National Institute of Economic and Social Research

Macroeconomic Effects of "Breaking the Link"

National Institute of Economic and Social Research

NIESR Scenario Analysis

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This report was commissioned by The Green Britain Foundation. The scenarios reported have been generated using the National Institute Global Econometric Model (NiGEM) and represent an assessment of the economic effects of lower electricity prices on the UK economy based on data provided by The Green Britain Foundation.

Contents

Executive Summary 4
Introduction 5
Methodology 5
National Institute Global Econometric Model (NiGEM) 5
Scenario design 7
Modelling assumptions 8
Results 8
Scenario 1: Energy price spike in 2023 8
Scenario 2: Normal energy use 10
Conclusion 11

Executive Summary

- This report simulates the macroeconomic effects of a shock to electricity prices in line with The Green Britain Foundation's research on the impact of switching to a "pay-as-bid" electricity pricing system instead of the current "pay-as-clear".
- Given the estimated fall in electricity prices, this would lower prices for consumers and input costs for firms, inducing a boost to GDP. This is driven by a demand-side boost in consumption through higher real incomes, and a supply-side boost in investment, driven by lower interest rates and lower input costs.
- Simulations are run for two scenarios, demonstrating what would have happened if the new pricing system had been adopted during the energy price spike in 2023 and what would happen if the policy were to be adopted now:
    - A "spike" scenario, where electricity prices spike and become more important in the CPI basket as in 2023, and
    - A "normal" scenario, where electricity's weight in the CPI basket remains at current and historic average levels.
- Results suggest that, had this policy been adopted in 2023, consumers would be about £273 better off in nominal terms in 2025. Inflation in 2023 would have been 1.5 percentage points lower, and growth would have been 0.5 percentage points higher. The government deficit would be £20 billion lower by 29/30 as a result of higher growth, higher revenues, and lower debt payments.
- In a second scenario, where the policy is implemented starting from now (when electricity prices are relatively normal and the share of electricity in the consumption basket is lower), inflation would still be 0.3 percentage points lower temporarily, and real GDP would be 0.4 per cent higher permanently than in the baseline scenario without the policy change. Three years from now, the consumers would be about £77 better off in terms of their disposable income.

Introduction

The "Breaking the Link" report argues that there is a fundamental dysfunction in the current UK electricity market arrangements, preventing the falling cost of renewable energy being reflected in lower bills for consumers and businesses. Currently, the UK wholesale electricity market operates under a *'marginal cost pricing'* (or *'pay-as-clear'*) system, in which the price of all electricity is determined by the most expensive unit required to meet demand. In practice, this is typically fossil gas. As a result, falling costs of renewable generation do not directly reduce electricity bills, and consumers and industry remain exposed to price volatility in international gas markets.

The report's proposed approach to address this issue is a transition to a *'pay-as-bid'* system, in which electricity generators are paid the price they bid rather than the marginal price. Under such a system, the cost of renewable electricity could have a more direct effect on consumer and business bills, decoupling electricity prices from gas price fluctuations. The report finds that adopting the *'pay-as-bid'* system would have reduced the electricity component of the CPI by 44 per cent in 2023, lowering the headline inflation rate by 1.35 percentage points and generating total savings of £43 billion (£30 billion for businesses and £13 billion for households). The estimated savings would increase to £86.7 billion (£61.3 billion for businesses and £25.4 billion for consumers) by 2030 with the *'pay-as-bid'* system.

This report focuses on the broader macroeconomic implications of lower electricity prices due to the change in the wholesale pricing system. As the electricity costs are a major driver of both consumer inflation and production costs, this price fall can have wider macroeconomic and behavioural effects. We use the National Institute's large-scale global macroeconomic model, NiGEM, to capture these second-round effects, providing a comprehensive view of how lower electricity costs could influence the wider UK economy, including consumption, investment, production costs, consumer price inflation, wages and gross domestic product (GDP).

The rest of this report is organised as follows. In the next section, we provide a brief overview of NiGEM and discuss potential linkages between electricity prices and different macroeconomic variables. We then outline our assumptions based on the "Breaking the Link" report. Finally, we present results from our simulations.

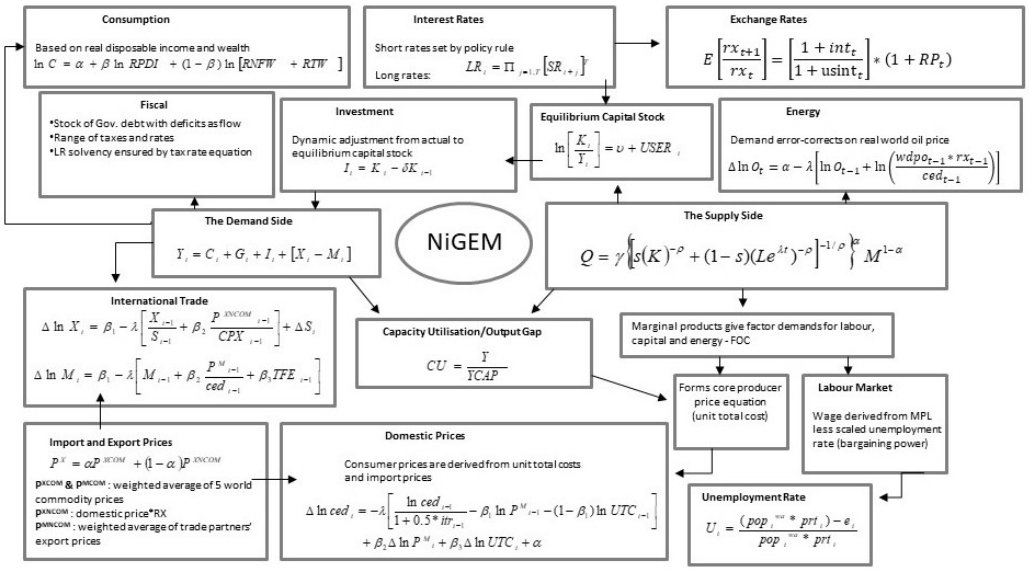
Methodology

National Institute Global Econometric Model (NiGEM)

NiGEM is a structural global macroeconometric model widely used by central banks, international organisations, and policy institutions for forecasting, scenario analysis, and policy evaluation. It provides a globally consistent framework in which major advanced and emerging economies are modelled individually, while smaller economies are represented through regional aggregates. Each country model incorporates both short- and long-run equilibrium relationships grounded in macroeconomic theory, featuring forward-looking behaviour by economic agents and policymakers alongside nominal rigidities that shape the adjustment to shocks.

In each country, short-term output dynamics are determined primarily by demand-side factors—consumption, investment, government spending, labour markets, prices, and international trade—while long-run output depends on supply-side fundamentals such as capital accumulation, labour input, productivity growth, and energy use. The model links economies through trade, competitiveness, and financial markets, allowing for the simulation of second-round and spillover effects of domestic and global shocks. Figure 1 summarises these interconnections across key macroeconomic sectors.

Figure 1: Main Macroeconomic Relationships in NiGEM

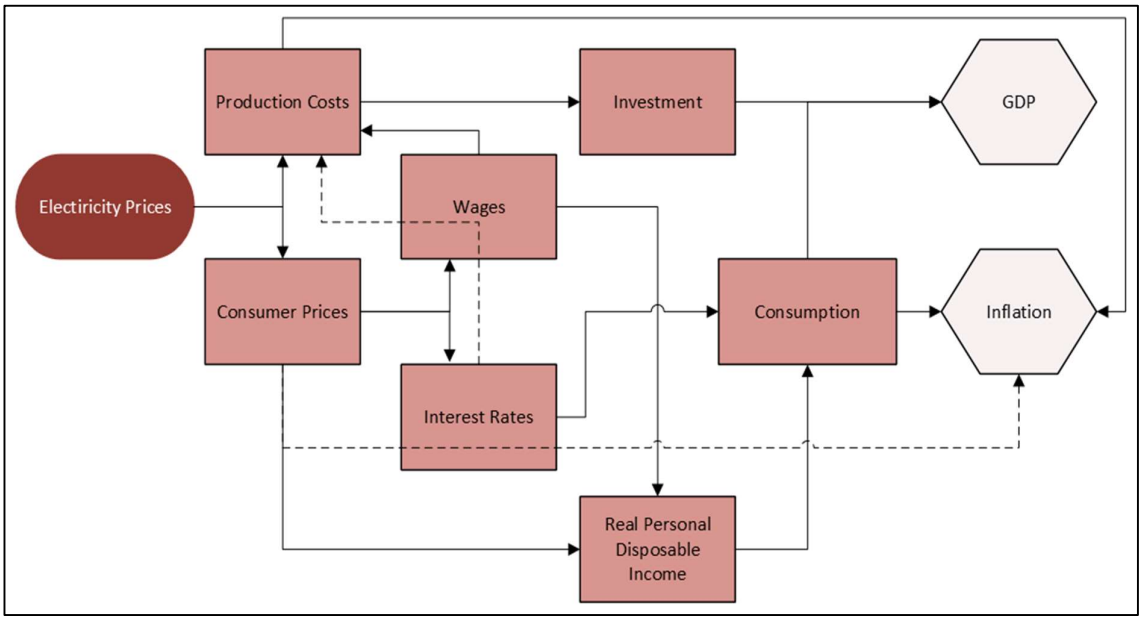


Source: NIESR

The flowchart in Figure 2 shows how the electricity price feeds through the economy in NiGEM. Essentially, its impact mainly runs through supply and demand channels. On the supply side, electricity is a key input in production. Declines in electricity prices reduce production costs, which can encourage investment and raise output. Since electricity is embedded in nearly all goods and services, lower energy costs also put downward pressure on overall prices, contributing to lower inflation.

On the demand side, the effects operate through both direct and indirect mechanisms. Electricity accounts for about 3 percent of the Consumer Price Index (CPI) basket, so lower electricity prices directly reduce CPI inflation. In addition, there are several indirect linkages. First, lower energy costs increase households' real disposable income, supporting consumption, which may raise both inflation and GDP. Second, lower inflation could prompt the Bank of England to ease monetary policy, reducing interest rates. This would stimulate consumption and investment, supporting growth and potentially adding to inflationary pressures. Finally, when consumer prices fall due to lower electricity prices, nominal wage growth may also moderate. This would lower production costs (encouraging investment) but reduce household income (weighing on consumption). Both effects would influence GDP and inflation dynamics.

Figure 2: Transmission of Electricity Prices to the UK Economy



Source: NIESR illustration

Scenario design

We simulate two different scenarios based on initial estimates of the change in the electricity price due to the pricing system change provided by The Green Britain Foundation.

In the first scenario, we explore how inflation and the wider economy would have developed had this policy been adopted in 2023. We base our assumptions on electricity prices falling by 44 per cent. Assuming the weight of electricity in the consumption basket is initially 2.7 per cent, the immediate (static) impact is a 1.2 per cent reduction in the level of consumer prices, which gradually narrows to around 0.9 per cent in subsequent periods. This gradual fall captures two factors: First, the relative importance of electricity increased temporarily in 2023 due to the energy shock following the Russia-Ukraine war but subsequently normalised. Second, the change in the pricing system produces a one-off downward shift in the level of the price index. While this lowers CPI permanently, the rate of change in CPI (inflation) returns to its underlying trend once the one-time effect has passed.

In the second scenario, we explore how inflation and the wider economy could develop in the future should the policy be put in place in 2025. We assume that the impact on prices is now lower than the first scenario with electricity prices drop by 10 per cent, and electricity accounts for two per cent of the CPI basket (that is, the static impact reduces consumer prices by 0.2 per cent).

For firms' input costs, for both scenarios, we shock the price of useful energy (that is, final energy used in the production process), weighted by the share of useful electricity in total useful energy.

We find this to be about 19 per cent based on 2024 data[1], so, firms' energy costs fall by roughly 8.4 per cent.

Modelling assumptions

In addition to the above shocks, we made the following assumptions regarding the fiscal and monetary policy responses.

- The government is assumed not to adjust fiscal policy in response to changes in spending or revenues that may arise from shifts in economic activity following the reduction in electricity prices.
    - By default, NiGEM assumes that the government would adjust tax rates over time to maintain fiscal solvency in response to any changes in revenue or spending commitments. In this scenario, government revenues are expected to rise as GDP increases due to lower electricity prices. If tax rates were to fall automatically in response, households would experience an additional increase in disposable (after-tax) income.
- Monetary policy and financial markets endogenously react to the changes.
    - The central bank reacts to the lower inflation rate by lowering interest rates, and exchange rates shift in line with changes in monetary policy.

Results

Scenario 1: Energy price spike in 2023

This scenario assumes that the policy was adopted in 2023, when electricity prices were particularly high and represented a larger share of the CPI basket. It represents a counterfactual scenario, looking at how the economy could have developed had the policy been in place. Figures 3, 4 and 5 below show the different outcomes for CPI inflation, interest rates and GDP resulting from lower electricity prices in 2023. In each figure, the dashed black lines represent the baseline scenario with the current system, while the solid red lines show the counterfactual scenario in which the policy that lowers electricity prices ("Breaking the Link") is implemented in 2023.

The results indicate that inflation would have been consistently lower throughout 2023 and 2024 under the policy scenario by 1.5 and 0.2 percentage points, respectively. This reflects both the direct reduction in household energy costs and the indirect effects of lower production costs across the economy. While consumer prices remain consistently lower, inflation in the counterfactual gradually converges back toward the baseline by 2025 as the one-off impact of the price fall fades. In the meantime, lower inflation would have meant smaller rises in interest rates than happened, by 60 and 30 basis points in 2023 and 2024, respectively (figure 4).

[1] Electricity use in final energy consumption (TWH) taken from here:
https://assets.publishing.service.gov.uk/media/688a2865647852567539051/DUKES_2025_Chapter_5.pdf
Total final energy consumption (TWH) taken from here:
https://assets.publishing.service.gov.uk/media/687f4cf592957f2ec567c64f/UK_Energy_in_Brief_2024.pdf

Figure 3: Impact of "Breaking the Link" on Inflation – Scenario 1

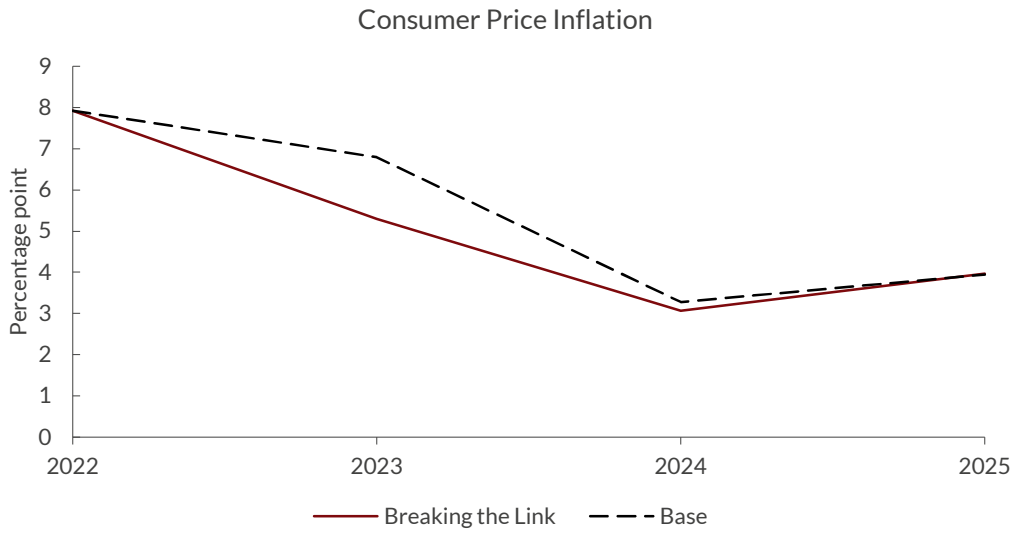
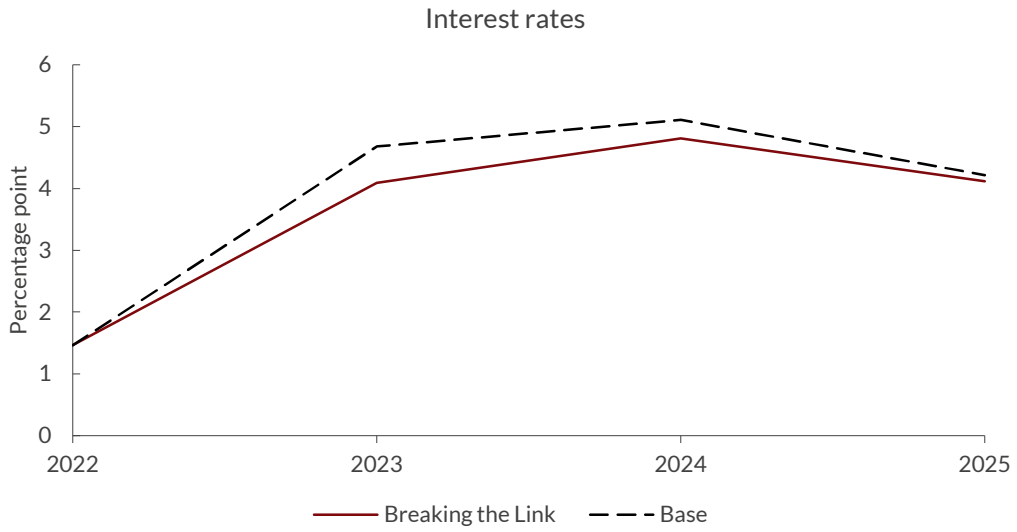


Figure 4: Impact of "Breaking the Link" on Interest Rates – Scenario 1



The combination of higher consumption thanks to lower inflation and higher investment due to lower interest rates and input costs means that UK GDP growth would have been boosted by 0.5 percentage points in 2023 and 2024 (figure 5). By the end of 2025, the level of real GDP would have been 1.1 per cent higher than the baseline scenario of current conditions. In nominal terms, GDP would be £36 billion higher in 2025.

Figure 6 shows what this means for average UK residents. Our scenario results show that each resident would have been better off by around £256 in 2023, £285 in 2024 and £273 in 2025. Additionally, higher GDP growth and reduced debt-servicing costs from lower interest rates would improve the government's fiscal position, resulting in deficits around £20 billion lower by 2029/30.

Figure 5: Impact of "Breaking the Link" on Real GDP – Scenario 1

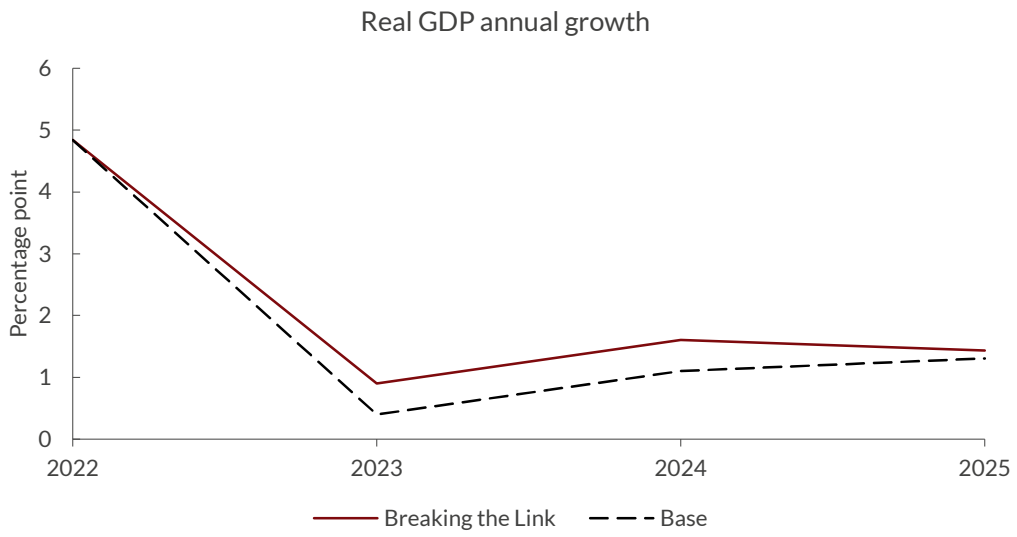
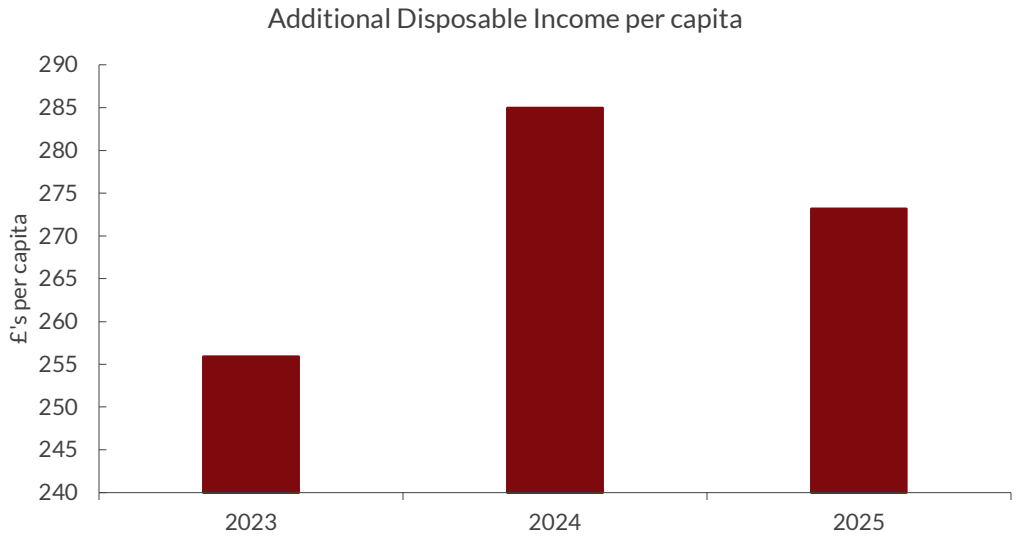


Figure 6: Impact of "Breaking the Link" on Per Capita Income – Scenario 1

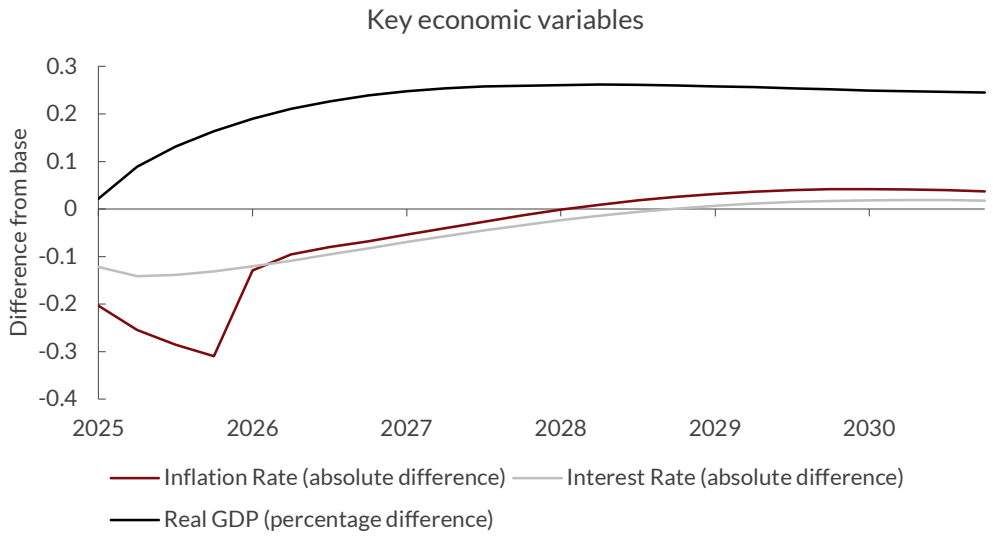


Scenario 2: Normal energy use

The above scenario assumes that the policy started in 2023, when electricity price inflation was at peak levels, therefore, the overall macroeconomic gain from lower energy prices would have likely been higher. In a second scenario, we assume that the policy is put in place in 2025, where we assumed that the electricity prices would drop by 10 per cent, and the electricity accounts for two per cent of the CPI basket.

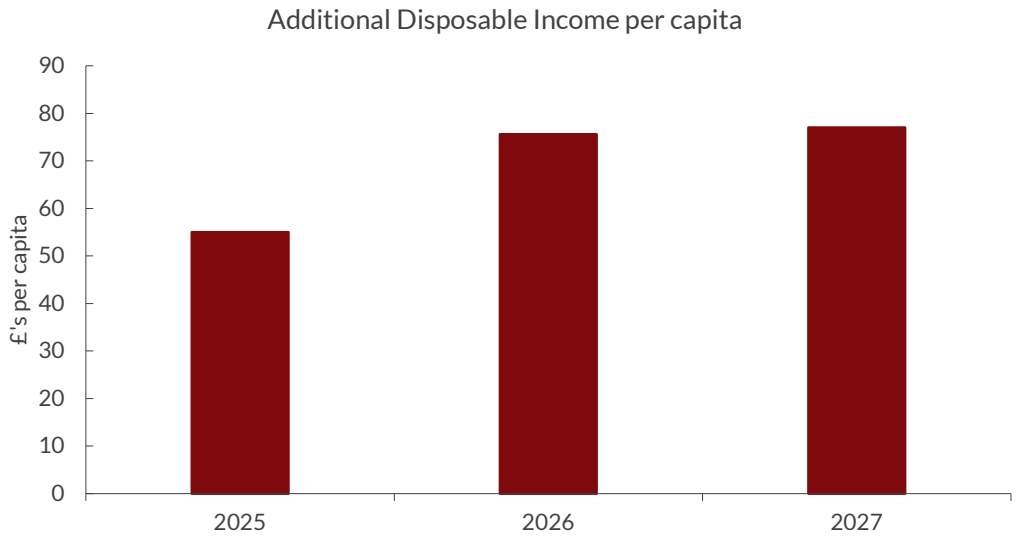
The impacts of this scenario on key macroeconomic variables are summarised in figure 7. In the first year that the policy implemented, inflation and interest rates would be 0.3 and 0.1 percentage points lower, respectively, compared to the baseline scenario with current prices. The deflationary effects continue to hold for four years, allowing the Bank of England to keep interest rates lower for an extended period.

Figure 7: Impact of "Breaking the Link" on Key Macroeconomic Variables – Scenario 2



Thanks to the real income boost as a result of lower inflation and higher investments stimulated by lower interest rates, GDP would be positively affected by lower electricity prices. Five years after the policy change, real GDP would be 0.2 per cent higher than the baseline scenario, which corresponds to about £9 billion in nominal terms. For average residents, this corresponds to £77 higher disposable income as shown in Figure 8.

Figure 8: Impact of "Breaking the Link" on Per Capita Income – Scenario 2



Conclusion

This report explores the potential macroeconomic impact of switching to a "pay-as-bid" pricing system outlined in The Green Britain Foundation's "Breaking the Link" report. Using NIESR's macroeconomic model, NiGEM, we examined two scenarios. The first scenario investigates how

the alternative pricing system could have helped to mitigate the severity of the 2023 energy price shock and deliver economic gains by avoiding price increases for firms and consumers. The second scenario shows how benefits would still arise outside of crisis conditions, as energy prices can still be lowered (although to a lesser degree).

The economic benefits range from permanent increases in real GDP from lower production costs on the supply side, temporarily lower inflation and a corresponding movement in interest rates, to higher RPDI, making consumers feel better off than they otherwise would have been.