11	0.065
Current	1970-1989	18	16	1.46	1.52	0.235
Trend	2000-2024	18	23	0.80	0.81	0.403
	1970-2024	11	12	1.15	1.27	0.000
Band-Pass	1970-1989	10	9	1.39	1.57	0.007
Trend	2000-2024	13	16	1.00	1.07	0.019
	1970-2024	35	41	2.11	2.14	0.213
Future	1970-1989	15	17	2.91	3.02	0.412
Trend	2000-2024	24	28	1.63	1.66	0.288
	1970-2024	14	16	1.62	1.67	0.053
Forward	1970-1989	13	13	2.28	2.36	0.108
Trend	2000-2024	16	19	1.22	1.26	0.084

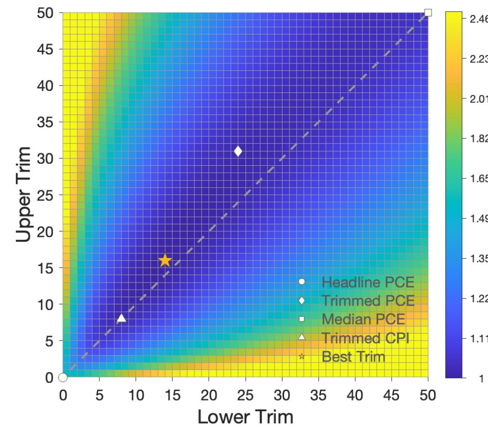
Notes: The table reports the best trims for different targets of trend inflation over different samples as determined by the predictive performance across trims. The root-mean-square error (RMSE) of the best trim is also reported along with the lowest RMSE of the official trimmed and median inflation series. The last column reports the p-value of the Diebold and Mariano (1995) test for the difference between the RMSEs of the best trim and the lowest of the official series.

Figure B.4: RMSE across Trims

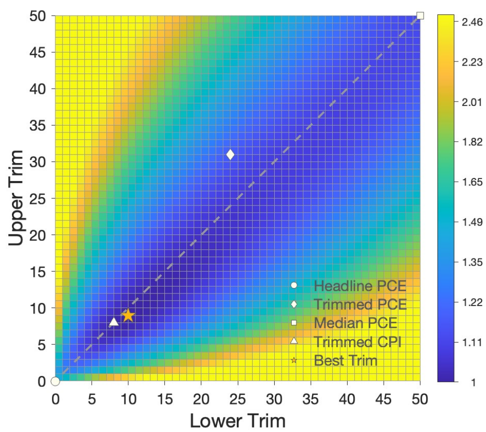
(a) Band-Pass Trend: 1970–2024



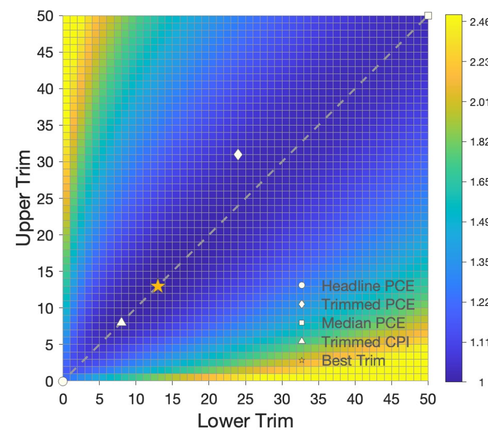
(b) Forward Trend: 1970–2024



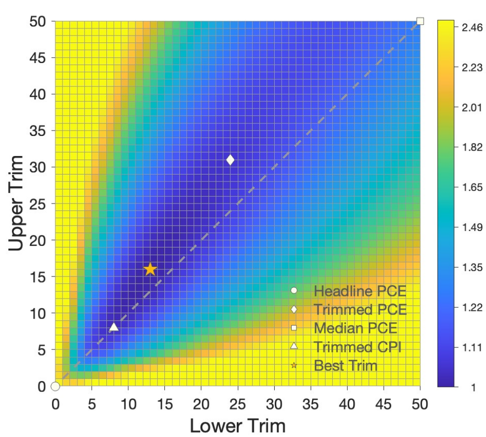
(c) Band Pass Trend: 1970–89



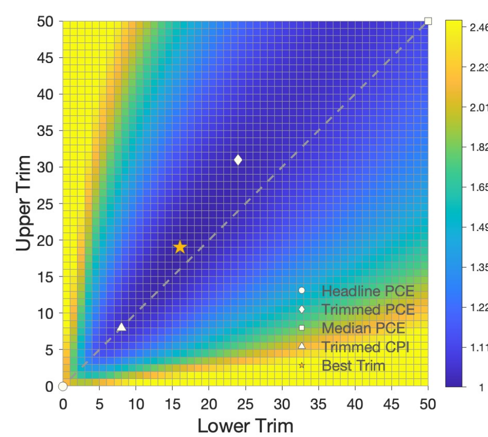
(d) Forward Trend: 1970–89



(e) Band-Pass Trend: 2000–2024



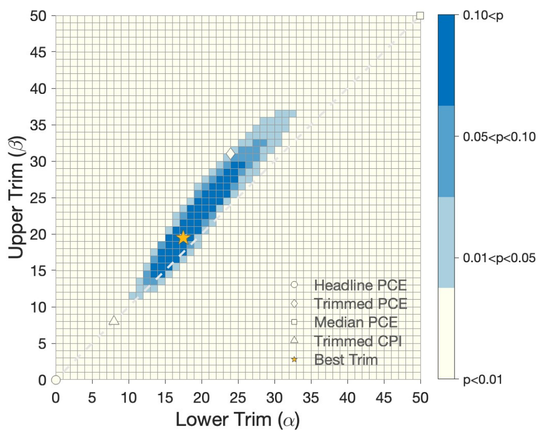
(f) Forward Trend: 2000–2024



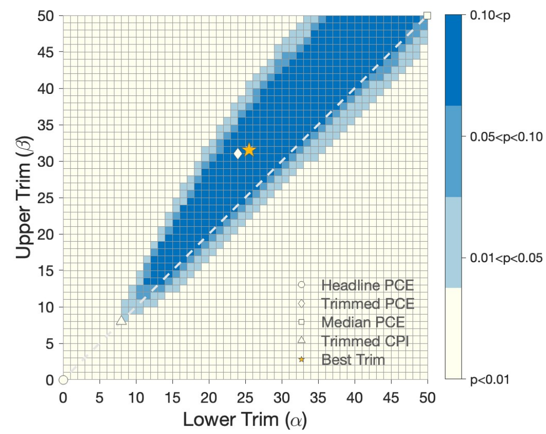
Note: *The figures show heat maps of the root-mean-square error (RMSE) when targeting band-pass and forward trend inflation with different trimmed-mean inflation measures. To ensure comparability across plots, the RMSE numbers are reported relative to the RMSE of the best trim reported in Table B.4.*

Figure B.5: Statistical Difference of RMSE across Trims

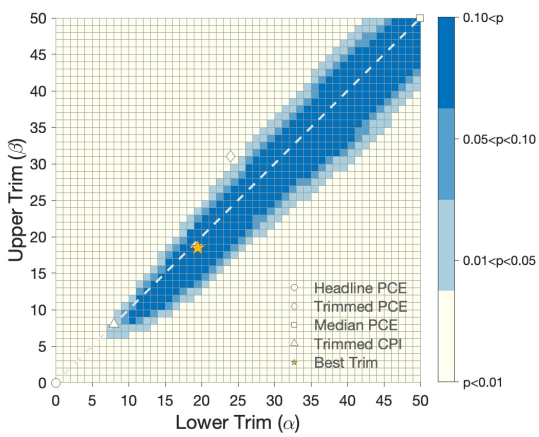
(a) Current Trend: 1970–2024



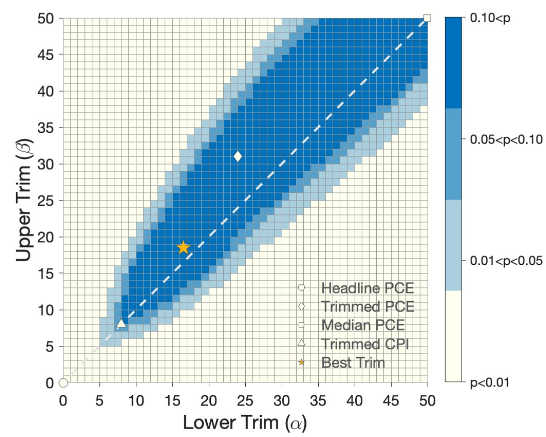
(b) Future Trend: 1970–2024



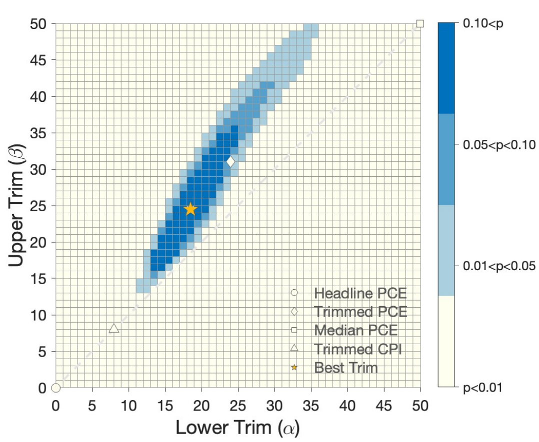
(c) Current Trend: 1970–89



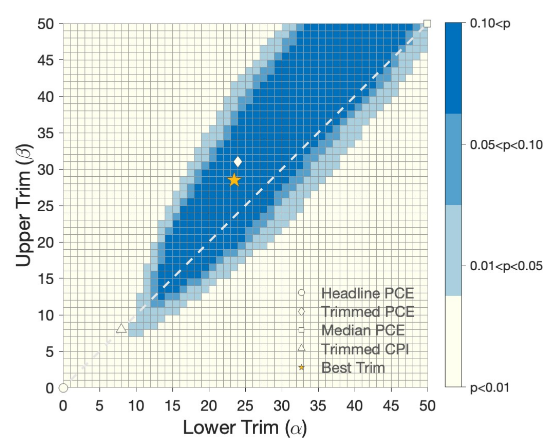
(d) Future Trend: 1970–89



(e) Current Trend: 2000–2024



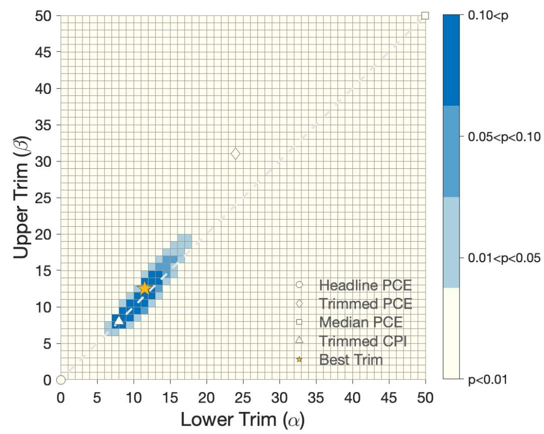
(f) Future Trend: 2000–2024



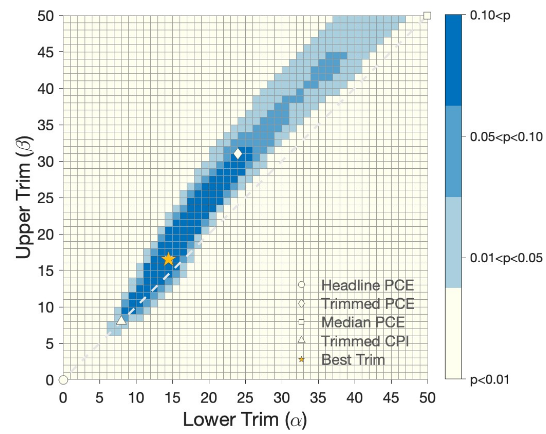
Notes: The figures group trims according to the outcome of the Diebold and Mariano (1995) test, which compares the root-mean-square error (RMSE) implied by the trims with the RMSE of the best trim as presented in Table 2. The trims are grouped based on the p-value of the test. The darkest region consists of trims whose RMSE is statistically equivalent to the lowest RMSE across all trims.

Figure B.6: Statistical Difference of RMSE across Trims - Alternative Trends

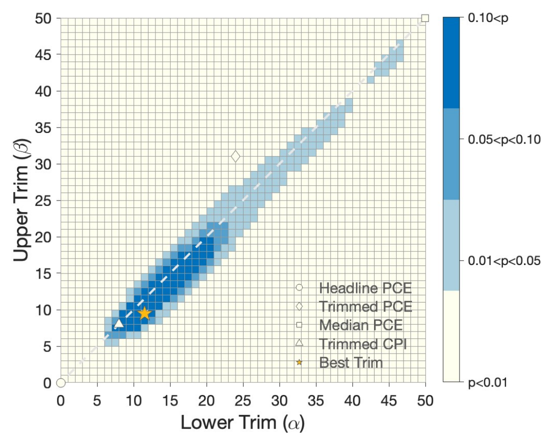
(a) Band-Pass Trend: 1970–2024



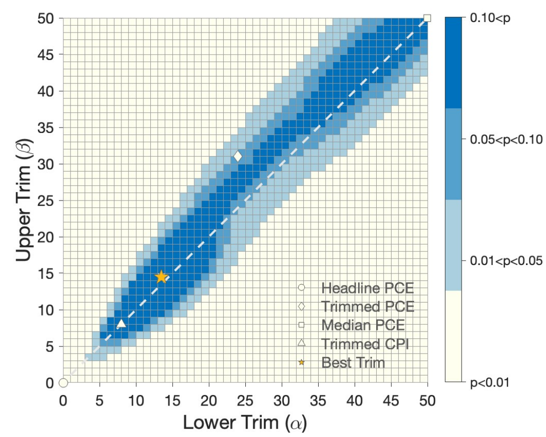
(b) Forward Trend: 1970–2024



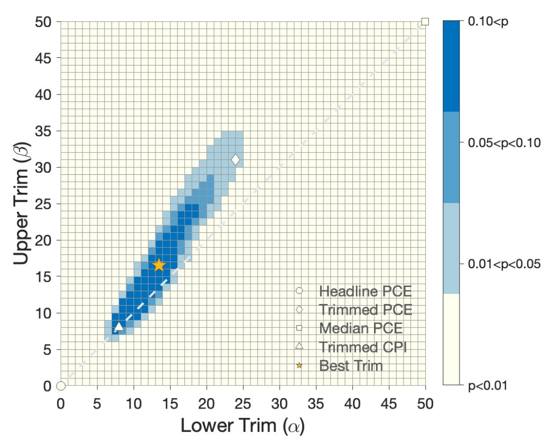
(c) Band-Pass Trend: 1970–89



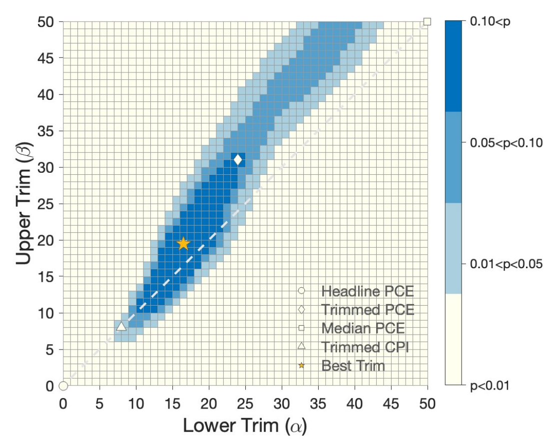
(d) Forward Trend: 1970–89



(e) Band-Pass Trend: 2000–2024



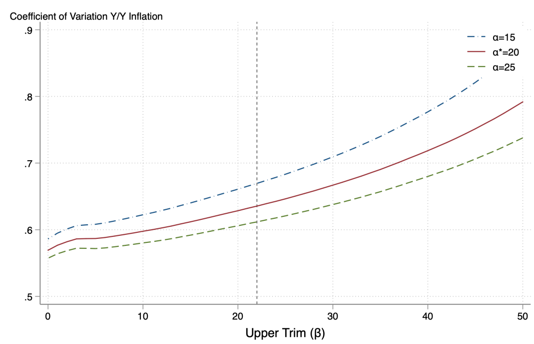
(f) Forward Trend: 2000–2024



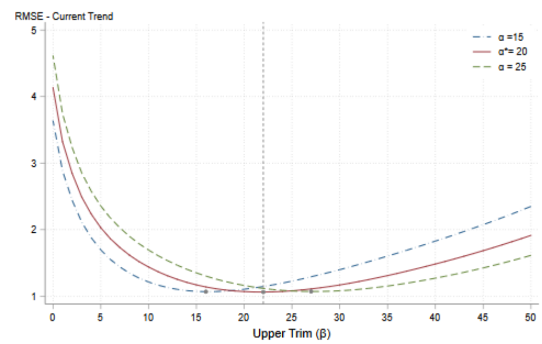
Note: The figures group trims according to the outcome of the Diebold and Mariano (1995) test, which compares the root-mean-square error (RMSE) implied by the trims with the RMSE of the best trim as presented in Table B.4. The trims are grouped based on the p-value of the test. The darkest region consists of trims whose RMSE is statistically equivalent to the lowest RMSE across all trims.

Figure B.7: The Behavior of Trimmed Mean Measures

(a) Coefficient of Variation



(b) RMSE - Current Trend



Notes: The left panel shows the coefficient of variation for different upper trims for trimmed mean measures with three different levels of lower trim. The coefficient of variation is the ratio between the standard deviation and the mean of thee series over the 1970–2024 sample. The right panel shows the RMSE of the series when targeting current trend inflation. The dotted vertical line signals the optimal upper trim and the $*$ indicates the optimal lower trim.

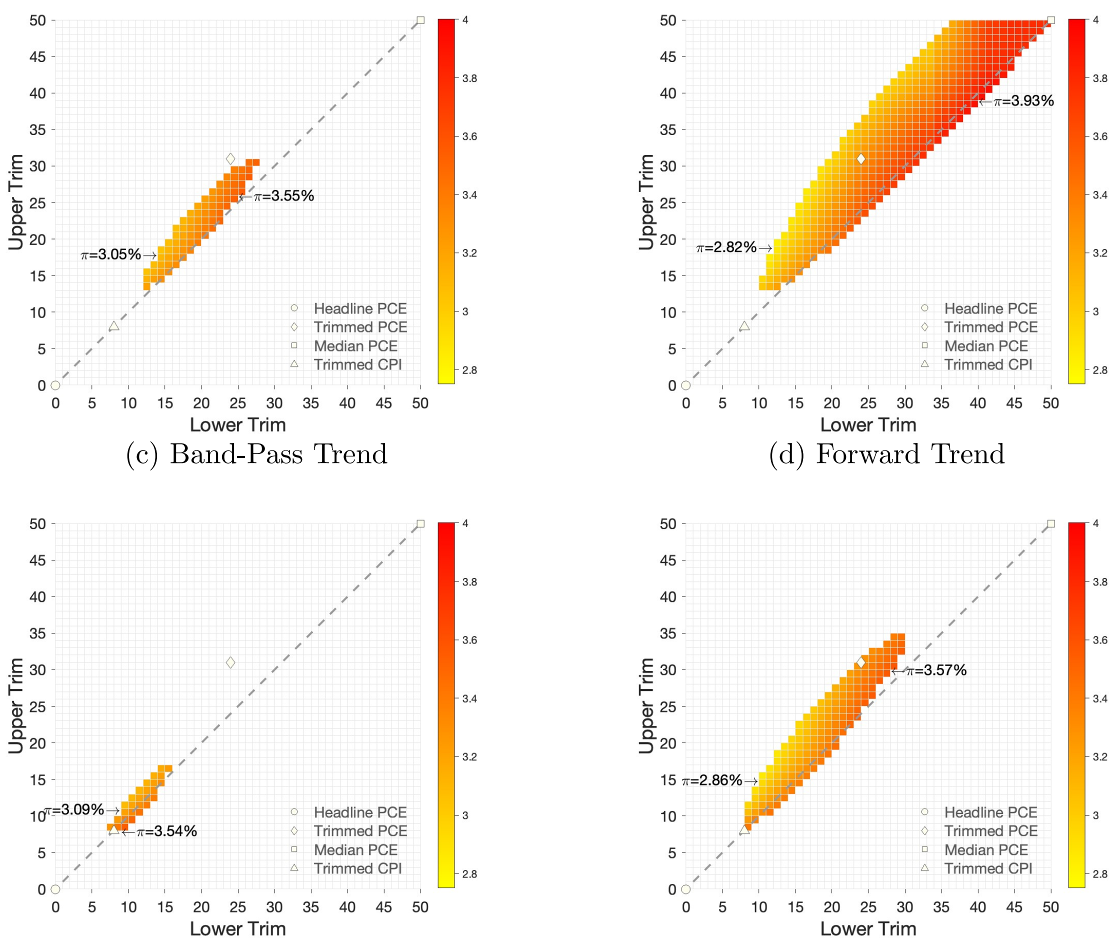
Figure B.8: Prediction across Best Trims - February 2024

(a) Centered Trend

(b) Future Trend

(c) Band-Pass Trend

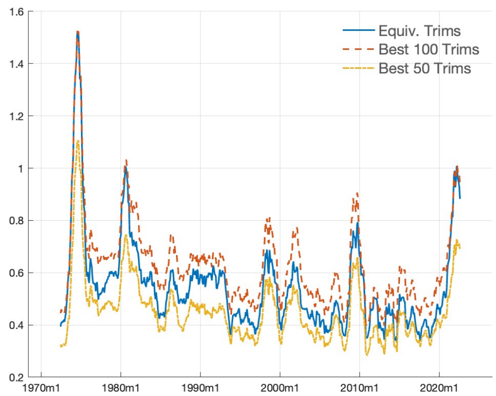
(d) Forward Trend



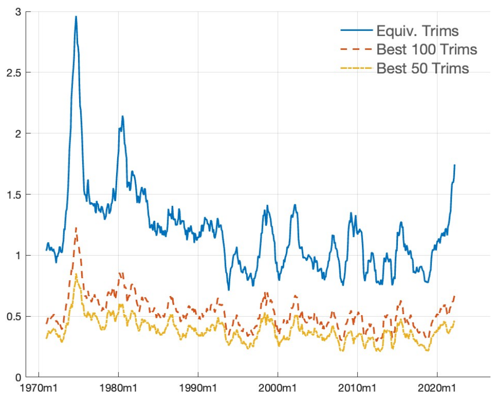
Note: The figures show heat maps of the prediction level for February 2024 across the best 50 trim combinations, ranked according to their RMSE when targeting band-pass or forward trend inflation over the sample 1970–2024. The best trims vary according to the trend inflation series being targeted. The set of best trims is defined as those with an RMSE statistically indistinguishable at the 5 percent significance level from the lowest RMSE across all trims.

Figure B.9: Prediction Range across Best Trims across Time

(a) Centered Trend

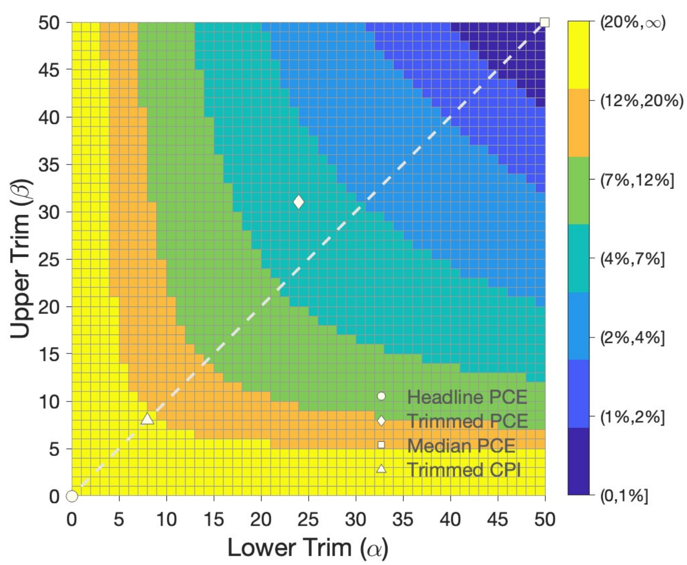


(b) Future Trend



Notes: The figures plot the range between the lowest and highest predictions for the current and future trends between 1970 and 2024 given a set of trimmed-mean measures of inflation. There are three ranges for each inflation target: first, the range implied by considering the trims that are statistically equivalent at the 5 percent level according to the Diebold and Mariano (1995) test of the difference of their root-mean-square errors (RMSEs) with respect to the RMSE of the best trim (see Table 2); second, the range implied by considering the best 100 trims as ranked by their RMSE; third, the range implied by considering the best 50 trims as ranked by their RMSE.

Figure B.10: Average Range of Inflation by Trims



Note: The figure shows the average range of inflation rates across individual expenditure categories implied by each trim combination, $\pi_{1-\beta} - \pi_\alpha$.

B.4 Excluding Housing from Trimmed-Mean Inflation

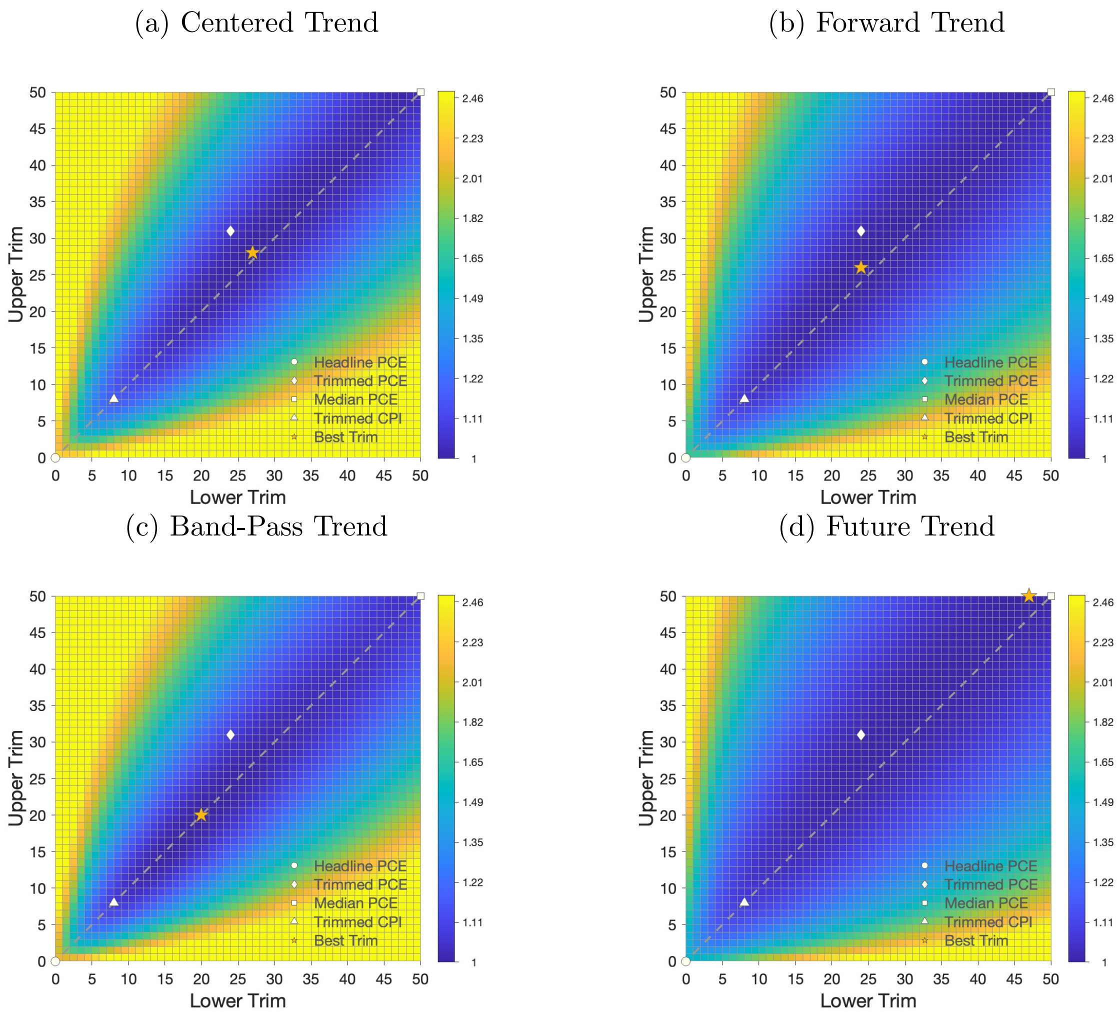
Housing is the single largest expenditure category and may have different dynamics from the remainder of the consumption basket (Adams et al., 2024). It is also one of the series most commonly included in the official trimmed mean and median inflation measures (see Table B.2). This can raise questions over housing having too large of a role in the behavior of trimmed mean inflation measures. That is not the case. We now reproduce our main results while excluding owner occupied housing from the construction of trimmed mean measures and re-weighting the remaining categories accordingly. All of our results are preserved, with the obvious exception of the level of the optimal trim cutoffs that changes to reflect the exclusion of housing from the set of expenditure categories.

Table B.5: Best Trims for Trimmed-Mean Inflation without Housing

Target	Sample	Best Trim		
		Lower Trim	Upper Trim	RMSE
Centered Trend	1970–2024	27	28	1.20
	1970–1989	26	23	1.65
	2000–2024	27	30	0.88
Band-Pass Trend	1970–2024	20	20	1.22
	1970–1989	22	19	1.47
	2000–2024	18	19	1.09
Future Trend	1970–2024	47	50	2.19
	1970–1989	24	25	3.02
	2000–2024	47	49	1.65
Forward Trend	1970–2024	24	26	1.70
	1970–1989	24	23	2.37
	2000–2024	27	28	1.26

Notes: The table reports the best trims for different targets of trend inflation over different samples as determined by the predictive performance across trims. The root-mean-square error (RMSE) of the best trim is also reported.

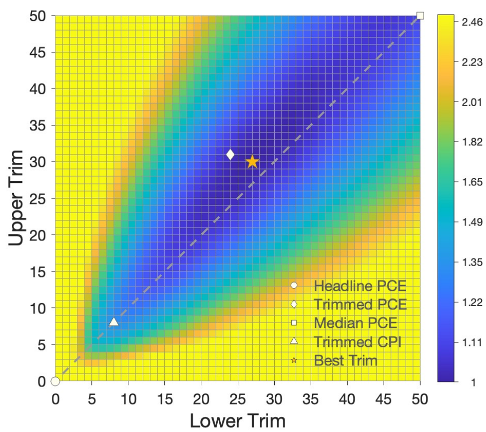
Figure B.11: RMSE across Trims: 1970–2024 (Sample without Housing)



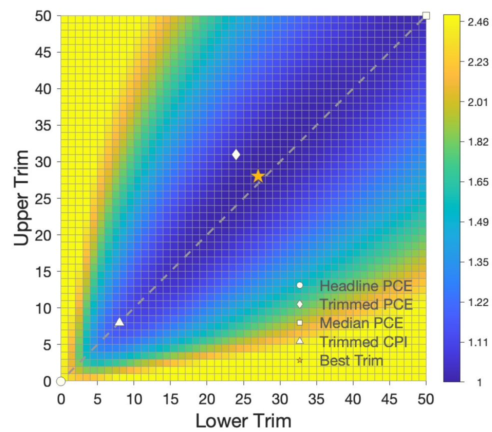
Note: The figures show heat maps of the RMSE when targeting trend inflation with different combinations of trimmed-mean inflation measures. Four measures of trend inflation are considered. To ensure comparability across plots, the RMSE numbers are reported relative to the RMSE of the best trim reported in Table B.5.

Figure B.12: RMSE across Trims: 2000–2024 (Sample without Housing)

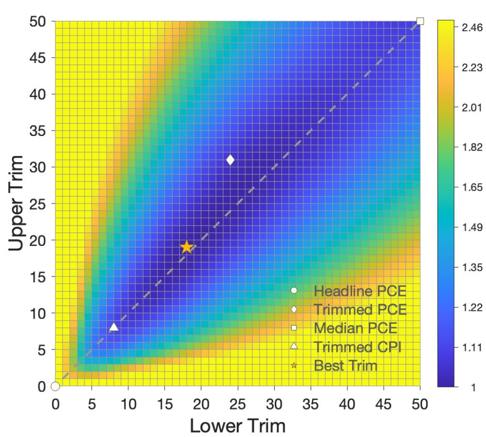
(a) Centered Trend



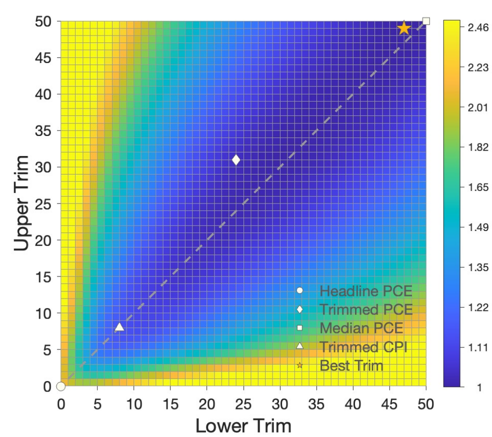
(b) Forward Trend



(c) Band-Pass Trend



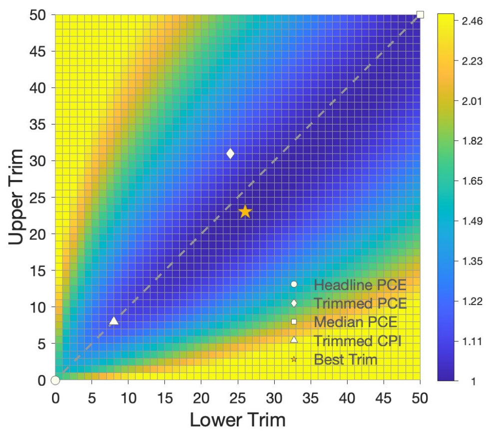
(d) Prediction



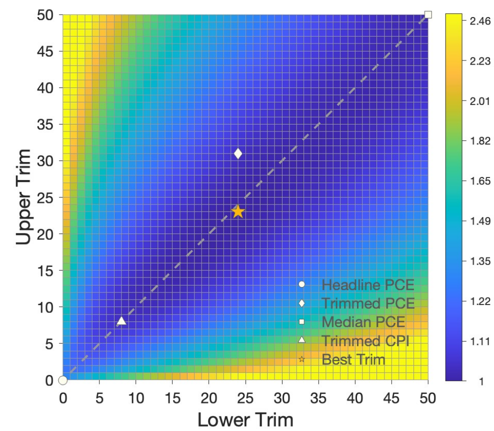
Note: The figures show heat maps of the RMSE when targeting trend inflation with different combinations of trimmed-mean inflation measures. Four measures of trend inflation are considered. To ensure comparability across plots, the RMSE numbers are reported relative to the RMSE of the best trim reported in Table B.5.

Figure B.13: RMSE across Trims: 1970–89 (Sample without Housing)

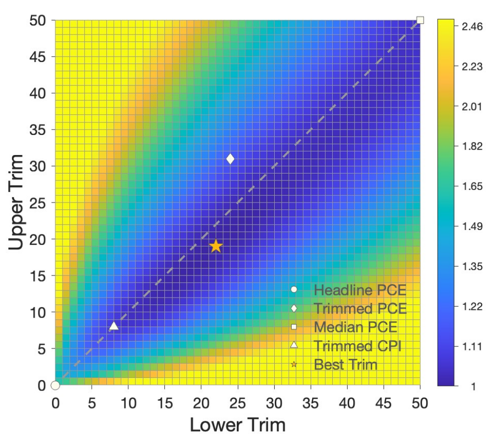
(a) Centered Trend



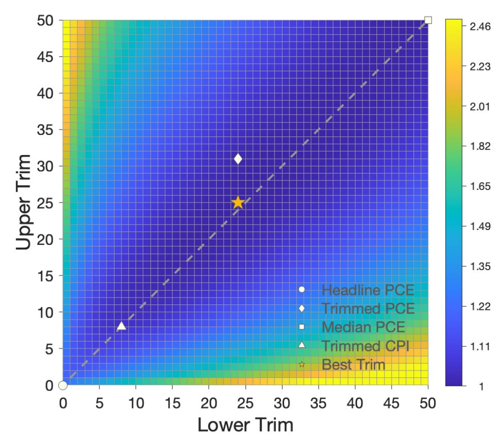
(b) Forward Trend



(c) Band-Pass Trend



(d) Prediction



Note: The figures show heat maps of the RMSE when targeting trend inflation with different combinations of trimmed-mean inflation measures. Four measures of trend inflation are considered. To ensure comparability across plots, the RMSE numbers are reported relative to the RMSE of the best trim reported in Table B.5.