

THE ECONOMIC EFFECTS OF THE FIXED ENERGY PRICE POLICY IN MALTA¹

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The post-COVID recovery in economic activity and the Russia-Ukraine conflict, have led to a sudden increase in natural gas and Brent crude oil prices, triggering higher retail energy prices. In response, policymakers, including the Maltese Government, have adopted a range of policies aimed at mitigating the impacts these shocks would have had on the economy. This study uses a New Keynesian model with a detailed energy block to estimate the macroeconomic impact that the fixed energy price policy, adopted by the Maltese Government, have had on the Maltese economy. Results show that the peak effects of the energy price fixing policy were observed in 2023, with the GDP level estimated to be around 1.2% lower in the case of a no-intervention policy compared to the observed levels. The fixed energy price policy has contributed to keep consumer inflation down by around 1.2 percentage points by 2023, with poorer households benefitting significantly more than wealthier counterparts. As expected, the policy has also had unfavourable effects on the Government's fiscal space, with the public debt-to-GDP ratio in 2023 increasing by around 3 percentage points when compared to baseline.

Introduction

Following the drops experienced during the COVID-19 crisis, global fossil fuel prices recovered rapidly as from the second part of 2021. A steep recovery in global economic activity led to a strong resurgence in demand for energy which in the short-term was not met by increases in fossil fuel supply. Cyclical drivers were compounded by concerns about inadequate gas supplies for the winter, partially caused by the Nord-Stream II approval standoff. The start of the Russia-Ukraine conflict in February 2022 caused widespread disruptions in the European energy markets. Given the geographical configuration of European primary energy supplies, in particular that for natural gas, the start of the Russia-Ukraine conflict led to a sudden disruption in the primary energy supplies that immediately reverberated through prices of oil products (both crude and refined) and natural gas leading to considerable increases in retail energy prices.

In this light, policymakers across the EU, including the Maltese Government, have adopted a range of policies aimed at either compensating economic agents for the increase in retail energy prices, or else at cushioning the increase in retail price increases through subsidies to energy distributors or producers. In this respect, the Maltese Government has since the last part of 2021 enacted a fixed energy price policy that has effectively shielded both industry and households from any electricity or fuel price movements. This study aims to estimate the macroeconomic impact that such policy is having on the Maltese economy.

Retail energy prices across the EU

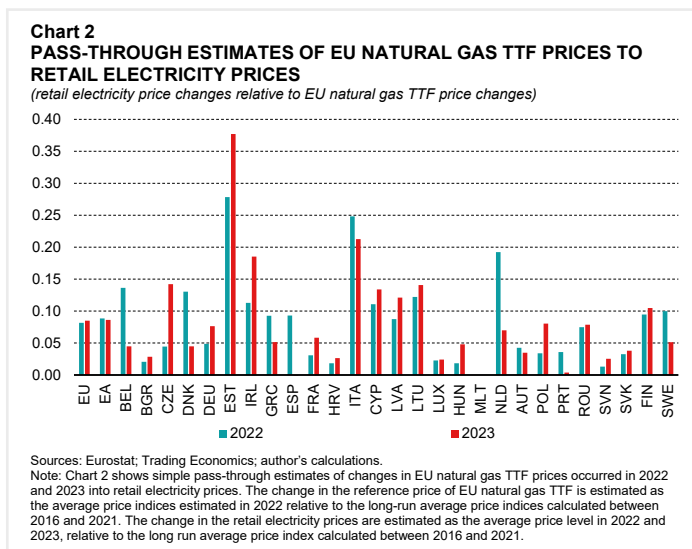
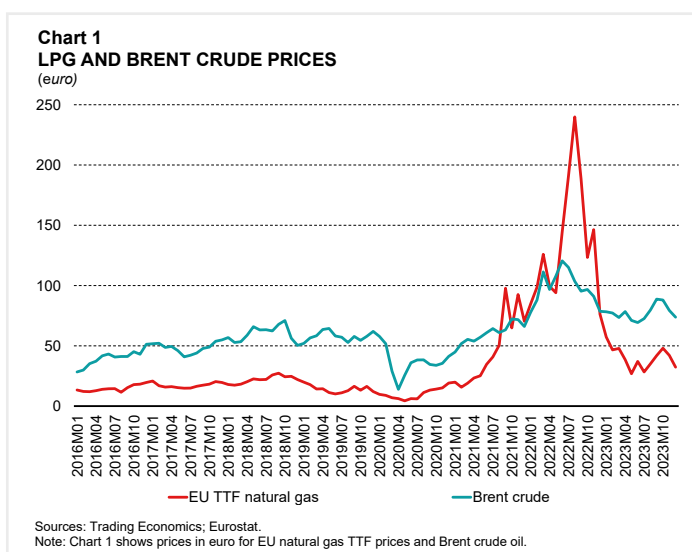
As shown in Chart 1, immediately following the Russian invasion of Ukraine in 2022, EU natural gas Title Transfer Facility (TTF) prices surged to around €240/MWh by September of the same year. Between February and June 2022, Brent crude oil also experienced a surge in prices peaking to around USD 130 per barrel. This together with increased volatility in refining margins has led to increases in international prices of refined gasoline and diesel prices. Following these developments, as well as due to international sanctions imposed on Russian firms, the EU started to diversify away from Russian supplies. By end of 2022, Europe had successfully replaced the reduction in Russian gas and oil imports by ramping up imports of oil from the Middle East and United States while increasing

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LNG imports. These developments have led to a stabilisation of gas and oil prices to levels, that despite being considerably lower than the peaks registered in 2022, were still between 40% (in case of Brent crude oil) and 100% (in case of EU natural gas TTF) higher than their pre-COVID long run levels.

These international developments had very important repercussions on European wholesale and retail energy prices, with most EU countries seeing steep rises in prices of electricity and refined fuels. Indeed, Ari et al. (2022) found that around 90% of electricity price variation at the wholesale level that occurred between 2021 and 2022 can be attributed to natural gas price changes.²

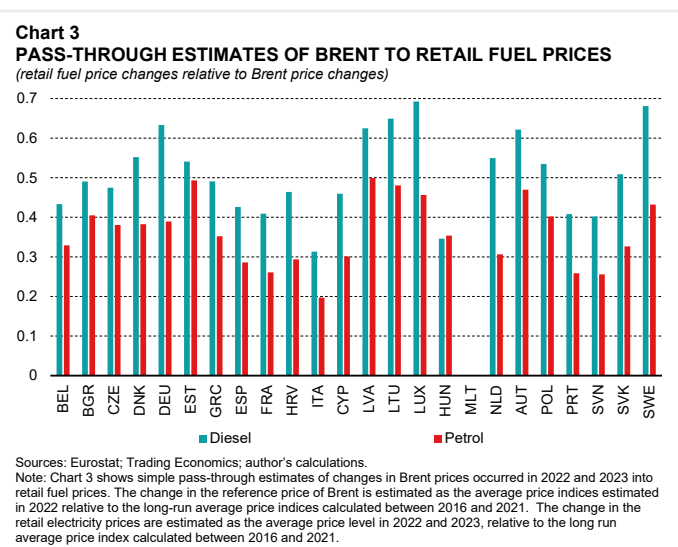
Focusing on dynamics in retail electricity prices, Chart 2 shows country-specific estimates for the 2022 and 2023 pass-through of natural gas to retail electricity prices across the EU.³ While being smaller than estimates prevailing for wholesale prices, passthrough estimates to retail electricity prices are still significant, especially when considering the extent of the shock to EU TTF gas prices. Passthrough estimates into retail prices also exhibit considerable cross-country heterogeneity. As discussed in Ari et al. (2022) and European Commission (2022), retail passthrough is affected by a number of country-specific factors. For instance, the passthrough from wholesale to electricity prices depends on different tax and levies structure and network fees. More importantly for the purpose of this study, the passthrough to retail prices has been affected by the measures adopted by European governments since the last part of 2021, in an effort to either smoothen out or outright absorb part of the increase in retail prices through the reduction on VAT, levies or the introduction of new temporary or semi-permanent subsidy structures. Moreover, country heterogeneity for retail prices is also considerable in 2023, suggesting that the main sources of cross-country differences in passthrough are more of a structural nature rather than temporary issues such as contract renegotiations.



² The tight relationship between natural gas prices and wholesale electricity prices is dictated by the fact that by 2021, 20% of total electricity supply was produced using natural gas. Moreover, the auctioning system in place for the wholesale electricity market in Europe would also have led to an increased correlation between electricity and natural gas prices. The wholesale electricity market in Europe operates a marginal pricing system whereby the highest priced accepted bid offered by any customer at each point in time sets the overall wholesale price. In periods of high demand and high gas prices, bids fulfilled by natural gas plants tend to be the highest and are therefore responsible for a considerable variation in wholesale electricity prices. See Ari et al. (2022) and Emiliozzi et al. (2023).

³ The passthrough for 2022 can be defined as: $\frac{P_{2022}^{ELR}}{P_{2022}^{ELR}} \frac{P_{2022}^{TTF}}{P_{2022}^{TTF}}$, where P_{2022}^{ELR} is the average retail price of electricity in 2022, \bar{P}^{ELR} is the long run average of wholesale prices from 2016 onwards, while P_{2022}^{TTF} and \bar{P}^{TTF} are EU natural gas TTF prices from 2022 and its long run average, respectively.

Similar arguments can be made for the pass-through of Brent prices to retail fuel prices shown in Chart 3. Results show that on average, pass-through to retail fuel prices were higher than those for electricity. Moreover, while still present also for refined fuels, cross-country heterogeneity is less pronounced than in the case of retail electricity prices. This reflects a faster speed of adjustment of fuel prices in general and fewer mitigating measures adopted by governments to control or smoothen dynamics in transport fuels, a result also confirmed in Ari et al. (2022).



Government support measures

One of the main factors affecting the degree of pass-through to retail fuel and electricity prices, is the degree of Government intervention aimed at smoothing out or shielding households and firms from international movement in energy prices. Between 2021 and 2023, Governments of the 27 EU states had either utilised or earmarked a total of around €540 billion, equivalent to around 3.2% of EU-wide GDP (Sgaravatti et al., 2023). These funds were either targeted at compensating households and/or firms with one-off transfers that partially make up for the lost purchasing power due to energy inflation, or else at directly intervening in the utilities markets by imposing semi-permanent price caps. The different strategies adopted by Governments across the EU differ both in terms of the effect they have on retail-passthrough estimates as well as in the fiscal burden they exert. In particular, strategies based on price caps are associated with lowering pass-through and having direct effects on household inflation, but also tend to be more expensive to finance.

“One of the main factors affecting the degree of pass-through to retail fuel and electricity prices, is the degree of Government intervention”

The Maltese Government’s approach to the energy crisis was characterised by a sustained commitment to control retail price increases of electricity and fuels. This was achieved using subsidies directly transferred to electricity and fuel distributors such as Enemalta and Enemed, aimed at covering any increases in marginal costs. These subsidies were further accompanied by reductions in the duties levied on fuel products.⁴ As shown previously, these policy measures ensured that there was no pass-through of commodity to retail energy prices in Malta.

While being extremely successful at insulating the local energy market from the direct impact of international energy price changes, these policies have had a considerable impact on public finances. Between 2021 and 2024, subsidies to public sector energy entities are expected to reach around 4.5% of GDP. Another drawback of a strategy based entirely on price caps, is that it distorts price signals and thus tends to disincentivise investment in increasing energy efficiency and green energy generation as well as lower household consumption of energy. Moreover, while energy markets have undoubtedly stabilised when compared to the first part of 2022, most commodity prices, mainly those related to EU TTF natural gas, are projected to remain higher than the pre-Covid levels. This implies that maintaining the current fixed price policy would imply a strain on Government finances for a prolonged period.

In this light, international institutions have issued recommendations to the Maltese Government to prepare an exit strategy from the current fixed price policy.⁵ Nonetheless, when designing an exit strategy, policymakers should first and foremost measure both the macroeconomic and distributional benefits that the fixed-price strategy has had on the Maltese economy. With this in mind, the macroeconomic and distributional costs of the proposed exit strategies can be better evaluated.

⁴ See Farrugia J. (2023) for a more detailed description of inflation relief measures enacted by the Maltese Government during the COVID-19 pandemic and at the start of the energy crisis.

⁵ See for instance IMF (2024) and EC (2024).

Model

The quantification of the realised as well as the projected economic effects of the fixed price strategy employed by Government is estimated using MEDSEA-NRG (Rapa, 2024), a New Keynesian model with a detailed fiscal and energy block. Energy within the model is produced using a layered multistage production process where energy firms optimally combine different energy types and fuels. In the first layer of energy production, the model distinguishes between electrical and “fuel” based energy, with the latter proxying the fuels used for transport.

Electrical energy within the model is a further combination of brown electricity produced using conventional fuels, and electricity produced using renewable sources. The former is a combination of locally produced electricity and electricity imported from the Malta-Sicily interconnector. Electricity generated locally in conventional power plants is produced using some local capital and LNG, such that its price is heavily dependent on the prices at which Malta’s electricity producer can source LNG. The price of imported electricity is on the other hand simply equal to the price of euro area electricity and is therefore fully exogenous. Green electricity produced with renewable sources is generated using green capital that is financed through local savings. Green electricity within the model captures the energy that is presently produced by households and firms using photovoltaic panels and other renewable sources, which is then either consumed directly or sold to the national grid.

The model incorporates a variety of fiscal instruments that enable the Government to distort households’ and firms’ energy demand preferences. Most importantly for the purpose of this study, the Government can either levy taxes or grant subsidies on all brown and green energy types independently. Moreover, the model allows for the endogenous adjustment of subsidies to brown energy, to mitigate fluctuations in wholesale fuel prices thus mimicking the fixed-pricing strategy recently implemented by the Maltese.

In particular,

$$P_t^{EF} = P_t^{EF,W} + \tau_t^{EF} - S_t^{EF} \quad (1)$$

$$P_t^{EEG} = (P_t^{EEG,W} - S_t^{EEG})(1 + \tau_t^{EEG}) \quad (2)$$

Where P_t^{EF} is the retail price of fuel energy, $P_t^{EF,W}$ is the wholesale price (heavily dependent on international refined fuel prices), τ_t^{EF} is an excise duty levied of the volume of fuels and S_t^{EF} are subsidies used to stabilise the retail price level. Similarly, P_t^{EEG} is the retail price of grid or brown electricity (which depends on the international prices of LPG and spot prices of electricity sourced from the EU grid), $P_t^{EEG,W}$ is its wholesale counterpart, τ_t^{EEG} is an ad-valorem tax and S_t^{EEG} are subsidies used to stabilise retail electricity prices. Both subsidies can be set to adjust endogenously to cancel out any shocks that perturb the wholesale prices of fuel and grid electricity prices.

The model is calibrated using actual data. In particular, both real (in terms of calorific value) and nominal (in terms of expenditure) energy mixes are perfectly matched to actual data. Similarly, all energy-specific taxes/duty and subsidies are matched to actual fiscal estimates.

Measuring the impact of the fixed-pricing strategy

The first step in measuring the impact of direct Government energy price intervention on the Maltese economy is to calibrate the international energy crisis scenario. This calibration is complicated by the unknown effects of purchase and hedging agreements on the pass-through of international energy shocks to the marginal cost structure of local energy producers and distributors. In fact, between 2017 and 2022, ElectroGas Malta, the importer of LNG for Malta’s LNG-powered power plants in Delimara, operated under a fixed-price Supply and Purchase Agreement with a foreign supplier.⁶ Following the expiration of this agreement, Enemalta entered into a new contract with another foreign supplier effectively securing the price of a fixed volume of LNG.⁷ Albeit less structured in nature, transport fuels are usually covered by similar hedging agreements. Given the confidential nature of such agreements, the extent to which shocks in foreign LNG and refined fuel prices transmit into the marginal cost structure of local distributors is largely unknown.

⁶ [ElectroGas Malta Limited Public Statement – 11 September 2020.](#)

⁷ [Malta signs new deals to lock in price of LNG.](#)

In this light, the simulation design of the energy crisis rests on actual data on Government funds that were used to maintain the fixed pricing strategy between 2021 and 2023. The shocks are calibrated by first turning on the fixed price subsidy system within the model which allows S_t^{EF} and S_t^{EEG} to adjust endogenously to fix retail prices. I then impose shocks to all types of brown energy in the model, including imported interconnector electricity, LNG prices, as well as foreign fuel prices, with their magnitude calibrated such that the value of fuel-specific and electricity specific subsidies match exactly the actual subsidies spent by the Government. From 2024 till 2030, I use internal forecast of government spending on the fixed energy price strategy.⁸ These forecasts are in turn based on the assumption that the Government will continue to fully subsidise any changes in foreign commodity and energy prices, in line with its most recent announcements. The simulations are then performed under a deterministic setup, implying that all agents in the economy are aware of the Government's policy. Moreover, this setup implies that the Government's announcements of the price fixing strategy are fully credible and adhered to throughout the length of the simulation. Such a setup is quite convenient as it replicates the actual strategy employed by Government of pre-announcing its commitment to keeping all energy prices fixed and adhering to it. This simulation exercise provides a baseline scenario, consistent with the actual policy adopted by Government between 2021 and the present day.

After calibrating the shocks and running the model under a fixed energy price policy, I rerun the model with energy subsidies turned off. This setup simulates a hypothetical scenario where the Government chooses and commits, back in 2021, not to intervene in fixing local energy prices allowing local electricity and fuel distributors to pass on increases in their marginal costs to consumers. The impact of the Government price fixing strategy is then estimated as the difference between the hypothetical counterfactual (assuming Government did not intervene to fix prices) and the baseline scenario (with full energy subsidies).

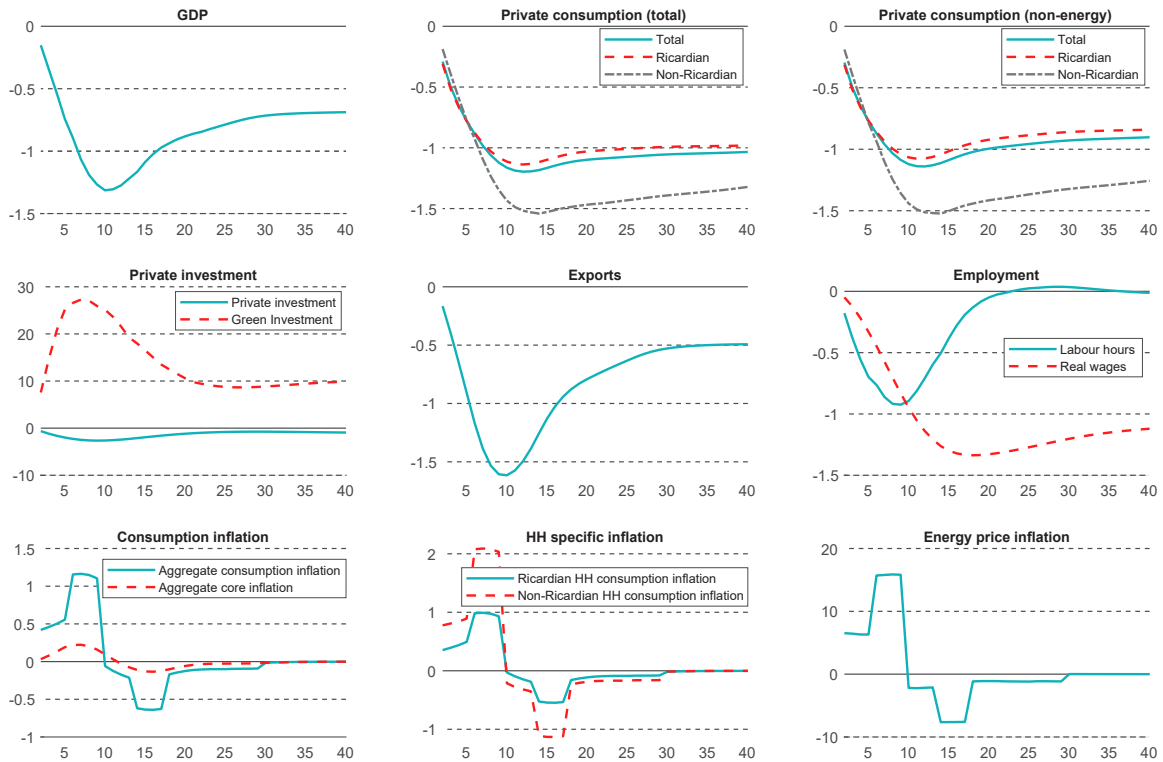
“Had Government failed to intervene in the retail energy market, Malta’s GDP level would have been significantly lower than the level actually observed”

Charts 4 and 5 show the impacts of a hypothetical scenario in which the Government is assumed to commit not to intervene in any way to dampen the effects of the volatile energy markets. Results are expressed relative to the baseline scenario (i.e. the actual scenario with full subsidies) in quarterly frequency starting from 2021 and spanning till 2030. These estimates suggest that had Government failed to intervene in the retail energy market, Malta's GDP level would have been significantly lower than the level actually observed. The peak effects of the energy price fixing policy were observed in 2023 with the GDP level expected to be around 1.2% lower than the observed levels. Despite falls in international energy prices, the current subsidy scheme is expected to positively sustain economic activity also going forward, with GDP expected to be pushed up by around 0.6% by 2030. The drivers behind the results are quite diverse. In the absence of the price fixing strategy, an increase in brown energy prices would have led to an increase in annual overall energy inflation of around 6 percentage points in 2021, peaking to around 16 percentage points in 2022. The increase in overall energy prices would be driven by the imperfect substitutability between brown and green energy sources. The surge in energy prices would have reduced energy demand and subsequently, due to their complementarity, also negatively affected value added. This in turn would have implied a reduction in labour and capital demand by firms leading to a reduction in employment hours and private investment. The drop in employment demand, would have led to downward pressures in both nominal and real wages. This notwithstanding, marginal costs of production would have increased, driven exclusively by the energy component in intermediate production. Indeed, these price pressures would have increased core inflation by around 0.25 percentage point by end-2022. On the external side, the increase in marginal costs would have led to a worsening of external competitiveness, leading to a reduction in real exports. Domestically, negative income and wealth effects would have led to a reduction in Ricardian private energy and non-energy consumption.⁹ The negative income effects experienced by poorer households would have been

⁸ I use internal forecasts provided by the Fiscal Affairs and Reports Office for the period 2024-2026 period. Between 2027 and 2030, I assume that all international commodity and electricity prices are fixed at the levels reached in 2026.

⁹ Within this model, Ricardian households proxy the richer proportion of the income distribution. On the other hand, non-Ricardians proxy poorer households, in particular those households in the lowest income quartile. In this respect and in order to match data, the share of energy consumption in the consumption basket of non-Ricardian households is calibrated to 11% in line with the analysis of Darmanin (2021). The share of energy in the overall consumption basket is then equal to 5.9%, in line with HICP data.

Chart 4
ENERGY COUNTERFACTUAL – MACROECONOMIC RESULTS
 (% Deviations from baseline – full subsidy scenario – levels unless otherwise specified)



Source: Author's estimates.

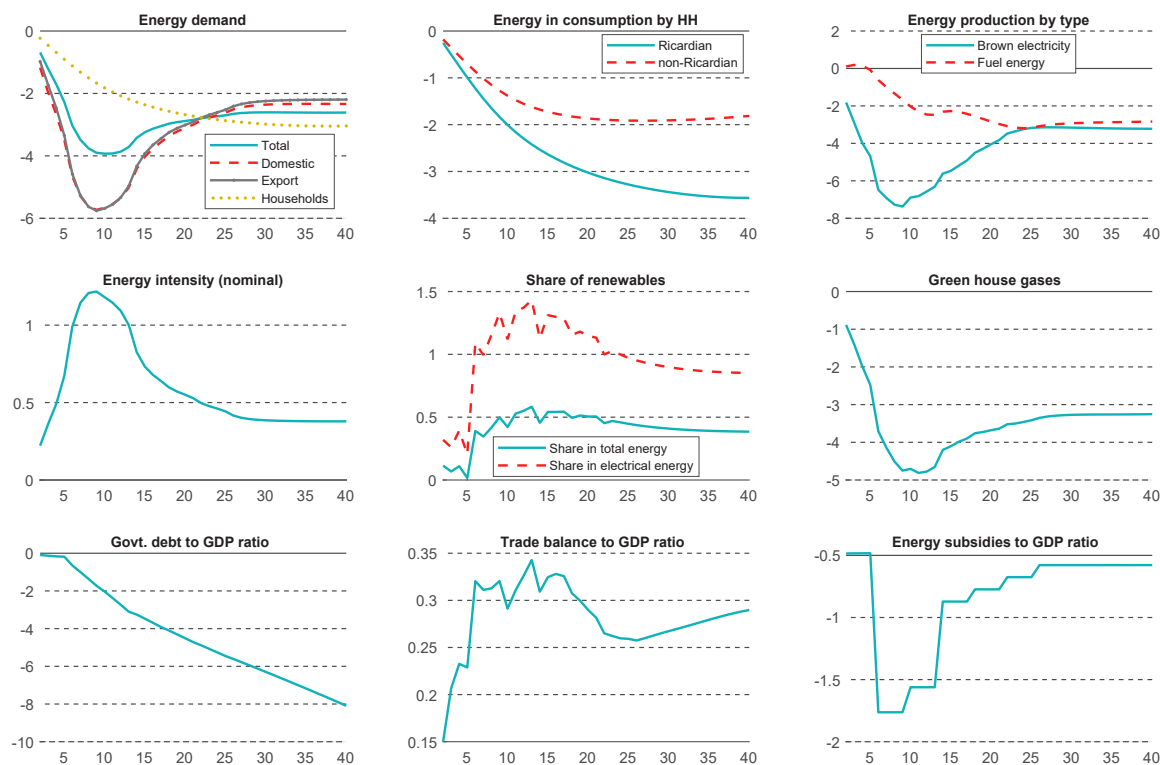
Note: Charts show deviations of macroeconomic variables pertaining to a hypothetical no Government intervention strategy, compared to a strategy based on full subsidisation (baseline scenario). Both scenarios are characterised by the same series of foreign energy price shocks and differ only in the subsidy policy. All results show deviations in % from the levels estimated under the baseline scenario. Results for inflation measures are in terms of percentage point deviations.

even more pronounced. Indeed, non-Ricardians would have cut back their consumption by almost 1.5% by 2030 compared to cut of around 1% of Ricardians.

“Households would have experienced an inflation rate which is 2 percentage points higher when compared to baseline levels, more than double the increase estimated for wealthier households”

Assuming a no-intervention policy by the Government, the model estimates that consumer inflation would have been around 1.2 percentage points higher in 2023 when compared to the baseline scenario. More importantly, the model uncovers considerable household heterogeneity. Consumer inflation faced by Ricardian or wealthier households would have been considerably smaller than that of non-Ricardians. Under the scenario of no energy subsidies, poorer households would have experienced an inflation rate which is 2 percentage points higher when compared to baseline levels, more than double the increase estimated for wealthier households. This effect is driven by two factors. First, poor households tend to spend a larger proportion of their income on energy goods, and secondly, they would have cut back on energy consumption by a smaller proportion when compared to their Ricardian counterparts. The stronger inflation rate faced by poor households would have led to stronger falls in real disposable income of the same households, in turn partially explaining the stronger cuts in non-Ricardian private consumption.

Chart 5
ENERGY COUNTERFACTUAL – ENERGY-SPECIFIC RESULTS
 (% Deviations from baseline – full subsidy scenario – levels unless otherwise specified)



Source: Author's estimates.

Note: Charts show deviations of energy-related and environmental variables pertaining to a hypothetical no Government intervention strategy, compared to a strategy based on full subsidisation (baseline scenario). Both scenarios are characterised by the same series of foreign energy price shocks and differ only in the subsidy policy. All results show deviations in % from the levels estimated under the baseline scenario. Results for variables expressed as ratios (energy intensity, share of renewables, government debt ratio, trade balance and energy subsidies) are in terms of percentage point deviations.

Turning to energy and environmental results, we see that a no-subsidy policy by Government would have resulted in a considerable drop in energy demand, driven primarily by demand of intermediate producers. When compared to their Ricardian counterparts, rule of thumb households would have cut back on their energy consumption by less. The latter result is based on the premise that the energy consumed by the relatively poorer households is necessary to sustain the non-energy type of consumption. In this respect, non-Ricardians are likely to have a lower price elasticity of energy demand in their consumption basket in the short term when compared to their wealthier counterparts. These dynamics, together with the greater energy intensity at steady state of non-Ricardian consumption are expected to contribute to the stronger consumption inflation experienced by poorer households.

The counterfactual analysis also reveals that the fixed energy price policy has had strong effects on environmental outcomes, mainly by affecting the brown-green energy mix in the country. Results show that in the hypothetical scenario of no energy subsidies, the share of green energy in overall energy supply would have been around 0.7 percentage point higher than in the baseline, or around 1.5 percentage points higher when considering the share of green electricity in total electricity supply. In fact, the market induced increases in brown energy prices would have led to increased demand for renewable energy in turn leading to an increase in the demand for green capital. This would have translated into an increase in the rate of return to green capital and a considerable and sustained increase in private investment in capital used in the production of electricity through renewable sources. Estimates indicate that “green” investment would have increased by less than 30% by 2022, stabilising to slightly less than

10% for the rest of the period under consideration. The cut in overall energy demand as well as the increase in the share of green energy in the energy mix would have in turn resulted in a drop in greenhouse gasses emitted of around 5% by 2022.

Turning to the impact on Government finances, the fixed-price policy is estimated to have had significant implications on the fiscal space enjoyed by Government. Indeed, by end 2024, the current energy policy is estimated to have increased the Government debt ratio by around 5 percentage points. While the size of energy shocks, and consequently of government subsidies, is projected to fall considerably over the coming years, the impact of this policy on Government finances is expected to continue accumulating. In fact, based on internal projections for international energy prices, the cumulative impact of this policy on Government debt is expected to reach 8 percentage points by 2030 when compared to a hypothetical no-intervention policy.

Furthermore, results indicate that the price cap enacted by Government could have contributed to a worsening of Malta's trade balance. In fact, in spite of the improvement in export performance under a full subsidy scenario, the trade balance to GDP ratio is expected to have worsened driven by the higher import prices coupled with the lack of adjustments in consumption and energy demand caused by artificially low retail energy prices. This exercise also shows that the worsening in the trade balance is estimated to remain higher than in the hypothetical case of no Government subsidies for the length of the simulation horizon, with some adverse dynamics evident also by the end of the sample period. These results are based on the fact that a foreign energy price shock transmits itself to the local economy as an adverse terms of trade shock. While energy price caps are very effective at shielding the economy from the adverse macroeconomic and distributional effects of such a shock, they do not allow for economic agents to adjust their aggregate and energy demands leading to adverse trade balance and balance of payment effects that would be financed by extra external borrowing.

Conclusion

Following the increase in international energy prices, the Maltese Government has introduced a fixed energy price policy, effectively shielding Maltese households and industry from any increase in retail energy prices. The article assesses the impacts that this policy has had on Malta's economy using a newly developed New Keynesian model with a detailed energy and fiscal block.

Results indicate that the Maltese Government policy was successful at supporting economic activity. Overall economic activity would have been around 1.2% lower when compared to the realised levels by 2023, mainly due to lower exports, private consumption and private investment. The positive effects on economic activity are expected to persist also going forward despite the stabilisation in foreign energy prices. The policy is estimated to have contributed to reducing headline and core inflation by around 1.2 percentage points and 0.2 percentage point, respectively. Due to their higher share of energy in their consumption basket, and the lower elasticity of substitution between energy and non-energy consumption, poorer households are expected to be affected the most by a non-intervention policy by government. Indeed, in the absence of Government intervention, consumer inflation faced by poor households would have been almost twice that experienced by wealthier counterparts.

In view of their distortive nature, the energy price cap also had important effects on the green-brown energy mix in Malta. Brown energy subsidies have led to lower green investment than in the case of no subsidies, implying a lower renewable energy share in the energy mix. Moreover, this strategy also had non-trivial effects on Government finances with energy subsidies estimated to have pushed up the public debt-to-GDP ratio by around 3 percentage points by 2023. Moreover, in spite of preserving Malta's international competitiveness, the energy price cap is estimated to have had negative repercussions on Malta's current account balance driven mainly by higher energy prices and no adjustment in energy or aggregate demand.

All-in-all, the fixed energy price strategy currently enacted by Government has been successful at smoothing out the effects of the energy price spikes by supporting aggregate demand in Malta, while controlling consumer inflation and thus preserving the purchasing power of consumers. Moreover, the policy has had very significant distributional

effects, effectively shielding poorer households from relatively more pronounced falls in disposable income when compared to their wealthier counterparts.

“Such a policy has had and is expected to continue having negative effects on both fiscal space of Government as well as on the external indebtedness of the economy”

Nonetheless, such a policy has had and is expected to continue having negative effects on both fiscal space of Government as well as on the external indebtedness of the economy through a worsening trade balance.

In this light, any hypothetical withdrawal of the Government from its current strategy should take in consideration not only the macroeconomic impact of such decision, but also the distributional effect that higher energy prices are likely to have. Moreover, the suspension of the current policy would also free a significant amount of fiscal space, especially in the medium-term which can be either fully or partially recycled. In this light, a hypothetical suspension of the current energy price cap, should most likely be supplemented by targeted transfers designed to reduce the impact that higher energy costs are likely to have on poor households. Furthermore, such transfers could be supplemented by green incentives designed to accelerate the transition towards a less greenhouse-intensive energy generation.

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