Analysis

What to infer from inflation outliers

- *Price shocks, or 'outliers,' raise general inflation if they 'infect' core prices and wages*
- *This happened in the 1970s and early 1980s, on the occasions of the two big oil shocks*
- *However, it has not happened (in 'advanced' economies) since the mid-1990s*
- *Current conditions do not seem ripe for a 1970s-type response to current outliers*

Introduction

The recent sharp acceleration in US inflation – both 'headline' and 'core' (as measured by the CPI or the PCE deflator excluding food and energy) has provoked concern that it may herald *sustained* higher inflation. The crucial issue is whether the shock, or 'outliers', will 'infect' the 'core',[1] wages, or both. The history of earlier shocks offers some clues.

History

The Korean War of 1950-53[2] sparked a sharp increase in the prices of agricultural and industrial raw materials. US CPI inflation shot up from 1.1% in 1950 to 7.9% in 1951.[3] However, commodity prices soon fell back, as did CPI inflation which, by 1952, was down to 2.3%, and to just 0.8% by 1953. Crucially, neither the 'core' nor wages had reacted significantly. That the world economy was near the trough of a cyclical recession may well have played into that.

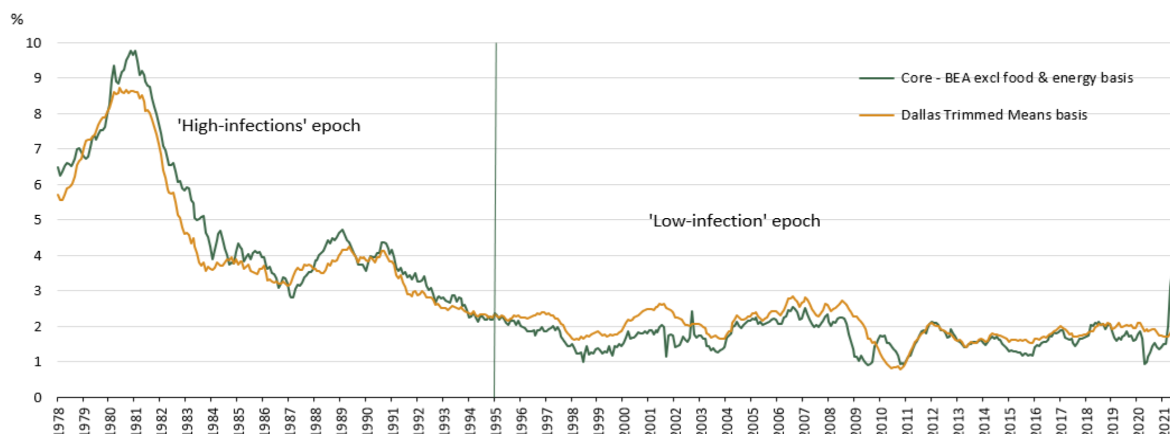
The 1970s to mid-1990s was a 'high-infection' epoch …

During the **Yom Kippur War of 1973-74**, the accompanying oil embargo, and the US having newly become a net importer of oil, led to a quadrupling of oil prices. US CPI inflation, which had been accelerating through the second half of the 1960s in an environment of reasonably strong growth, powerful unions in some sectors, and growing policy-induced rigidities of various kinds,[4] immediately accelerated, from 3.3% in 1972 to 6.2% in 1973.

These higher oil prices led to higher prices for the many products into which oil is an input; and also speculative purchasing drove up the prices of many other commodities.

Most importantly, however, wages started to accelerate: at that time, around 60% of major collective bargaining agreements included cost-of-living adjustment (COLA) or 'indexation' clauses,[5] and such adjustments were widely mirrored in non-union wage arrangements as well.[6] US CPI inflation rose further, peaking at 11.1% in 1974. Thus both the core and wages were very much 'infected'.[7]

Figure 1: 'Core' and 'Trimmed Means' measures of underlying inflation



Source: Federal Reserve Bank of Dallas, U.S. Bureau of Economic Analysis (BEA), and Llewellyn Consulting

Note: Last data point June 2021

The 1978-79 oil price doubling. Before inflation had fully come down, a tight oil supply-final demand balance, combined with panic inventory-building, provoked a further increase – this time a doubling – of the price of internationally traded oil. Inflation shot up again, US CPI reaching 11.3% in 1979 and 13.5% in 1980.

Thereafter it decelerated, but only slowly, getting down to around 4% only by the mid-1980s. Crucially, wages again played a substantial part: annual growth in the employment cost index peaked at over 10% in 1981. Thus the core and wages were again 'infected'.

However, it took until the mid-1990s for inflation to settle down into the 2%-odd range that was to become the norm – until recently.

Summarising the 1970s to mid-1990s period

Although the events summarised above were the stand-outs, the experience of the period as a whole can be summarised by a regression in which 'trimmed mean' inflation in a given year is deemed to be a function of the value of the 'outlier' a year previously.[8]

For the period from 1978 to 1994, there was a quite tight relationship ($R^2 = 0.54$), with the coefficient a highly significant 1.7.[9] In other words initial shocks, or outliers, 'infected' the core; and then that effect was multiplied by the response of wages, such that typically, a year after a shock, overall inflation had increased by getting on for twice the size of the initial outlier.

Experience from the mid-1990s until 2020

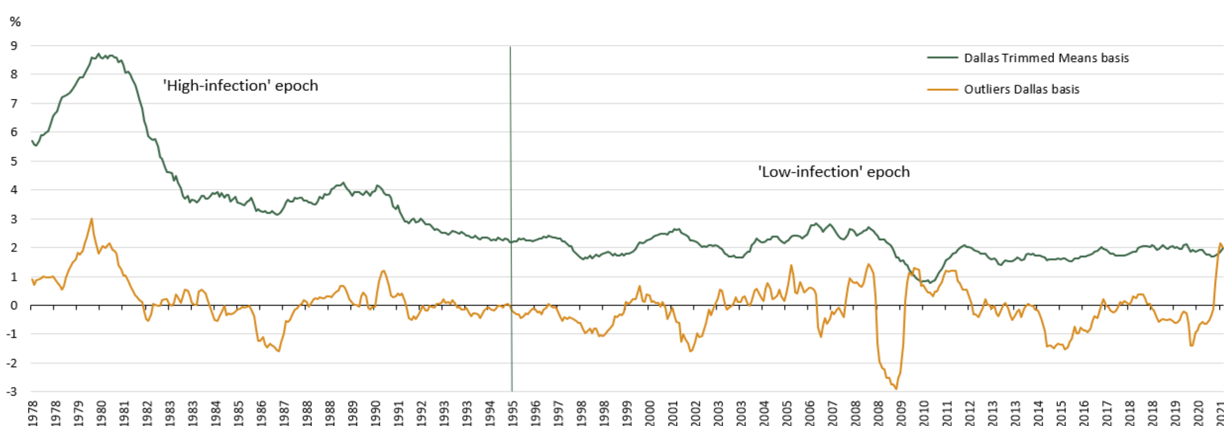
… but in the mid-1990s a 'low-infection' epoch began

The following quarter-century was, up until this year, comparatively quiet − at least with regard to inflationary shocks[10] − see Figure 1. Perhaps not surprisingly, therefore, the relationship between outliers and the core in the year following has been weak ($R^2 = 0.15$) and, equally importantly, the coefficient small (0.2). The core has apparently not been infected significantly by such outliers as there were, and nor have there been any significant 'knock-on' effects on wages.

There are several reasons for this, including:

1. The greatly-enhanced credibility of the Fed's commitment to sustaining low inflation accumulated during Paul Volcker's term as Fed Chair (1979-86). Moreover, this was maintained throughout the long incumbency of his successor, Alan Greenspan, so that inflation expectations became (and remained) 'well-anchored'.

Figure 2: PCE deflator: trimmed means and outliers



Source: Federal Reserve Bank of Dallas and Llewellyn Consulting

Note: Last data point June 2021

2. The decline in 'union density' (the proportion of the work force who are members of, or are represented by, labour unions) from 20% in 1983 to a low of 10.3% in 2019,[11] and the corresponding decline in the prevalence of wage indexation arrangements to 20% by the mid-1990s.[12]
3. Other developments in the legal framework within which wage negotiations are conducted, such as the proliferation of 'non-compete clauses' in employment contracts, which prevent employees from moving to their employers' competitors in search of higher wages.[13]
4. The increase in imports as a share of US GDP – from less than 6% in the early 1980s to more than 10% by the second half of the 1990s, and to more than 15% over the past decade – which has provided an additional form of competitive 'discipline' over wage- and price-setting behaviour in the US labour and product markets.

The 2021 price-level surge against that background

The question now is whether a new epoch has begun …

Much of the price surge this year was caused by a sharp rise in a few outliers – including importantly of used cars and trucks, and the costs of insuring both used and new motor vehicles.[14] (The strong demand for used vehicles has arisen because of chip-related shortages of new ones, as well as a desire for alternatives to public transport for fear of catching Covid-19.)

The crucial question is whether the core, and wages, will be infected.

Certainly this shock has been fairly large. Calculated on a PCE "*headline minus core*" basis it was around 0.5 ppts; on a PCE "*headline minus trimmed mean*" basis, which is arguably the better measure in this case because the surge was caused by neither food nor energy, it is around 2 ppts[15] – see Figure 2.

In assessing the likely consequences, the key questions are:

- Whether the outlier(s) will persist;
- Whether they will 'infect' the core; and
- Whether there will be a knock-on effect on wages.

Persistence. Many of the current bottlenecks seem unlikely to persist. Containers being in the wrong place will be sorted out; COVID-distorted patterns of demand will revert to something more 'normal'. That said, other changes in the structure of demand – those due to climate change and technological change for example – will continue.

Infection. This seems less likely than was the case with oil. Neither new nor used cars are an 'input' in the way that oil was and is; and neither are housing costs, which are largely an imputed measure.

Wages. Although there are signs of employer willingness in some industries (including construction, manufacturing and, especially, hospitality and leisure) to offer higher wages in order to fill job vacancies, there is no evidence, to date at least, of a broad-based acceleration in wage inflation.

Moreover, current macroeconomic conditions do not seem likely to support a major acceleration of wages, given that the 'official' unemployment rate is almost 1½ ppts above, and the labour force participation rate still 1¾ ppts below, their respective pre-pandemic levels.

… we judge not

Against this backdrop, it seems likely that the increase in the US aggregate price level will turn out to be essentially transitory.

Watch Fors

Our judgement that the recent increase in the general price level will be essentially transitory would be invalidated by the emergence of either of the following:

- **Recurrent shocks**. Were there to be a succession of major price shocks, such that (say) each month the aggregate price level were to increase significantly, albeit for a different reason on each occasion, then little or no meaningful distinction could be made between 'core' and 'outliers'.
- **Rising wages**. Wage rates inevitably will increase in some activities, particularly those experiencing significant changes in the balance of supply and demand for labour: that is part and parcel of the normal functioning or markets. But that is quite different from a generalised increase in wages. Moreover, indexes of average wages can be affected by changes in composition – for example if, as in the recent slowdown, low-wage workers figure disproportionately in layoffs.

  A particularly appropriate index to monitor is the Bureau of Labor Statistics *Employment Cost Index* (ECI) which measures the change in the cost of labour devoid of the influence of employment shifts among occupations and industries.[16] ■

[1] The notion of 'core' inflation supposedly was coined by Robert Gordon in 1975. Measures of 'core' CPI and 'core' PCE deflators were introduced in the US the 1970s:

- The PCE deflator and the 'core' PCE deflator are produced by the Bureau of Economic Analysis (BEA), These exclude the prices of food and energy, which were taken to be volatile and thereby not representative of the trend growth of the cost of supply i.e. not representative of trend, or underlying, inflation.
- An alternative to such 'exclusion-based' measures is the so-called 'statistical' measures, notably 'Trimmed Means. These do not exclude items on an *a priori* basis: rather they exclude them on a judgement-free, purely statistical, basis by excluding a stipulated proportion of the most extreme observations (both upper and lower). One example is the Dallas Fed's Trimmed Means Trimmed Mean PCE Inflation Rate - Dallasfed.org)

[A fuller presentation of these and others is presented in in our latest *World View & Risks.*]

The 'core', and the 'trimmed mean', can each in principle be greater than, less than, (and hence equal to), the aggregate, depending on the extent to which: (1) the excluded values are at the upper, or the lower, end of the price distribution; and (2) the size of the change and their weight in the aggregate index.

Some people like the concept of the 'core', and some do not. The concept was quickly and cheerfully adopted by US politicians in particular, who in the 1970s were keen to say that inflation was not as high as it was measured as being. More respectably, policymakers, up to the present day, have always considered that they need some guidance as to what the underlying rate of inflation is.

However, the notion also opens itself to a less charitable interpretation. William Nordhaus once said to one of us that "*Core inflation is just aggregate inflation with the things that go up taken out*".

[2] The Korean War began on 25 June 1950, and hostilities ended with an armistice on 27 July 1953.

[3] All the cited US CPI data are as published in Consumer Price Index, 1913- | Federal Reserve Bank of Minneapolis (minneapolisfed.org) [Accessed 3 August 2021]

[4] Chronicled at the time by the OECD in a short publication *Inflation – the growing problem.* (Out of print).

[5] See for example, David Card, An Empirical Model of Wage Indexation Provisions in Union Contracts, *Journal of Political Economy*, Vol. 94, No. 3, June 1986, pp. S144-175; or 21 Julio A Carillo, Gert Peersman and Joris Wauters, *Endogenous Wage Indexation and Aggregate Shocks*, Working Paper No. 604,, Bank for International Settlements, Basel, January 2017.

[6] A Steven Holland, The Changing Responsiveness of Wages to Price-Level Shocks: Explicit and Implicit Indexation, *Economic Inquiry*, Vol. 26, April 1988, pp. 265-279.

[7] For a thorough review of the events of this period, see The 1972-75 Commodity Boom (brookings.edu)

[8] This is not a perfect test of the proposition that outliers 'pull up', or 'infect', the core, because other factors will be at work in the economy too: it may be entering recession, or a boom, for example. But to allow for any such effects would require simulation in a full-blown model.

[9] The data and the full regression results are available on request.

[10] That is not to say that there have been no such shocks: for example, the prices of West Texas Intermediate (WTI) oil increased by more than 250% between June 2004 and June 2008, and (after falling sharply during the 'Great Recession' induced by the global financial crisis), by 180% between February 2009 and April 2011. Food commodity prices (as measured by the FAO) doubled between June 2004 and June 2008, and (after also falling during the 'Great Recession') rose by 50% between March 2009 and March 2012).

[11] US Bureau of Labor Statistics, Union Members Summary, 22 January 2021.

[12] Boris Hoffman, Gert Peersman and Roland Straub, *Time Variation in US Wage Dynamics*, Working Paper No. 1230, European Central Bank, Frankfurt, July 2010.

[13] See for example, Evan Starr, J. J. Prescott and Norman Bishara, Noncompete Agreements in the US Labor Force, *Journal of Law and Economics*, Vol 64, No. 1, University of Chicago, February 2021, pp. 53-84; Office of Economic Policy, Non-compete Contracts: Economic Effects and Policy, US Department of the Treasury, Washington DC, March 2016.

[14] Other major contributors have been the reversion of air fares and hotel and motel accommodation charges to pre-pandemic levels (after sharp falls in the period immediately after the onset of the pandemic) and increases in the 'imputed rent' notionally paid by homeowners to themselves, which has an unusually large (by international standards) weight in the US consumer price index.

[15] The data are available on request.

[16] For information on the survey's concepts, coverage, methods, and more, see National Compensation Measures Handbook of Methods at www.bls.gov/opub/hom/ncs/home.htm

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