CONGRESSIONAL BUDGET OFFICE
U.S. Congress
Washington, DC 20515

Phillip L. Swagel, Director

January 31, 2022

Honorable Jason Smith
Ranking Member
Committee on the Budget
U.S. House of Representatives
Washington, DC 20515

Re: Price and Wage Growth in Rural Areas

Dear Congressman:

You asked the Congressional Budget Office to assess how increases in the prices of goods and services have differed recently between rural and urban areas and how those increases compared with changes in wages. CBO's findings are as follows:

- Annualized price growth in rural areas averaged 4.8 percent from the fourth quarter of 2019, before the onset of the coronavirus pandemic, to the fourth quarter of 2021. By comparison, annualized wage growth averaged 6.3 percent in rural areas during that period, CBO estimates.

- In urban areas, annualized price growth averaged 3.7 percent over those two years, and annualized wage growth averaged 5.7 percent.

Thus, CBO estimates that the average purchasing power of wages increased in both rural and urban areas. That growth in purchasing power—the difference between wage growth and price growth—was slower in rural areas.

Those findings about purchasing power hold when investigated in several different ways. In contrast, CBO's estimates of the specific rates of price and wage growth are more uncertain, especially for rural areas, and are sensitive to the method used to estimate them.

How CBO Estimated Price Growth in Rural Areas

To estimate growth in the prices of goods and services for people in rural areas, CBO used data from the consumer price index for all urban consumers (CPI-U), which is produced by the Bureau of Labor Statistics (BLS). In producing the CPI-U, BLS collects data on prices for about two-thirds of people living in areas defined as rural by the Census Bureau. The CPI-U is intended to reflect the prices faced by consumers in areas that cover 93 percent of the U.S. population.[1] Although those areas are located near urban centers, 15 percent of households in the covered areas live in places defined as rural. BLS neither reports data separately for those households nor collects data on prices for people in other rural areas.

CBO estimated price growth in rural areas in two steps. In the first step, the agency estimated the amount by which inflation in each of the country's nine Census Bureau divisions differed from inflation nationally. In the second step, applying statistical analysis to quarterly data for all of the divisions, CBO then estimated the implied percentage by which rural inflation differed from urban inflation in each quarter.[2] For this step, the agency also used data on the fraction of people in each division who live in places defined as rural within areas covered by the CPI-U.

How CBO Estimated Wage Growth in Rural Areas

CBO estimated nominal hourly wage growth in rural areas and urban areas using monthly data on wages from the Current Population Survey.[3] To

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[1] Those core statistical areas consist of one or more counties or equivalent entities associated with at least one core of at least 10,000 people, plus counties adjacent to that core that have a high degree of social and economic integration. See Bureau of Labor Statistics, "Consumer Price Index: Design" (accessed January 21, 2022), www.bls.gov/opub/hom/cpi/design.htm.

[2] Denote π_t^i as inflation in Census Bureau division i in quarter t and π_t as national inflation. In the first step, which was undertaken separately for each division, CBO estimated the persistent differences between divisional and national inflation from the fourth quarter of 2017 to the fourth quarter of 2021 and projected that relationship would apply equally in rural and urban areas. CBO used the equation $\pi_t^i = \beta_0^i + \beta_1^i \pi_t + \varepsilon_t^i$. In the second step, which was undertaken separately for each quarter, CBO accounted for persistent divisional differences and modeled how inflation varied with the fraction (r^i) of people living in rural parts of core-based statistical areas in the division. CBO used the equation $(\pi_t^i - \hat{\beta}_0^i)/\hat{\beta}_1^i = \alpha_{0t} + \alpha_{1t} r^i + \epsilon_t^i$. Nationally, CBO estimated urban inflation as $\hat{\alpha}_{0t}$ and rural inflation as $\hat{\alpha}_{0t} + \hat{\alpha}_{1t}$ for each quarter.

[3] Many Current Population Survey respondents reported their hourly wage directly; in such cases, CBO used that information. In other cases, CBO calculated hourly wages as usual earnings per week divided by usual hours worked per week. Those earnings cover wages and salaries from employment and exclude business income, capital income, and income from other sources. Because the Census Bureau does not report values for earnings above $2,885 per week to protect the privacy of survey respondents, CBO estimated those values using a log-normal distribution with separate parameters for men and women and for each year.

make its estimates as representative as possible of the same national area that is covered by the CPI-U, CBO multiplied the survey's sample weights by weights based on census data about the share of people within a survey respondent's county who live in areas defined as rural.[4]

Two counties in Missouri with substantial rural populations illustrate the types of places that are close enough to urban centers to be included in the analysis described here. In Cape Girardeau County, south of St. Louis, 30 percent of the population is classified as living in a rural area by the Census Bureau. A worker's wage in that county would receive a weight of 0.3 in the rural wage series and 0.7 in the urban wage series. In Bollinger County, west of Cape Girardeau, 100 percent of the population is classified as living in a rural area. A worker's wage in that county would receive a weight of 1.0 in the rural wage series and zero in the urban wage series.

I hope this information is helpful. Please contact me directly if you have any questions.

Sincerely,

Phillip L. Swagel
Director

cc: Honorable John Yarmuth
Chairman

[4] CBO's analysis of wage growth underrepresents people in less populated areas. To protect the privacy of survey respondents, the Census Bureau does not report the respondents' county of residence if those counties have a population of less than 100,000. Respondents for whom county data is provided live in areas that are more densely populated; 9 percent of such households reside in places defined as rural. By comparison, the CPI-U covers people living in areas in which 15 percent of households reside in rural places. For almost all respondents, the Census Bureau does report whether they live in metropolitan areas. CBO found that wage growth was slightly faster for people living in nonmetropolitan areas than in metropolitan areas during the past two years, consistent with the results derived from data on county of residence that indicate wage growth was slightly faster in rural areas than in urban areas.