

A cost-of-living crisis: Inflation during an unprecedented terms of trade shock – speech by Swati Dhingra

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Speech

For about two years, I have had the incredibly enriching opportunity of being part of the Economy 2030 Inquiry, a collaboration between the Resolution Foundation and the Centre for Economic Performance at LSE, where I am based. Economy 2030 is not simply a project that seeks to describe and diagnose the economic problems facing Britain. It is serious about providing solutions to create a fairer and more prosperous future. That means recognising the context of a decade and a half of economic stagnation and being realistic about the trade-offs that will have to be made to deliver concrete proposals for change. I am therefore delighted to be invited by Resolution to deliver my first public remarks on the cost-of-living crisis.

In this speech, I will first explain the unique features of today's shock and the role of supply chains in transmitting this through the UK economy. Second, I will analyse the direct and indirect effects of higher energy prices on domestic price growth. I will note that energy and other imports have a broad-based use in the CPI basket, and therefore the recent period of high inflation is what we might expect from a large terms of trade shock. Third and finally, I will review the outlook for inflation and discuss how this influences my current monetary policy strategy. My conclusion is that, given little evidence of further cost-push inflation, further tightening is a bigger risk to output and the medium-term inflation target.

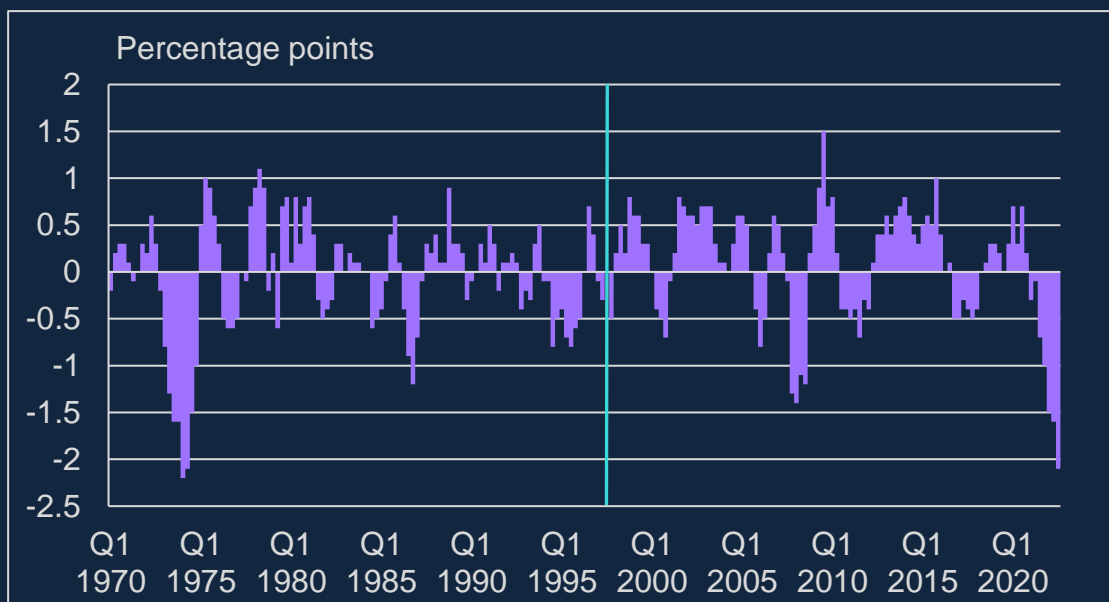
The interim report of Economy 2030, published last summer, set the stage for what I will discuss today. The report argues that managing the impact of inflation on families and firms, and attempting to cool inflationary pressures without deepening any resulting economic downturn, are immediate policy priorities. But, neither is going to be easy. The scale of the terms of trade shock – that is, a sharp rise in the price of imports relative to the price of our exports – and the inflationary pressure from it are unprecedented in the history of the MPC (Chart 1). The steep increase since autumn 2021 in the imported price of energy weighs on real incomes in this country, leading to an exceptional cost of living crisis. And we have an absence of similar episodes to learn from. While oil shocks of the 1970s created a larger terms of trade deterioration, the nature of the global and domestic economy have evolved a lot since that time. Shifts in bargaining power between economic agents, and the emergence of global value chains as a dominant feature of world trade, mean that shocks are likely to transmit differently. So, whilst history can provide useful insights, the challenges of the 1970s were markedly distinct from today's context.

The unique nature of this shock for the UK makes it difficult to apply lessons from elsewhere. As Economy 2030 recognises, the context and trade-offs confronting us are very different. Our transatlantic peers have seen their terms of trade improve because they are net exporters of energy, notably of natural gas. Our European peers, like France or Germany, share the pain of the energy crisis, but they have far outstripped us in

productivity growth over the last decade. These structural differences mean we will have to chart our own path to bring inflation down.

Chart 1: Purchasing Power of UK GDP

It is 2.1% lower from the Largest Terms of Trade Deterioration since the 1970s



Notes: Percentage point (pp) difference in 4-quarter growth rates of UK real Gross Domestic Income and real Gross Domestic Product, Q1 1970 to Q3 2022. Source: ONS (2022).

The ability of monetary policy to curb inflationary pressures naturally depends on whether we can influence the sources of inflation. As a small open economy and net importer of energy, the UK is a price-taker for traded goods on global markets. So we have little control over how much we are charged for energy by foreign providers. Our demand for energy is highly inelastic and we have few immediate substitutes for it. Moreover, almost every activity in the economy needs energy, so its price impacts are broad-based. Our government can however influence how energy prices are set domestically and how much families and firms have to pay for them. The Ofgem price cap and the government's energy price guarantee do this. The MPC has influence over further inflation arising as a result of firms trying to re-build their margins and workers trying to defend their real incomes through higher pay settlements.

Put differently, monetary policy cannot reduce our utility bills, but it can try to manage aggregate demand in the face of a large terms of trade deterioration. By raising costs of borrowing it can seek to address the risks of further domestically generated inflation. Higher interest rates dampen economic activity and lower expectations of future price inflation, but they come at the cost of deepening the economic downturn from already squeezed budgets. We must therefore evaluate the evidence carefully to avoid creating

excess volatility in the near term, unnecessary undershoots in inflation over the medium term and output destruction at a time when the economy is already weak and more prone to risks of undershooting the target.

The key question is whether monetary policy should be tighter and for how long to curb domestic inflationary pressures. Today, I will examine this question by evaluating evidence on how much different sources of inflationary pressures are driving consumer price inflation and the outlook for their future evolution. The evidence informs policy by revealing the constraints and trade-offs that would be involved in addressing the cost-of-living crisis.

Evidence on the Evolution of Inflation

Over a year has gone by since Russia's invasion of Ukraine, by which point inflation had already been above target for six months. About eighteen months of data on consumer prices are therefore available to quantify the proximate sources of the cost-of-living crisis. How much of inflation is driven by external factors such as energy? And how much is driven by domestic factors, such as wage costs? The extent to which imported and domestically generated inflation is driving above-target inflation speaks to the concerns around persistence. The further that inflation overshoots the MPC's target and the longer this persists, the more likely it is to affect economic behaviour.

Understandably, if workers and firms in the economy are seeing their real incomes squeezed due to the terms of trade shock and they expect this to persist, then they will seek to claw back their losses through higher nominal earnings. But in a world where we are all poorer, these actions will simply result in higher pay and price growth. So the risks of inflation persistence coming from domestically generated pay and margin pressures, so called "second-round" effects, are an important consideration for policy. But the relative contributions of unit wage costs and margins to inflation can often be hard to measure with standard data.

Based on national statistics and a long tradition of work on input-output linkages along the supply chain, we decompose CPI inflation into the extent to which it is driven directly by imports shares in final consumption and indirectly by cost pressures from energy, other imported inputs, wages and residual profit margins that make up the price of consumer items.^{1,2}

To fix ideas, take the example of sliced white bread. The price of a loaf increased from 108p in January 2022 to 139p in January 2023.³ Bread became about 30 percent more expensive. If we don't import much sliced white bread, the contribution of final imports for

¹ CPI refers to the Consumer Prices Index (2015=100) and CPI inflation to its 12-month rate.

² For a summary of the history of input-output analysis, see Leontief (2008). For recent applications to inflation, see Baqaee and Rubbio (2022) for a survey.

³ 800g loaf of sliced white bread from [ONS](#).

household consumption would be zero. Then one observation might be that bread inflation is driven purely by domestic bread prices, and therefore more needs to be done on monetary tightening to try to weed out the inflationary pressures being generated at home.

But this does not account for the fact that the costs of making bread, like the price of electricity and wheat flour, have themselves increased significantly. Wages of bakery employees have also risen. If we count all these costs of the bakery, we can then examine the difference between the unit price that the bakery charges and its per unit cost of making the bread. This remainder surplus can be interpreted as the bakery's profit margin, which it retains as pure profit for its owners or investors, or uses to finance its investments.

The consumer price of bread can be decomposed into the costs of sellers and their margins. This comes from a fundamental economic principle that:

Price of a product = Unit Costs of making the product + Residual Profit Margin from selling the product

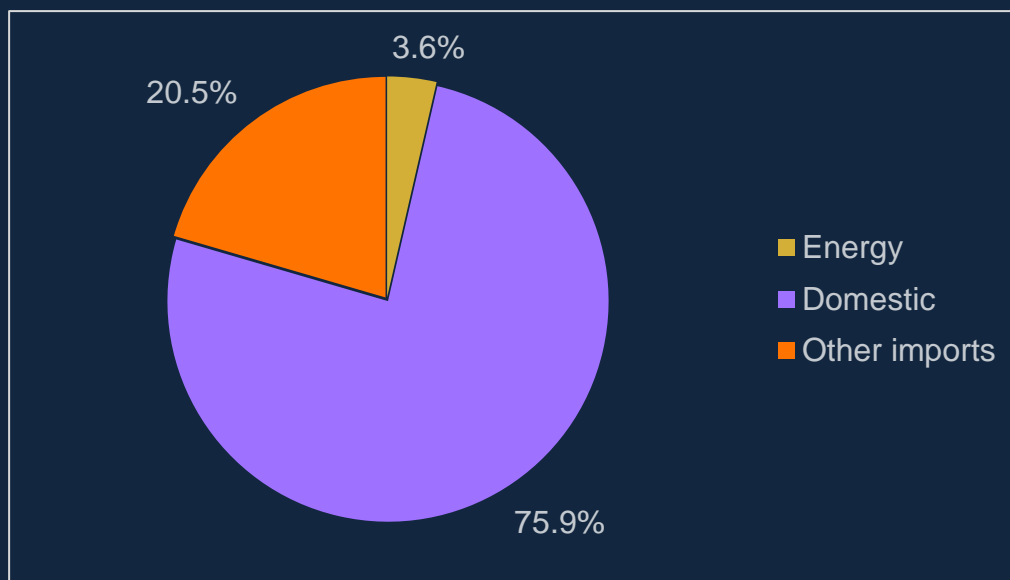
Little economic structure is imposed on the data to implement this price decomposition and therefore robust answers can be provided for the proximate contributions of various factor costs and profits to inflation. In economic parlance, the decomposition comes from an identity and we are simply attributing what is left over, after accounting for all unit costs, to profits.

Ideally, the price of every detailed product in the CPI basket, like sliced white bread, could be decomposed in this way to examine where inflationary pressures are coming from. However, data coverage and lags mean this is not feasible for every detailed product, but it can be done for each of the 105 unique items (or groups of detailed products) in the CPI basket. Therefore, even though a loaf of sliced white bread cannot be analysed individually, manufacture of bakery products collectively can and it includes white sliced bread along with other detailed baked products.

Chart 2 shows the cost components of all items in the CPI basket. Directly, households' energy bills make up 3.6 percent of the CPI basket and imports (other than energy) for final consumption make up 20.5 percent of the value of items in the CPI basket. The remainder 75.9 percent are the share of domestic items (other than energy) that households buy for final consumption.

Chart 2: CPI Decomposition – Final

Energy, Other Imports and Domestic Factors



Notes: Final Energy Bills, Final Consumption of Domestic and Imported Varieties (Other than Energy) as a Share of Total Consumption of CPI Basket Items. The pie chart contains the share of energy, domestic varieties (other than energy) and imported varieties (other than energy) for final consumption in the CPI basket. Energy is the sum of the CPI weights items including coal, petroleum, natural gas and electricity. Domestic and imported shares for items other than energy refer to the final consumption expenditure by households from 2018 product by product direct use tables for each item and aggregated using CPI weights of items.

Source: Authors' calculations.

Domestic purchases by consumers form the bulk of the CPI basket, making it important to understand the extent to which their prices are driven by domestic and external factors. Even though few households directly source white bread from abroad, the ingredients in white bread rely on energy and other imported inputs that increase the weight of external factors in the CPI basket. In the example, bakeries often import palm oil and soya flour, to add as ingredients in bread. The domestic and imported inputs and other factor costs required to supply bread at home are also recorded in the national supply-use tables. They tell us how much domestic sellers spend on energy, various domestic and imported inputs (other than energy), labour and taxes, and the amount of the value of the product that is left over as gross operating surplus (GOS) for the domestic seller.

Gross operating surplus contains the profits that the seller retains, having paid for energy costs, imported inputs, domestic inputs, compensation of employees and taxes. This

residual approach therefore lets us quantify profits, which are otherwise hard to measure directly, and which could be a source of domestically-generated inflation through margin building by firms.

Domestic sellers typically rely on upstream suppliers who provide the ingredients, such as wheat flour, needed to provide bread to households. Domestic supply chains are an important dimension for inflation and monetary policy. Price setting along the chain can cause inflation persistence if suppliers keep building their own margins or do not pass on their cost savings to downstream sellers. Indeed, (goods) producer price inflation reached as high as 20pp in 2022. But this occurred soon after input prices of materials and fuel purchased by domestic suppliers touched almost 25pp.

In the example, domestic mills that supply wheat flour to bakeries saw their own costs rise because of increases in the price of wheat, which Ukraine is a large supplier of on global markets. As a result, mills ended up with higher wheat and electricity costs, which must also be accounted for as external factors indirectly contributing to bread price inflation. Additionally, mills faced wage pressures to retain employees. Having accounted for all these cost changes of the mill, the difference between the unit price of wheat flour and its total unit cost can be inferred as the profit margin of the mill.

The behaviour of domestic suppliers has received some attention, particularly in the light of windfall profits for some domestic companies. What is less appreciated though is the consequence of domestic supply chains for the amplification of terms of trade losses for consumers. This is an application of a well-known principle in international economics that the rise of global value chains amplifies terms of trade losses because of accumulation through the use of imported inputs at each stage of the supply chain.⁴ When the cumulated terms of trade loss is evaluated as a share of domestically produced output, there is further magnification in the rate of the terms of trade deterioration because domestically produced content is a fraction of total output value.

Continuing with the example, inflation in bread prices is driven not just by costs incurred directly by the bakery, but also by the costs of domestic inputs supplied by the mill and the electricity generated by providers who power the bakery and the mill. Proceeding along the domestic supply chain from downstream to upstream suppliers, bread price inflation can be decomposed into costs from total energy use (including of the bakery, the mill that supplies the wheat flour, and the electricity generators that use some of the natural gas in the distribution of electricity that powers the bakery and the mill), the total imported input costs (including the direct imports of palm oil and soya flour by the bakery, the indirect imports of wheat by the mill), the total labour costs (of employees in the bakery, the mill

⁴ See Chapter 4 of World Bank (2017) for a survey.

and at the electricity providers) and the profit margins (of the bakery, the mill and the electricity provider).

To sum up, we can trace the contribution of all upstream costs in bread-making to arrive at the proximate contributions of energy, imported inputs (other than energy), labour and profits along the domestic supply chain of bread-making. Chart 3 accounts for domestic supply chains and shows the cost and profit components in the value of the CPI basket, together with the shares of final import shares of households' energy bills and other imports in consumption. While energy bills and other final imports made up less than a quarter of the value of the CPI basket, this increases to over 40 percent because of the use of energy and other imported inputs by domestic sellers and their domestic suppliers. The supply-use tables therefore reveal that direct consumption weights underestimate the extent to which the CPI basket relies on energy and other imports.⁵

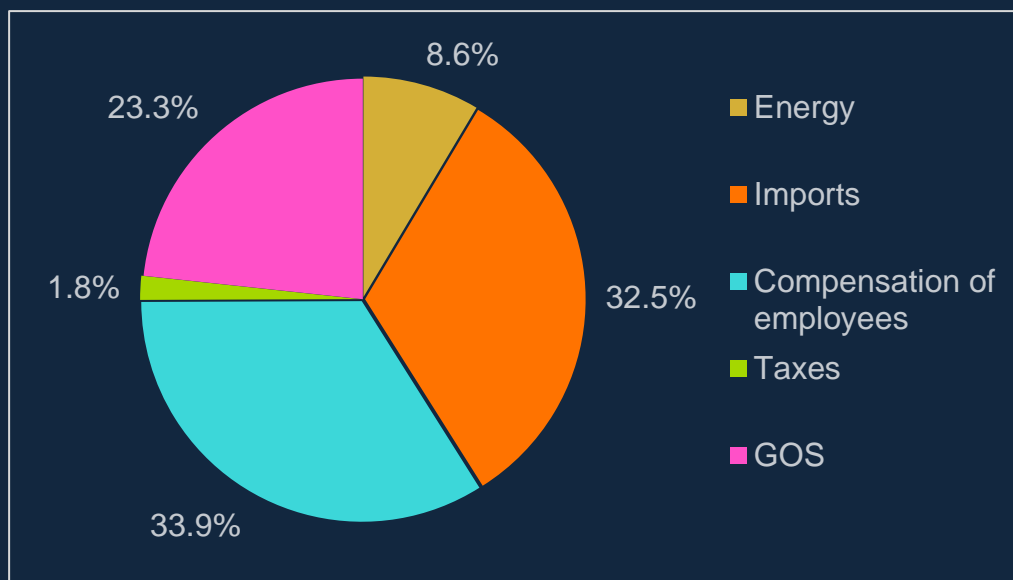
Domestic unit labour costs are measured as average weekly earnings divided by gross value added per worker for the sectors corresponding to each CPI item or input needed in the CPI basket. They make up over a third of the value of the CPI basket through the direct employment of staff in the bakery and the indirect employment of mill workers and staff at electricity providers.⁶ And gross operating surplus, which includes the profits of domestic sellers and suppliers, constitutes another quarter. Taxes are almost 2 percent, but remain small in terms of absolute shares.

⁵ Costa et al. (2022) is closest in terms of examining import use for the whole economy, including services.

⁶ It is standard practice to consider unit labour costs – see Tenreyro (2020), which also contains a cost decomposition.

Chart 3: CPI Decomposition – Final & Total Use

Energy, Other Imports and Domestic Factors



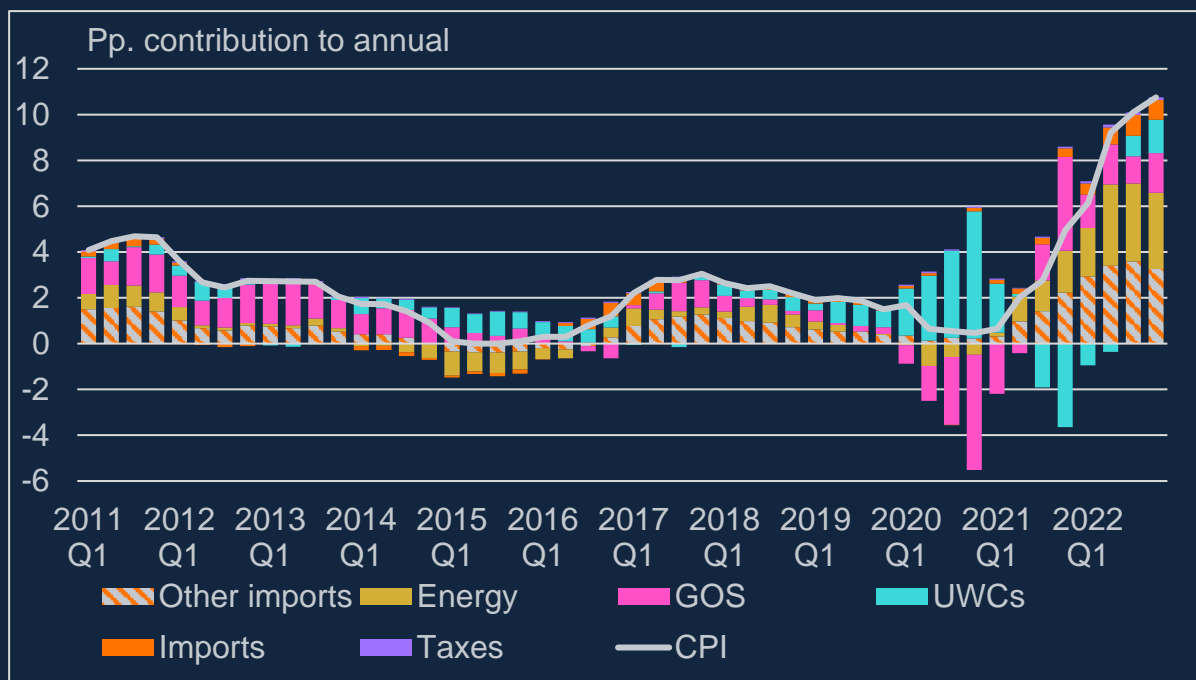
Notes: Final Energy Bills, Final Imports (other than Energy) for Household Consumption, Total Energy Costs, Total Imported Input Costs (other than Energy), Total Labour Costs, Taxes and Domestic Profits as a Share of Value of Output of CPI Basket Items. The pie chart contains the final energy consumption share of households in the CPI basket, the share of final imports of each item for consumption by households, the total energy used, the total use of imported inputs other than energy for making domestic consumer items, compensation of employees, taxes less subsidies on products and production, and domestic gross operating surplus in the value of output of the item at basic prices. The final consumption shares and cost shares are computed from 2018 product by product direct use tables. Direct use tables are iterated to arrive at total costs for each item. The final consumption and cost components of each item are aggregated using CPI weights of items.

Source: Authors' calculations

Having obtained the final consumption and total use shares, Chart 4 contains results for the CPI decomposition after accounting for final energy consumption, final consumption of imports (other than energy), total use contributions of energy, total use of imported inputs (other than energy), total labour costs, taxes and domestic profits generated along the domestic supply chain. Over 3pp of CPI inflation is from energy consumption and use. Import shares for final household consumption, evaluated at consumer prices, make up another 3.3pp of CPI inflation. Another 0.5-1pp is from the use of imported inputs in domestic supply chains. The combined contribution of energy and imports was 7.1pp and it rose over 2022 except at the very end in December when the sharp ascent of energy prices slowed down.

Chart 4: Energy, Other Imports & Domestic Factor Components in CPI Inflation

2011 Q1 to 2022 Q4



Notes: The bar chart contains the contributions of changes in final energy consumption of households, final import consumption share of households, total energy costs, total costs of imported inputs (other than energy), total unit labour costs (UWCs), taxes less subsidies on products and production, and domestic gross operating surplus (GOS) to the 12-month CPI inflation rate. Cost contributions refer to the change in the factor price in each quarter times the share of the factor from 2018 supply-use tables. Imported input prices refer to each 2-digit CPA input. Unit labour costs are nominal wages divided by gross value added per worker for each 2-digit CPA sector. Gross operating surplus is inferred from the difference between the domestic CPI or the producer price for the item and the total unit costs of the item at that stage (energy costs, domestic and imported input costs other than energy, unit labour costs and taxes). Final shares for energy and other imports are from 2018 supply-use tables for each CPI item. Final consumption price of other imports is set as the consumer price of the item. Contributions are calculated for each CPA 2-digit item and aggregated using CPI weights of corresponding items.

Source: Authors' calculations.

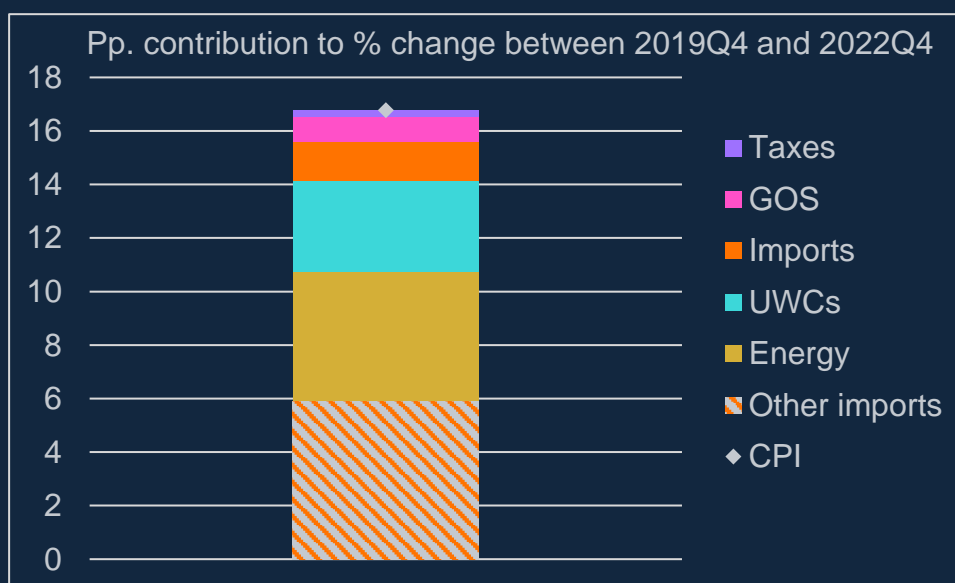
Labour has a large share in the costs of the CPI basket. The rise in unit labour costs make up -1 to 1.5pp of CPI inflation over 2022. There is a small contribution from changes in taxes. And the rest, 1.2 to 1.7pp of inflation, is driven by the profit margins that are retained by domestic sellers and domestic suppliers.

The pandemic and the recovery period have seen countervailing shifts in the contributions of wages and profits to inflation. This was a unique period with lockdowns and the furlough

scheme in place, making it harder to define and measure labour productivity. To overcome many of the difficult measurement issues due to the pandemic, it is instructive to compare the contribution of different sources of inflation in 2022 with their pre-pandemic contributions. Chart 5 shows that domestically generated inflation from wages and profits, made up a little over 4pp out of the 17pp rise in the CPI index between 2019Q4 and 2022Q4.

Chart 5: CPI Decomposition – Percentage Point Contributions

Energy, Other Imports and Domestic Factors



Notes: The bar chart contains the contributions of changes in final energy consumption of households, final import consumption of households, total energy costs, total costs of imported input (other than energy), unit labour costs (UWCs), taxes less subsidies on products and production, and domestic gross operating surplus (GOS) to the rise in the CPI index from 2019 Q4 to 2022 Q4. Cost contributions refer to the change in the factor price in each quarter times the share of the factor from 2018 supply-use tables. Imported input prices refer to each 2-digit CPA input. Unit labour costs are nominal wages divided by gross value added per worker for each 2-digit CPA sector. Gross operating surplus is inferred from the difference between the domestic CPI or the producer price for the item and the total unit costs of the item at that stage (energy costs, domestic and imported input costs other than energy, unit labour costs and taxes). Final shares for energy and other imports are from 2018 supply-use tables for each CPI item. Final consumption price of other imports is set as the consumer price of the item. Contributions are calculated for each CPA 2-digit item and aggregated using CPI weights of corresponding items.

Source: Authors' calculations.

Summing up, external factors – energy and imports – have been the dominant sources of inflation since it rose above the 2 percent target in August 2021. And they continued to be the main sources all through 2022, revealing our precarious dependence on critical inputs and consumption items for which few substitutes are available to us at home. Domestically

generated inflation was 0.5 to 3.2pp in 2022, with a rise from a negative contribution to about 1pp each quarter. The contributions of labour and profits to domestically generated inflation counteracted each other during the pandemic and recovery period. By the end of the period, nominal wages and profit margins had an almost equal share in their contributions to inflation. Wages and profits have evolved differently throughout the inflationary episode. With wages and margins co-moving in countervailing directions in some periods, wage growth is not a sufficient statistic for the aggregate losses from a terms of trade shock or for domestically generated inflation. It reflects the losses or nominal gains for the individual group of economic agents. This suggests that policy rules which focus on wage growth are measuring the evolution of the *division* of the terms of trade losses, not the aggregate losses for the economy.

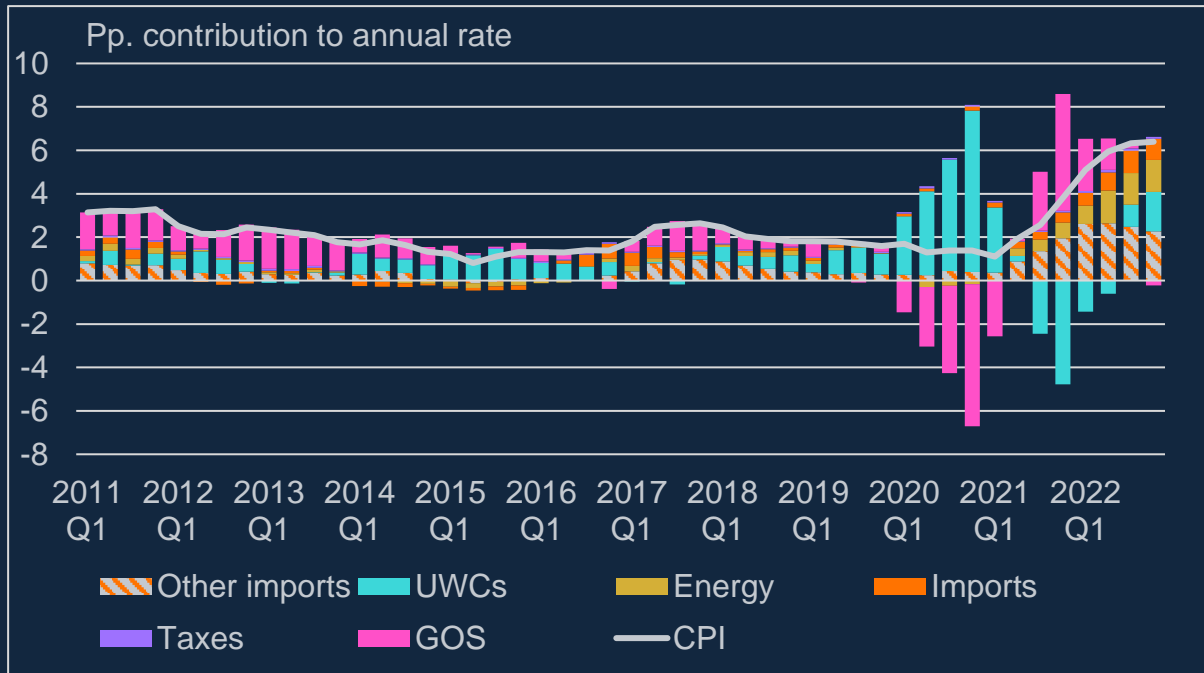
Along with wage growth, a greater emphasis is being placed in monetary policy assessments on examining inflation measures, other than headline inflation, to better gauge the pressures from domestically-generated inflation. Headline inflation confounds external and domestic sources of inflation. For example, CPI does not distinguish between domestic and imported varieties of an item, though three-quarters of the basket contains domestic final consumption and many domestic and imported prices co-move because they are set globally. A larger weight is therefore being placed in policy assessments on measures such as core inflation (which strips out volatile elements like energy and commodities), services inflation (due to its higher share of domestic factors like labour and profits) and core services inflation.

However, because of the pervasive role of energy as an input in the modern economy, these measures have also increased significantly due to the energy price surge. Take catering services as an example, which last year showed sharp price increases. While a large part of catering costs are wages paid to staff, energy and food imports are also important cost components. Examining the measures of core and services inflation reveals that this is in fact the case for these other measures of inflation too. Charts 6a, 6b and 6c show that energy and other imported inputs explain over 60 percent of core inflation, services inflation and core services inflation. The contribution of external factors is not much under the 71 percent for headline consumer price inflation and even higher in fact for core services inflation.

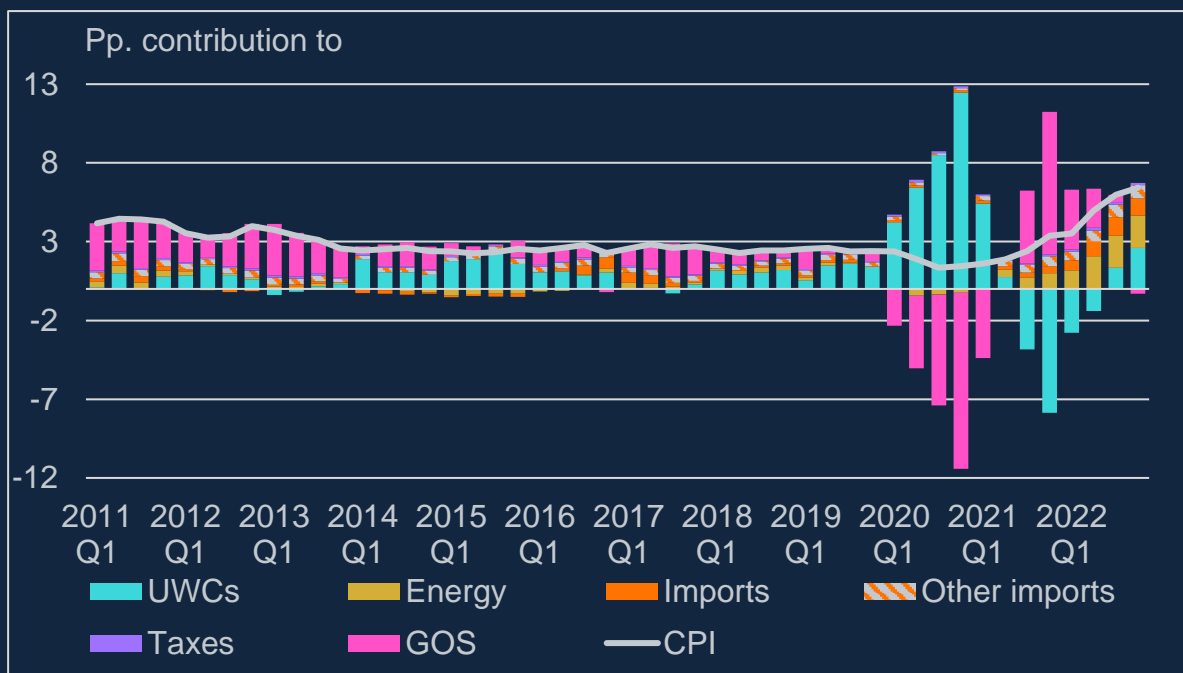
While these three measures of inflation may appear to be purely domestic measures because most consumers do not import them, final consumption is no longer the dominant channel for international trade. A massive rise in fragmentation of production within and across borders means that supply chains are key to how terms of trade shocks transmit themselves in the domestic economy. The three measures of core, services and core services inflation are therefore no longer pure measures of domestically-generated inflation. Their imported content is substantial and increases in the measures in the past year have been largely driven by the deterioration in the terms of trade.

Chart 6: Decomposition of “Pure Domestic” Consumer Price Inflation Measures

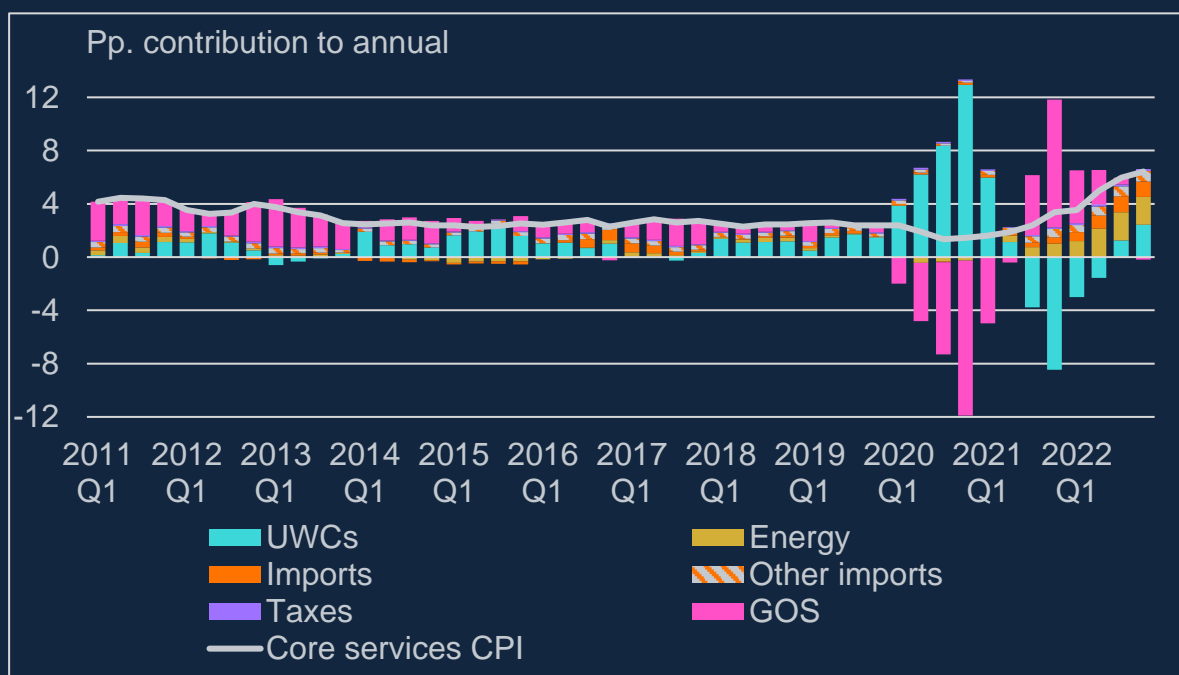
a) Core CPI



b) Services CPI



c) Core Services CPI



Notes: The bar chart contains the contributions of changes in final energy consumption of households, final import consumption of households, total energy costs, total costs of imported input (other than energy), unit labour costs (UWCs), taxes less subsidies on products and production, and domestic gross operating surplus (GOS) to the 12-month CPI inflation rate for core items, services and core services. Cost contributions refer to the change in the factor price in each quarter times the share of the factor from 2018 supply-use tables. Imported input prices refer to each 2-digit CPA input. Unit labour costs are nominal wages divided by gross value added per worker for each 2-digit CPA sector. Gross operating surplus is inferred from the difference between the domestic CPI or the producer price for the item and the total unit costs of the item at that stage (energy costs, domestic and imported input costs other than energy, unit labour costs and taxes). Final shares for energy and other imports are from 2018 supply-use tables for each CPI item. Final consumption price of other imports is set as the consumer price of the item. Contributions are calculated for each CPA 2-digit item and aggregated using CPI weights of corresponding items.

Source: Authors' calculations.

Overall, the decomposition exercises show over 70 percent of CPI inflation in 2022 could be accounted for by increases in energy and import prices. This is what might be expected in the face of a large terms of trade shock from energy and commodity prices. There have naturally been concerns for over a year now that the scale of the rise could result in further inflationary pressure from domestic price and wage negotiations. But as of now, about 30 percent of CPI inflation can be attributed to increases in unit labour costs. Workers and firms have shared about equally in the later part of 2022 because of higher nominal pay settlements and some margin rebuilding.

As with any data exercise, especially one that puts together various data sources for the whole economy, we can examine the upside and downside risks to the findings reported

here. A first key avenue to understand in future work would be how much substitutability of foreign inputs is feasible in the short term and how that might alleviate some of the inflationary pressures. Being able to substitute to lower cost alternatives is one way that consumers have already been trying to make their budgets stretch further. This is in fact captured in the price quotes that underlie the CPI. They reveal moreover that lower cost alternatives started to see sharper growth in this inflationary episode.⁷

But the price statistics do not capture substitutability across CPI items or across factors of production. The exercise holds spending shares across items and inputs fixed because it relies on supply-use tables which are updated with a lag. The main news in spending shares implies that we are likely to be overestimating domestically generated inflation because the weight of energy bills in the consumer basket has risen from 3.6 percent to 4.8 percent in 2023. If the terms of trade shock dissipates as expected, a bigger share of energy bills would mechanically reduce inflation faster than accounted for in the decomposition.

Firms may also be moving towards alternative sources of energy or substituting energy inputs with other factors of production, like labour. To the extent that they have already done so, domestically generated inflation should be higher but is then more likely to reflect business investments in alternatives rather than pure profits. If instead firms have not been able to reduce their reliance on energy and other imported inputs, they would have incurred higher expenses to meet these increased costs and again inflation would be expected to fall faster because the share of external factors would be higher now (than that recorded in the pre-pandemic period). The most recent monetary policy report presents data indicating that, since October last year, the demand for gas at a given temperature has been lower than in previous years. This could suggest demand substitution from energy to other goods. There is some corroboration of this data trend from Bank Agents' intelligence. Some firms are looking to invest in greater energy efficiency in response to marked cost inflation, and in a few cases have substituted away from energy consumption. But the evidence is tentative at this stage.

The decomposition is based on a residual profits approach and therefore cannot provide a clear demarcation between where the impact, rather than the incidence, of inflation is. For example, if energy prices are guaranteed to be below a threshold, then the decomposition would rightly reflect that in lower consumer prices. If the government subsidises energy prices for firms, then it would also show up rightly as reduced costs for them. The government is compensating energy suppliers for providing energy at below-market prices, and the decomposition does not include this transfer payment to energy suppliers. Estimates suggest that £9bn has been spent on the EPG in Q4 last year. That compares with nominal consumer spending of around £390bn in the same quarter.

⁷ Davies (2022).

This means that we are underestimating profitability by a relatively small 2 percent of the value of the CPI basket.

A related point is that because the decomposition infers profits as a residual, it does not distinguish between pure profits and profits that are needed to finance future investments. This is an important question but one that is a difficult area for further research because distinguishing profit margins by motive of firm spending is typically not directly feasible from standard data sources. In terms of its implications for domestically generated inflation, that magnitude would not change irrespective of where the profits are spent. But it might be expected that if the spending was on investments then supply capacity would increase over time.

Nonetheless, it is likely that we are overestimating domestically generated inflation because the CPI does not separate final import prices and these are expected to have risen faster, which would increase the external price contribution of final imported varieties of items other than energy.

There is reason to also think that we might be overestimating labour costs relative to profits. National supply-use tables record compensation of employees (which includes non-wage costs such as employers' national income contributions and pension contributions) and some components of compensation do not rise much in short spans. So weighting average weekly earnings growth by compensation overestimates the rise in unit labour costs.

Finally, better quality and more granular data typically helps improve the mapping across different datasets and provides more accuracy. Fortunately, the key data sources used in the analysis, such as the supply-use tables, price statistics and wages, follow similar classification systems or have precise mappings to each other. They are also done at the level of granularity that does not shrink sample sizes to unreliable levels. That being said, improved price statistics that enable tracing out prices at which items are bought and sold at each stage in the supply chain would be ideal for a decomposition exercise. We hope that as the ability to link up various administrative data sources and national statistics opens up, there can be progress on this but it remains a nascent topic of research and policy.

Overall, the magnitude of domestically generated inflation is if anything likely to be smaller than we estimate for the reasons discussed above, and the division between external factors and profits is relatively nuanced as a result. The main robust finding is that sharp increases in costs from the terms of trade shock have been the dominant source of headline inflation, even towards the end of 2022. Pass-through of domestic factor costs, including wages and margins, into inflation has been subdued relative to the scale of the

terms of trade shock. Will these trends from last year continue or should we expect them to reverse?

The Future Evolution of Inflation

Inflation is expected to fall sharply over 2023. Based on a mechanical calculation, we can be sure that this will happen if we do not see further cost increases of magnitudes similar to those that resulted from the war in Ukraine. For energy costs, this is hard to predict, but the recent experience over the winter gives some hope for the coming months and with some uncertainty, possibly over the next winter.

What then could prevent inflation from falling to target over the medium term? Many point to the tight labour market and firms' desire to rebuild margins. Inflation has been well above target for over a year now, but our decomposition shows that wages and margins have played a relatively smaller role than the broad-based terms of trade deterioration. Nonetheless, the longer this high inflation persists, the more likely it could become embedded due to domestically generated pay and margin pressures.

Private sector wage growth is high in the light of recent history. It has lagged the squeeze on household budgets despite a tight labour market that is possibly suffering from greater skills mismatch after the lockdown and the adjustment to a quick bounce back. However, the labour market responds relatively slowly to changes in monetary policy, typically lagging downturns in activity – for example, as firms hoard labour⁸. Furthermore, key labour market data for wages and unemployment are published with a lag. Therefore, the signal for monetary policy from these lagging indicators is hard to assess. More timely indicators – such as the Rec survey – and the Bank's Agency intelligence suggest that moving forwards, a flattening off in wage growth and, in some cases, dampening will occur in the near term. Accordingly, medium-term inflation expectations for households, firms and financial market participants have continued to gradually decline. These signals about the future path of wage growth suggest there will not be persistent inflationary pressure from real wage resistance.

With the labour market starting to turn and the cost of living crisis taking hold on disposable incomes, Agency intelligence also confirms that firms are finding it difficult to pass through fully existing cost rises to consumer prices. This is also apparent from national statistics on firm's pricing in the past. For example, when goods input PPIs fell back on the month in December, their output PPIs also moved in the same direction. Therefore, it appears that firms are sensitive to decreasing as well as increasing input prices.

⁸ Bank of England (2023).

A weak demand outlook in the future is expected to reinforce this. Tighter credit conditions and the cost of living crisis have already led to weak GDP growth and a recent slowdown in the housing market. The value of additional accumulated savings during the pandemic has also been largely depleted. Consumption remains much below pre-pandemic levels and it is hard to see where substantial renewed demand pressures could come from, particularly as the effects of monetary tightening start to also play a bigger role in dampening economic activity.

The Bank has already raised interest rates by 390 basis points since December 2021. It is well established that monetary policy affects the real economy with long, variable and somewhat unpredictable lags. Estimates generally indicate that, following a lagged effect on output, monetary policy takes well over a year to affect inflation.⁹ Rate hikes take time to get passed through from financial markets to households and firms who determine consumer prices.¹⁰ Going forwards, there is reason to expect therefore that demand will be subdued and not inflame inflation further.

Overall, the evidence does not point to persistent cost-push inflation becoming embedded in wages and margins. Even after a year and a half of above-target inflation, there is little evidence for such cost-push inflation beyond what might be expected following an unprecedented terms of trade shock. Consumption remains weak and many of the tightening effects of monetary policy are yet to fully take hold.

Overtightening poses a more material risk at this point, through potential negative impacts from increased borrowing costs and reduced supply capacity going forwards. It risks unnecessarily denting output at a time when the economy is weak and deepening the pain for households when budgets are already squeezed through energy and housing costs. Recent research indicates the persistent scarring effects of deep contractions associated with monetary policy tightening and energy market disruptions¹¹, indicating the harmful consequences of overtightening. Such an approach would increase the downside risks of missing the inflation target in the medium term. In my view, a prudent strategy would hold policy steady amidst growing signs external price pressures are easing, and be prepared to respond to developments in price evolution. This would avoid overtightening and return the economy sustainably to our 2% inflation target in the medium-term.

⁹ Cloyne and Hürtgen (2016).

¹⁰ There has been some discussion that pass-through may be higher this time, largely based on how mortgage rates responded immediately after the mini-Budget. Indeed, new mortgages have seen almost full pass-through compared to the usual 70 percent over three months from increases in Bank Rate. However, the usual forecasting rules already account for high and quick pass-through for other types of credit rates including mortgages on reversion rates, tracker mortgages and various corporate loans. There has also been slightly lower pass-through than usual in interest-bearing sight deposit rates.

¹¹ Aikman et al (2022).

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