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RESEARCH NOTE

Gas Shocks Hurt, But Not For Long

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Gas prices have more than doubled in Europe and the U.S. in the past year, and the rise in consumers' energy bills risks derailing the demand-driven, post-pandemic recovery. There are three main factors behind the rise in gas prices. First, demand recovered faster than expected due to policy support and cold winters in Asia and Europe. Second, there have been supply disruptions due to falling domestic output in Europe and lower liquefied natural gas (LNG) imports, resulting in insufficient inventory and a tight gas market in Russia. Third, China is redirecting away from fossil fuels, increasing the demand for natural gas. These factors affect all countries dependant on LNG imports, and global gas storage levels are already low; the average European Union natural gas import price increased 48% from last month and 478% from one year ago.

This note estimates that doubling the price of gas could reduce GDP growth by just below 1 percentage point in the U.S. and 1.5 percentage points in the euro area (EA), if everything else holds constant. This is a significant impact. European governments have already decided to ease the impact on consumers; they may do more without a solution to the gas shortage issue. In the U.S., the price impact will likely last longer and be higher as it passes through to broader prices, because elevated savings buffers are making consumers less reactive in terms of demand reduction. However, this also reduces consumers' sensitivity to prices, which would make the impact linger on inflation. The gas shock is not expected to increase the risk of inflation significantly since gas and energy use take a small part of the consumer basket, and governments are implementing new regulations and policy limits to support consumers.

Estimating the Impact on U.S. Consumers and GDP

The direct, adverse effect on disposable income from the doubling of natural gas, electricity, and fuels prices is limited, as utility bills represent only 3.3% of total U.S. household expenditures. We estimate it to be a 0.9% reduction in consumption for the average household, for a constant disposable income level (Table 1).

Since energy feeds into the prices of most other goods and services, the full impact of the shock is higher. The total estimated effect of a doubling of gas prices is a reduction in average household consumption of around 1%. As consumption represents 67% of U.S. GDP, U.S. growth could fall almost a percentage point, all else being equal.

Table 1: Impact of a 100% increase in energy prices on household consumption								
	U.S.				**EA**			
	Direct effect	Indirect effect	Total	**GDP impact**	Direct effect	Indirect effect	Total impact on C.	**GDP impact**
Average	-0.9%	-0.2%	**-1.1%**	**-0.8%**	-1.6%	-0.3%	**-1.9%**	**-1.5%**
Bottom 20%	-1.8%	-0.4%	-2.2%		-2.3%	-0.4%	-2.7%	
Top 20%	-0.4%	-0.09%	-0.5%		-1%	-0.2%	-1.2%	

Notes on the calculation: Higher gas prices reduce consumption depending on the share of consumption devoted to these items. This higher share reduces disposable income left for other items. The total fall in consumption reduces GDP growth.
Source: For the estimation, the marginal propensity to consume out of disposable income is taken from working papers from the ECB and the University of Pennsylvania (Marginal Propensities to Consume in the 2021 Economy — Penn Wharton Budget Model). The share of consumption in GDP is taken from the Consumer Expenditure Survey, U.S. Bureau of Labor Statistics (2021) and Office for National Statistics (2019). Consumption: Haver. As of September 30, 2021.

This impact is disproportionate across income brackets. For households in the bottom 20% of the income distribution, total utilities and fuels represent a large share (5.2%) of expenditures; the shock is estimated to reduce their consumption by 2.2%. As utility bills represent only 2.4% of expenditures for the top 20% of households by income, the total impact is less than a quarter of this, at 0.5%. The hit on the average consumer is of the same order of magnitude as that in the first year of the Great Financial Crisis, when U.S. household consumption fell 1.7%.

Estimating the Impact on Euro Area Consumers and GDP

Energy in Europe, at 3.8%, represents a slightly higher share of average household expenditures than in the U.S. due to import dependency and higher costs. The direct adverse impact of a doubling of gas prices is higher, with a 1.6% hit to consumption. Again, the bottom 20% of the households suffer more than others, as total utilities and fuels take 7.4% of their spending, almost three-times more than for the top 20% households.[1]

We estimate the total adverse impact of a doubling of wholesale gas prices and utility bills on consumption to be 1.9% for the average EA household. This translates into a 1.5 percentage point loss in GDP growth, quite a dramatic impact and almost double that in the U.S. This is because energy represents a bigger share of consumption in the EA, and as consumption is a bigger share of GDP, the marginal propensity to consume out of income is much bigger.[2]

[1] Due to a lack of data by income bracket aggregated for the euro area, we use U.K. data on expenditure by income bracket and assume the EA has the same distribution.

[2] It is important to notice that MPC estimates vary widely across literature, depending on the estimation methods used. We use 0.28 for the U.S. and 0.42 for the EA.

The True Impact is Likely to be Somewhat Smaller than Estimated

The numbers should be considered an upper bound of the estimated slowdown in consumption and GDP resulting from the gas shock.

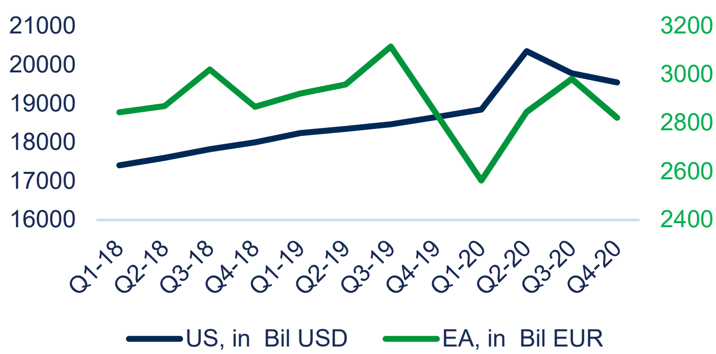
First, households have accumulated large amounts of excess savings during the pandemic, and government aid considerably cushioned household income losses. Involuntary savings owing to the government-imposed restrictions and fear of the virus led to a decline in consumption while disposable income increased (Chart 1), which boosted household savings rates. These savings can be tapped to smooth the impact of higher energy prices on overall consumption. However, this could also make inflation pressures from higher gas prices more persistent.

- We calculate that euro area households could cover the extra costs generated by the gas shock using 8% of the extra bank deposits they have accumulated during the pandemic.
- U.S. households would have to use just 2.5% of aggregate excess savings to cover extra costs.
- While the shock could make a bigger dent in lower-income households' savings, this work suggests that, on aggregate, households have the means to cushion the blow to their income and should therefore at least partially do so.

Second, many companies locked in prices before the spike, so they will not be able to change prices in the next few months. This will likely reduce the hit to consumption. However, some suppliers will suffer from selling gas and electricity to consumers below cost.

Finally, government policy interventions should limit consumer price increases, which is already the case in Europe. The Spanish government will channel about €2.6 billion from corporate taxes to consumers (in the form of tax cuts) in the next six months. It has also announced that a special electricity tax would drop to 0.5% from 5.1% until the end of the year. In France, energy checks will be distributed to more than 6 million low-income households this winter. The government has also blocked any further price increases until April 2022. A similar policy is being implemented in Italy.

Chart 1. Real Disposable Personal Income



Source: Haver. As of September 30, 2021.

Conclusion

The projected impact on GDP (-0.8 and -1.5 percentage points hits in the U.S. and the euro area, respectively) is an unlikely worst-case scenario that would only materialize if governments do not pass sufficient aid measures and if uncertainty motivates consumers to hold on to their savings and reduce current consumption in the wake of the gas shock. For now, gas reserves accumulated at lower prices, government controls, and ample consumer savings will go a long way to mitigate the shock, and, at this stage, does not materially affect our expectations for growth next year.

IMPORTANT INFORMATION

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