

CORNWALL INSIGHT

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Insight paper

Counting the costs:

**Forecasting the financial
impacts of the Energy
Price Guarantee on the UK
government**

October 2022



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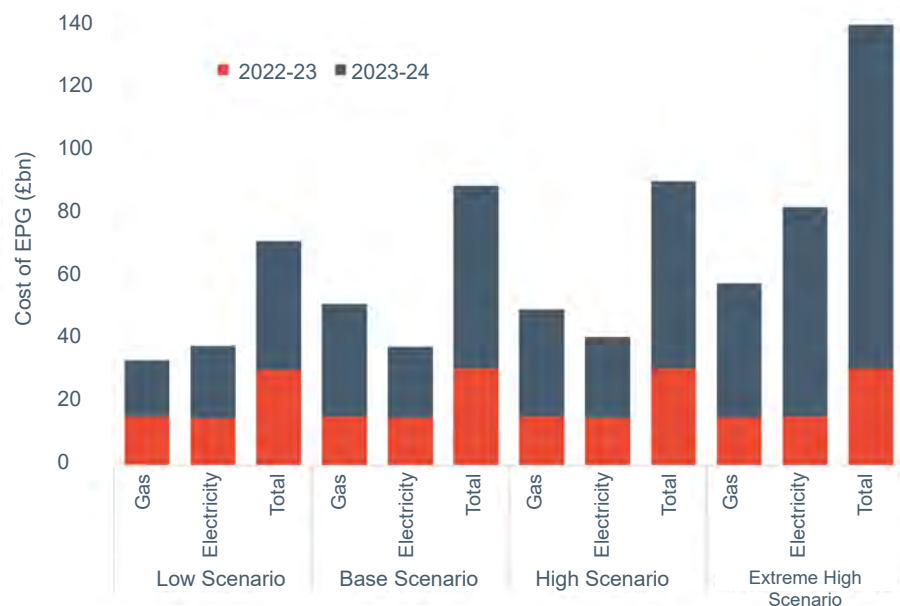
Executive summary

In its first month in office, the Truss Government has introduced policies to address the cost of the energy crisis. On the domestic front, the Energy Price Guarantee (EPG) has been implemented as a support scheme for households due from 1 October 2022 and for the next two winters.

The scheme allows for a freeze in the Default Tariff Cap at a value of £2,500 for a typical British dual fuel household, with domestic consumers on fixed tariffs afforded the same price protections as other domestic consumers under the EPG. This support will be achieved by capping the unit price for wholesale power and removing the policy costs for green levies.

Cornwall Insight has applied modelling and qualitative analysis to identify what the difference may be between the EPG price levels and the potential costs of energy for consumers across the intended two years of the scheme (see Figure 1). We have produced four scenarios, relying on our proprietary wholesale price modelling in conjunction with our assessment of the Default Tariff Cap.

Figure 1: Cost of the EPG under the different Cornwall Insight scenarios



Source: Cornwall Insight

Figure 2: Table of the EPG costs under the different Cornwall Insight scenarios

£bn	2022-23	2023-24	TOTAL
Market Base (using 28-Sept-2022 wholesale energy prices)	30.74	58.05	88.79
Low	30.74	40.87	71.61
High	30.74	59.41	90.15
Extreme High	30.74	109.10	139.84

Source: Cornwall Insight

* Using an estimated 29mn households in the UK and Ofgem's annual Typical Domestic Consumption Value of 12,000kWh gas and 2,900kWh for electricity. The 'extreme high' scenario represents an assessment of costs based upon the highest recorded prices on the wholesale curve observed to date for the EPG period (26 August 2022).

Key results are as follows:

- According to our market Base case scenario, the EPG will amount to approximately £88.8bn (nominal terms) for the two years of its currently planned existence.
- In our High case scenario, this comes in at just over £90.2bn (nominal).
- According to our Low case scenario, the EPG will amount to £71bn (nominal).
- Given the high levels of volatility, we also include an Extreme high scenario that implies a surge in the costs of the EPG to approximately £139bn (nominal), with the costs for the second year of the scheme jumping to almost £110bn.
- These costs are in addition to the Energy Bills Support Scheme which, as at least £400 per household, represents at least a further c. £12bn in expenditure, but is likely to be well above this amount once additional funding for more vulnerable households is factored in.

The potential c. £70bn swing in the cost of the EPG between the Low (£72bn) and Extreme High (£140bn) scenarios serves to highlight the extent of the uncertainty relating to the cost of the scheme, with particular variability in year two of the scheme, assuming suppliers are hedged for this winter.

There are pervasive and significant uncertainties relating to wholesale market volatility, geopolitical instability, macroeconomic policy, further European and international policy and regulatory intervention, the elasticity of demand, weather, and infrastructure resilience across both years of the EPG. But these increase the further out in time one looks, with a particular impact on quantifying the costs necessary to rebuild gas storage in Europe in the summer of 2023, and how prices will evolve in winter 2023-24. Importantly, these are also variables largely outside the governments control.

In addition, looking ahead, application of Cornwall Insight's October 2022 Benchmark Power Curve (BPC) forecasts implies that a return to more "normal" price conditions is not anticipated until well into the second half of the decade. If this view is correct, whether the government is compelled to consider an additional period of support is an important question.

Everything suggests that the need for a viable exit strategy to the EPG is crucial. The outcomes from the Review of Energy Market Arrangements (REMA) consultation which launched on 18 July 2022, and the Net Zero review which launched on 26 September 2022, will be important. But these processes will take time to conclude and can't be expected to make a large difference in the next two years. In the meantime, the EPG should be seen as less the final answer to household effects of high energy prices, and more as a reviewable stopgap that buys time to consider more robust alternatives. Other options should be developed to improve durability, provide alternative policy choices, and put domestic support on a more sustainable footing, regardless of circumstances outside the control of the government.

For example, the government could begin now to develop and consult on options for targeted energy support policies for households as alternatives to the EPG, building on proposals brought forward during the late summer across industry actors and think tanks. At the time, the urgency of the imminent price cap move prompted a

universal response by government due its simplicity, and the need for speed. That pressure has now lifted. Most proposals recognised that the net of more targeted support would still need to be wide given the impacts of the higher market energy costs on many households, but the advantage would be the costs would be less onerous, and the effects on households potentially more progressive.

To maintain structured and orderly transitional approaches, the government could set review points for the EPG to assess whether it should be continued, or such alternatives adopted. This is very similar to the approach they are taking on business energy support and recognises the wide range of possible price environments that could play out. This would also see a template developed for an extension of support beyond two years, if necessary, that would be more affordable and sustainable.

Alongside this the government and industry in partnership should drive simple changes in behavior to reduce energy demand, further reducing wholesale prices and helping both households and the public finances as a result.

Box 1: What is the Default Tariff Cap?

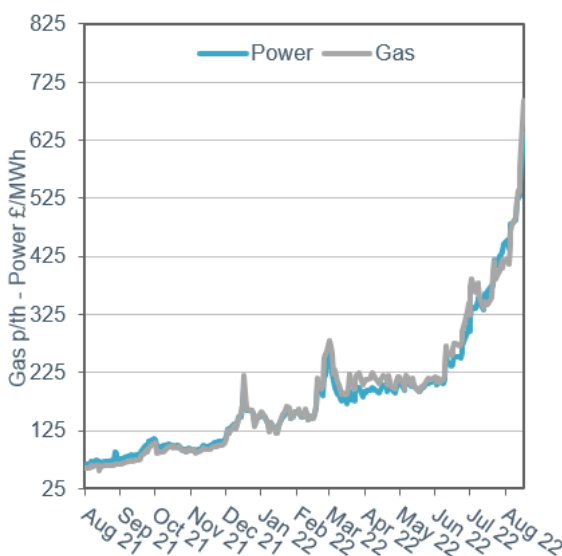
The Default Tariff Cap (price cap) was introduced in January 2019 as a means to (among other elements) improve supplier efficiency by driving down costs and encourage consumer engagement with the supply market through switching. It uses a methodology established and maintained by Ofgem based upon the annual consumption of a typical domestic customer. The cap is not a finite limit on the total cost of energy a customer pays per year on their energy bills. The cap is calculated as a limit on the unit rate (p/kWh) and standing charge (p/day) that energy suppliers can charge for their standard variable (i.e. “default”) tariffs. These unit rates and standing charge are applied to the volumes for a typical domestic customer to yield an indicative annual spend. Each individual customer’s bills will therefore depend upon how much energy they use at these calculated unit rate and standing charge levels.

2. How does the Energy Price Guarantee work?

The pressures caused by sky-rocketing wholesale energy prices have been at the forefront of discussions across the country throughout 2022 (see Figure 3). To alleviate the threats that these pressures pose to businesses and livelihoods, the new Government under Prime Minister Liz Truss has introduced a number of policies and interventions. In his first month in office, the Chancellor of the Exchequer, Kwasi Kwarteng, confirmed a three-step plan including: the Energy Price Guarantee (EPG) support scheme for households, the Energy Bills Relief Scheme for non-domestic consumers, and the Energy Markets Financing Scheme for commercial banks to offer emergency liquidity to energy suppliers.

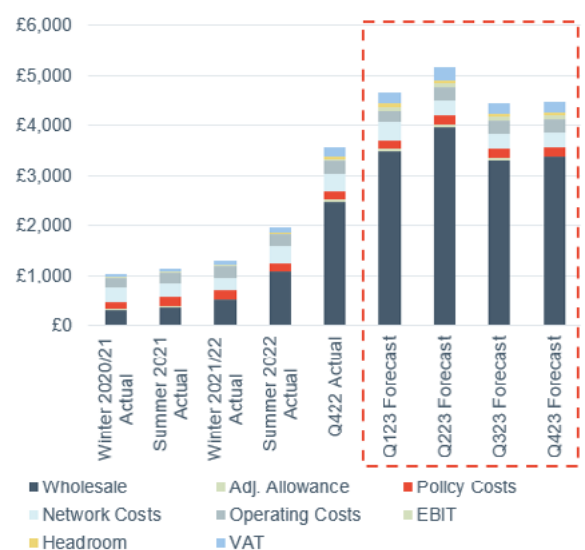
It is the first of these three schemes which we will look to explore in this paper. The EPG allows for a freeze in the Default Tariff Cap at a value of £2,500 for a typical UK household for the next 2 years, from 1 October 2022. The trajectory of the cap prior to the freeze can be seen in Figure 4. For customer on a Standard Variable Tariff their average unit prices will be limited to 34.0p/kWh for electricity and 10.3p/kWh for gas. Unit price reductions of up to 17p/kWh for electricity and 4.2p/kWh for gas will apply to fixed tariff customers that currently have unit rates above the EPG. There will also be a separate discretionary fund to provide equivalent support to households that do not pay directly for mains gas and electricity (e.g. those using heating oil, living in park homes, or connected to heat networks), with the exact details for this fund still to be announced.

Figure 3: UK gas and power prices for August 2021 to August 2022



Source: Cornwall Insight

Figure 4: Default Tariff Cap for the typical UK household (dual fuel, direct debit payment £ per annum)



Source: Cornwall Insight (28 September 2022 closing prices)

This support is achieved by capping the unit price for wholesale power and removing the policy costs for green levies. The differential between the cost to suppliers of buying power on the wholesale market and the capped value they can sell it on will likely be covered by a combination of general taxation and increased government borrowing, with any additional windfall tax firmly ruled out as a way of covering these costs.

The EPG scheme has been welcomed by both domestic and business customers who otherwise questioned how they could ever afford upcoming bills. However, given stated plans to pay for the scheme via taxation and borrowing, questions arise around what impacts this might have to the UK economy over the coming decades.



3. Potential costs of the Energy Price Guarantee

3.1 Three scenarios

To understand the impacts of the EPG, we have produced three scenarios calculating the extra costs to be covered by the UK state between the EPG levels and the forecast Default Tariff Cap levels – the latter of which represents the best assessment of the retail cost of the energy.

In establishing these scenarios, we have used our wholesale price modelling from our Benchmark Power Curve (BPC), alongside our Third Party Charges (TPC, also referred to as non-energy costs) modelling, in conjunction with our assessments of the Default Tariff Cap. As confirmed by the government, the EPG will be set at a rate of **34.00 pence per kWh** (inc. VAT) for electricity and **10.30 pence per kWh** (inc. VAT) for gas.

These figures therefore represent our immediate basis for comparison, noting that additional reform in respect of the standing charge element of the bill is a possibility over the lifetime of the EPG. In each of the modelled cases, we assess the potential cost against the planned two years of operation for the EPG. In all instances, we apply a single case scenario for TPCs which represent our latest views as of the date of publication.

Figure 5: Summary of Cornwall Insight modelling scenarios

Case	Description
Base	<p>Calculated Default Tariff Cap rates for Q422 and Q423 calculated as per Ofgem methodology and Cornwall Insight analysis.</p> <p>Dual fuel direct debit customer with central case Typical Domestic Consumption Value (TDCV), i.e., 12,000kWh per annum for gas and 2,900kWh for electricity, assuming 29mn households.</p> <p>Assessment uses wholesale energy closing prices on InterContinentalExchange (ICE) for NBP natural gas, Baseload electricity and Peakload electricity on 28 September 2022.</p> <p>Single, central TPC scenario across all three cases, noting non-commodity costs are not the most profound driver of costs in this environment.</p>
High	<p>Calculated Default Tariff Cap rates for Q422 and Q423 calculated as per Ofgem methodology and Cornwall Insight analysis.</p> <p>Dual fuel direct debit customer with central case TDCV, i.e., 12,000kWh per annum for gas and 2,900kWh for electricity, assuming 29mn households.</p> <p>Assessment uses Cornwall Insight BPC High Case scenario published October 2022.</p> <p>Single, central TPC scenario across all three cases, noting non-commodity costs are not the most profound driver of costs in this environment.</p>
Low	<p>Calculated Default Tariff Cap rates for Q422 and Q423 calculated as per Ofgem methodology and Cornwall Insight analysis.</p> <p>Dual fuel direct debit customer with central case TDCV, i.e., 12,000kWh per annum for gas and 2,900kWh for electricity, assuming 29mn households.</p> <p>Assessment uses Cornwall Insight BPC Low Case scenario published October 2022.</p> <p>Single, central TPC scenario across all three cases, noting non-commodity costs are not the most profound driver of costs in this environment.</p>

Source: Cornwall Insight

In establishing the basis for comparison presented in Figure 5, we note that the application of an annual cap (rather than the quarterly periods applied under the prevailing Ofgem approach) means that the EPG cost for 2022-23 is largely fixed with the primary cause of variation being the 2023-24 period. This is discussed further below.

3.2 EPG assessment: Base case

The counterfactual for the Base case reflects our view of the Default Tariff Cap rates for electricity and gas calculated using our application of the Ofgem cap methodology and closing wholesale energy prices as presented in Figure 5. The modelled Default Tariff Cap rates for the 12 months commencing 1 October 2022 (Q422) and 1 October 2023 (Q423) are presented in Figure 6 along with their underlying standing charge (£ per day) and unit rate (p/kWh).

The latter can then be compared with the stated rate in the EPG to determine a two-year cost per household, from which an indicative total scheme cost can be calculated on the assumption of 29mn dual fuel households with central case Typical Domestic Consumption Values (TDCVs) for gas and electricity.

Figure 6: Cornwall Insight EPG Assessment: Base case (nominal)

	2022-23 (Q4 2022 Cap)		2023-24 (Q4 2023 Cap)	
	Electricity	Gas	Electricity	Gas
Standing Charge (£)	£168.63	£103.08	£133.69	£111.03
Per Unit Costs (£)	£1,510.72	£1,771.32	£1,758.45	£2,465.40
Standing Charge (£/day)	0.46	0.28	0.37	0.30
Per Unit Costs (p/kWh)	52.09	14.76	60.64	20.55
EPG Unit Rate (p/kWh inc. VAT)	34.00	10.30	34.00	10.30
Difference (p/kWh inc. VAT)	18.09	4.46	26.64	10.25
Cost per household (£)	£524.72	£535.32	£772.45	£1,229.40
Number of households (mn)	29	29	29	29
Cost (£bn)	15.22	15.52	22.40	35.65
Total Annual Cost (£bn)	Year 1	30.74	Year 2	58.05
Cumulative Total Cost (£bn)			Year 1 + Year 2	88.79

Source: Cornwall Insight

Our analysis yields a cost of approximately £88.8bn (nominal terms) for the two years of the EPG and that the largest cost is from gas (£58.1bn) rather than electricity, which is consistent with the nature of wholesale price movements being driven by gas prices.

As stated above, in terms of the relative certainty of the numbers, if we assume that the 2022-23 EPG period is notionally locked in – which would imply that all of the volume associated with this had been hedged – then around £30.7bn of the total figure is confirmed with the balance (£51.1bn) at risk for the 2023-24 EPG period. Indeed, with the observation window for the Q423 Default Tariff Cap not commencing

until 19 May 2023 (and running to 17 August 2023), the potential for variation in the cost for the second year of the EPG is high – as highlighted in the scenario analysis.

3.3 EPG assessment: High case

The counterfactual for the **High case** uses the same underlying approach as above, but with wholesale prices for both gas and electricity as per our October 2022 BPC outputs for both electricity and gas. Application of the High Price BPC Scenario yields slightly higher numbers in the case of the High scenario, with this coming in at just under £90.2bn (nominal), as presented in Figure 7.

Figure 7: Cornwall Insight EPG assessment: High case (nominal)

	2022-23 (Q4 2022 Cap)		2023-24 (Q4 2023 Cap)	
	Electricity	Gas	Electricity	Gas
Standing Charge (£)	£168.63	£103.08	£133.69	£111.03
Per Unit Costs (£)	£1,510.72	£1,771.32	£1,865.27	£2,405.43
Standing Charge (£/day)	0.46	0.28	0.37	0.30
Per Unit Costs (p/kWh)	52.09	14.76	64.32	20.05
EPG Unit Rate (p/kWh inc. VAT)	34.00	10.30	34.00	10.30
Difference (p/kWh inc. VAT)	18.09	4.46	30.32	9.75
Cost per household (£)	£524.72	£535.32	£879.27	£1,169.43
Number of households (mn)	29	29	29	29
Cost (£bn)	15.22	15.52	25.50	33.91
Total Annual Cost (£bn)	Year 1	30.74	Year 2	59.41
Cumulative Total Cost (£bn)			Year 1 + Year 2	90.15

Source: Cornwall Insight

Given the high levels of wholesale market volatility, a further assessment of the upper level of costs can be determined by using the highs seen in the gas and electricity markets on 26 August 2022 and assuming a return to these levels. This “Extreme High” scenario implies a surge in the costs of the EPG to approximately £140bn (nominal), with the costs for the second year of the scheme jumping to around £109bn. This is presented in Figure 8.

Figure 8: Cornwall Insight EPG assessment: Extreme high case (nominal)

	2022-23 (Q4 2022 Cap)		2023-24 (Q4 2023 Cap)	
	Electricity	Gas	Electricity	Gas
Standing Charge (£)	£168.63	£103.08	£133.69	£111.03
Per Unit Costs (£)	£1,496.10	£1,771.32	£2,453.54	£3,527.72
Standing Charge (£/day)	0.46	0.28	0.37	0.30
Per Unit Costs (p/kWh)	51.59	14.76	84.60	29.40
EPG Unit Rate (p/kWh inc. VAT)	34.00	10.30	34.00	10.30
Difference (p/kWh inc. VAT)	17.59	4.46	50.60	19.10
Cost per household (£)	£510.10	£535.32	£1,467.54	£2,291.72
Number of households (mn)	29	29	29	29
Cost (£bn)	14.79	15.52	42.56	66.46
Total Annual Cost (£bn)	Year 1	30.32	Year 2	109.02
Cumulative Total Cost (£bn)			Year 1 + Year 2	139.34

Source: Cornwall Insight

3.4 EPG assessment: Low case

The counterfactual for the Low case retains the same underlying approach as above, but with wholesale prices for both gas and electricity as per our October 2022 BPC outputs for both electricity and gas. Application of the Low Price BPC Scenario yields a cost for the scheme of approximately £71bn (nominal), as presented in Figure 9.

Figure 9: Cornwall Insight EPG Assessment: Low case (nominal)

	2022-23 (Q4 2022 Cap)		2023-24 (Q4 2023 Cap)	
	Electricity	Gas	Electricity	Gas
Standing Charge (£)	£168.63	£103.08	£133.69	£111.03
Per Unit Costs (£)	£1,496.10	£1,771.32	£1,784.00	£1,847.42
Standing Charge (£/day)	0.46	0.28	0.37	0.30
Per Unit Costs (p/kWh)	51.59	14.76	61.52	15.40
EPG Unit Rate (p/kWh inc. VAT)	34.00	10.30	34.00	10.30
Difference (p/kWh inc. VAT)	17.59	4.46	27.52	5.10
Cost per household (£)	£510.10	£535.32	£798.00	£611.42
Number of households (mn)	29	29	29	29
Cost (£bn)	14.79	15.52	23.14	17.73
Total Annual Cost (£bn)	Year 1	30.32	Year 2	40.87
Cumulative Total Cost (£bn)			Year 1 + Year 2	71.19

Source: Cornwall Insight

3.5 The extent of the uncertainty

The potential c. £70bn swing in the cost of the EPG between the Low and Extreme high scenarios only serves to highlight the extent of the uncertainty relating to the cost of the scheme. Crucially, with the primary source of variation in the modelling being down to wholesale gas prices, and with the prevailing concerns which exist in the market ahead of this winter showing no signs of abating, immediate supply concerns risk becoming entrenched with prevailing prices becoming the new norm.

Furthermore, with the wholesale market increases echoing across the traded curve as a whole, should the government seek to extend the current support package beyond its current two-year term, it risks doing so in the face of continued volatility – not to mention the ongoing question marks over its budgeting and potential borrowing.

4. When will normality return?

Looking ahead, another key question to consider is when we might expect to see prices return to “normal” levels. In this case, “normal” may be considered to be the wholesale market levels that we saw in 2021-22 which led to the establishment of a Default Tariff Cap of approximately £2,000 for a typical household for the Summer 2022 period. Application of our BPC numbers implies that a return to such conditions is not anticipated until well into the second half of the decade, which would involve at least an additional two to three years of support.

The need for an exit strategy is therefore crucial, particularly given how expensive this support package will be for the government and the need to ensure it does not extend beyond the two years. It will also be important for the industry to know when it is time to return to business as usual. It would also be beneficial for the government to ensure regular review points – for example quarterly – for the universal scheme to assess whether it should be continued or transitioned, working up and consulting on targeted options in the meantime. This is very similar to the approach the Government is taking on business energy support and recognises the wide range of possible price environments that could play out.

While such a move could introduce a degree of uncertainty, it would also aid in the energy industry in planning for a return to business as usual. In other words, the presence of this structured process of quarterly reviews would reassure market participants that the scheme would not be withdrawn abruptly because of the pressures of financial markets. With the UK needing to compete in volatile international markets for its gas and power, ensuring we are not overconsuming will have potential benefits. One way to manage this volume down would be to encourage energy efficiency and voluntary demand reduction. Other economies are seeking such reductions, with campaigns planned or launched. It may be that such activity would also benefit the UK. Remaining focused on the Review of Energy Market Arrangements (REMA), for which a consultation was launched on **18 July 2022**, is also important to make sure our future energy market is fit for purpose.

Some of that thinking is emerging as part of the EPG. There will be an increased policy focus on maximising the domestic supply of UK oil and gas, both from additional licensing for the North Sea and from lifting the moratorium on shale gas fracking. These changes are alongside an acceleration of efforts to increase UK energy supply from nuclear and other renewables. However, it is unlikely that the increased domestic supply of energy within the next two years will be sufficient on its own to prevent us again falling hostage to global gas prices. In the absence of Russian gas supply to much of Europe this winter, and alongside the reductions in Norwegian hydro and French nuclear power production, there is a real concern that without the concerted efforts on the part of consumers, we could be faced with the potential for energy rationing or blackouts. The EPG has been intended as a balm to help soothe the fears of domestic and business consumers. However, there are still a large number of details that need working out, and speed is of the essence.

Hence, more needs to be done to address the roots of the problem, with greater focus over the coming weeks and months on incentivising improvements in energy efficiency and demand side responses of both domestic and business consumers. There is a risk that the cap on wholesale prices, even at the low relative to peak market levels embodied in the two government schemes, could dampen incentives to use energy efficiently, and that businesses and households may just delay efforts to reduce energy consumption which would not improve our energy security for winter.

The implementation of the EPG scheme could grant us the time to develop and implement more targeted schemes, for example by leaving – at least to a certain extent – some price signals in place, so to reduce demand levels. In other words, those that are able to face market prices should be able to face them to a degree, so that those that are unable to do so could receive a more targeted support. Bespoke and progressive approaches would have the advantage of being less onerous for the public purse and directed to those most in need. This move would be particularly important given the fact that, if long-term costs will be indeed remain higher than historical averages, the affordability of the scheme as it stands becomes a significant issue. Our view is that, given the significant uncertainties related to macroeconomic drivers and geopolitical shifts, it would be wise to have in place contingent alternative plans that could be rapidly deployed when needed in the next two years.

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