

# Effects of bottlenecks on inflation and activity in EMU and Spain

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# Motivation

- **The COVID-19 crisis has been a major disruption in value chains.** Not only during the initial phases of the crisis, when most of the planet was confined and a large part of non-essential production and international trade came to a halt, but also in the most recent months, despite vaccines roll out is supporting economic recovery. In addition, uncertainty about the evolution of the pandemic may also have led to investment postponements and slow building stocks. Since the start of 2021, bottlenecks have been occurring at various points in the global production process.
- **Initially, bottlenecks were expected to be short lived, with very limited effects on activity and final prices.** This was because most of the frictions were attributable to the inability of supply to respond nimbly to the relatively sharp reactivation of demand, particularly from China and then from the United States driven by significant stimulus. However, as the months go by, it is becoming apparent that other factors, such as persistent differences in the degree of vaccination and, therefore, disease attenuation between different regions of the world, are playing a key role that is likely to extend well into 2022.
- **In this presentation, we show the modeling strategy proposed by BBVA Research to identify bottleneck shocks,** differentiate them from other supply-side shocks, and calculate their impacts on the European and Spanish economies. **In particular, we identify bottleneck shocks, imposing sign restrictions on the econometric model responses according to the sequence of events we are observing in the current episode.** Thus, we define the shock as characterized by a fall in the availability of capital and intermediate goods (domestically produced or imported) and an increase in the output prices of these goods, coupled with a deterioration in the perception of firms regarding the limiting capital factors in production.
- **Given the high uncertainty, we present several simulations of the duration and intensity of the shocks to assess the cumulative effects on activity and prices, both for Spain and the EMU.** The figures presented should be read as deviations from the baseline scenario in the absence of these shocks and not as a forecasting exercise. It should be noted that there are other demand and supply shocks (i.e., energy prices hikes) that are impacting on the economy and are outside the scope of this report.

# Takeaways



## 1. The SVAR model and the identification strategy

- We estimate a set of SVAR models, identified with sign restrictions to assess the effects of bottlenecks, both in Spain and in the euro area as a whole.
- The Impulse Response Functions suggest that bottlenecks can have a significant impact on activity. The upward pressure on producer prices appears not to be significantly passed through to final prices, probably due to lower demand.



## 2. Response to shocks experienced through 3Q21

- Our estimates suggest that current shocks are unprecedented for both Spain and especially for the EMU. Bottlenecks already subtracted -0.1pp and -0.2pp of Spanish QoQ GDP growth in 2Q21 and 3Q21, respectively. The impact on the European economy was close to -0.15 in 2Q21 and -0.3pp in 3Q21
- On a yearly basis the Spanish economy could grow 0.3pp more in 2021 in the absence of the bottlenecks registered until 3Q21, while the impact on the European economy is close to 0.45pp. If the shocks do not reverse in 4Q21 they could subtract close to 1,0 pp of 2022 growth in both Europe and Spain.



## 3. The potential cost of additional bottlenecks' shocks in 2022

- We simulate the impact of different time-span sequence of shocks, all of them equivalent to the average of those observed in 2021. If shocks persist in 4Q21, the impact on the 2022 growth for the Spanish economy could reach 1.2pp, while the impact for Europe would be 1.5pp.
- If bottlenecks last another year they could subtract up to 1.5pp from 2022 growth in Spain and up to 2.0pp in Europe.

# 01

## The SVAR model and the identification strategy

# Bottlenecks: The SVAR model and the identification strategy

## IDENTIFICATION SCHEME

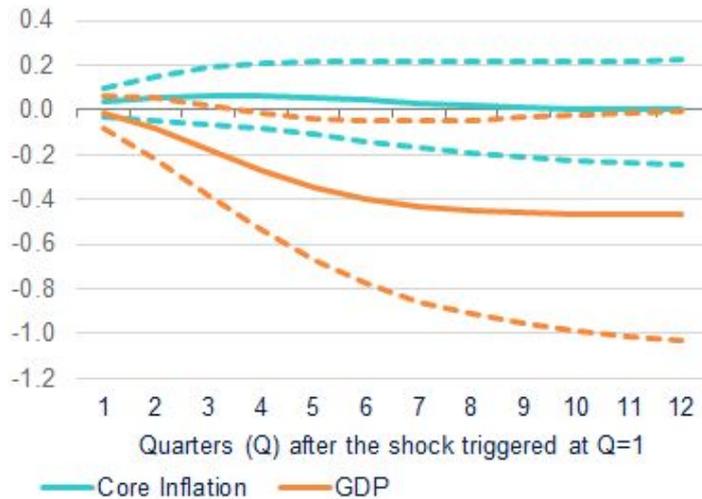
VARIABLE	RESTRICTION
Industrial production of capital or intermediate goods	(-)
Imports of capital or intermediate goods	(-)
Industrial prices of capital or intermediate goods	(+)
Capital limiting factors in manufacturing (EC business and economic surveys)	(+)
Factors limiting labor force in manufacturing (survey)	
GDP	
Core Inflation	

- We estimate a set of SVAR models, identified with sign restrictions to estimate the effects of bottlenecks on activity and prices, both in Spain and in the euro area as a whole.
- Our baseline models type uses the manufactures breakdown by economic destination of the goods.
- The models are agnostic on the response of key variables of interest: aggregate activity (GDP) and the final consumer prices' trend (core inflation). We do not impose any restriction on factors limiting labor force.

# Bottlenecks: The SVAR model and the identification strategy

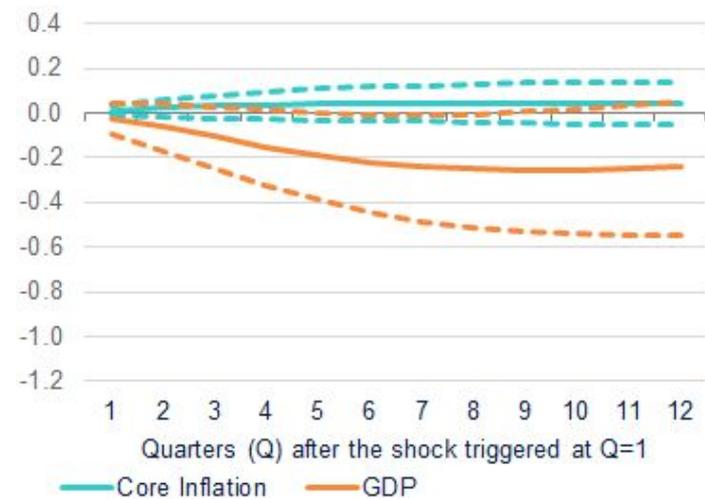
## SPAIN. IMPULSE RESPONSE FUNCTION

(DEVIATION FROM BASELINE LEVEL IN PP)



## EMU. IMPULSE RESPONSE FUNCTION

(DEVIATION FROM BASELINE LEVEL IN PP)



Source: BBVA Research.

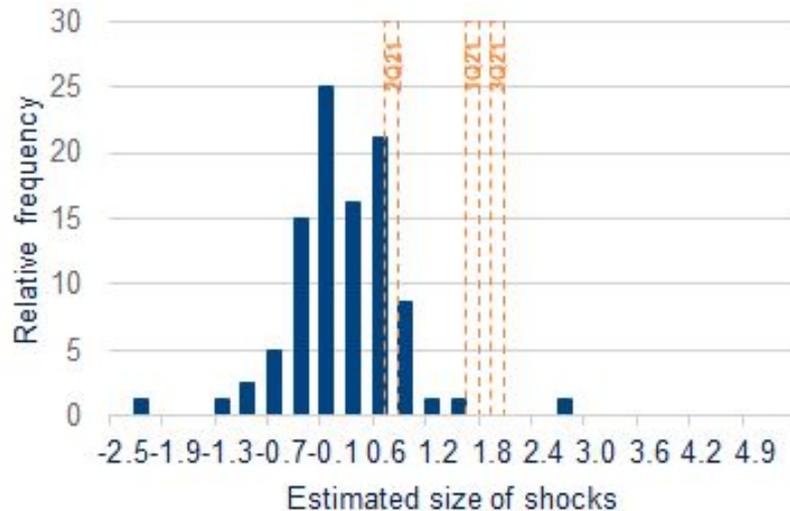
Empirical evidence suggests that bottlenecks can have a significant impact on activity. The upward pressure on producer prices appears not to be significantly passed through to final prices, probably due to lower demand.

# 02

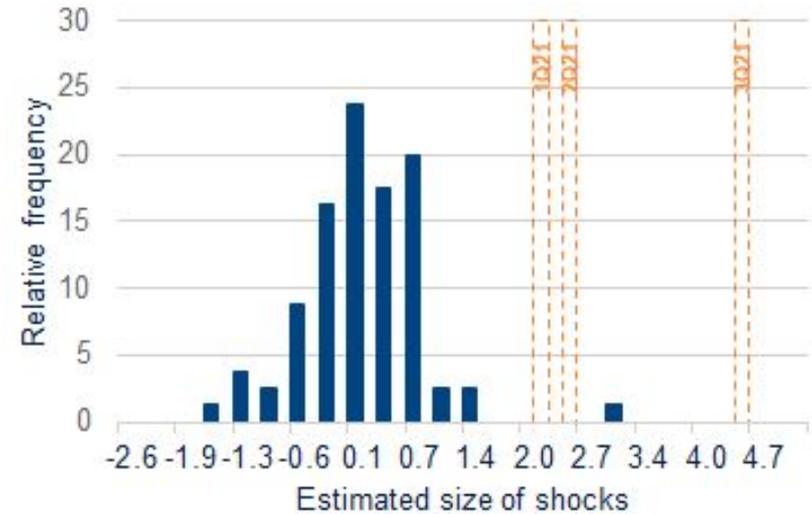
## Response to shocks experienced through 3Q21

# Bottlenecks: an unprecedented shock still in place

**SPAIN. BOTTLENECKS SHOCKS 2001-2020**  
EMPIRICAL DISTRIBUTION AND 2021 SHOCKS



**EMU. BOTTLENECKS SHOCKS 2001-2020**  
EMPIRICAL DISTRIBUTION AND 2021 SHOCKS



Source: BBVA Research

Our estimates suggest that current shocks are unprecedented for both Spain and especially for the EMU.

# Bottlenecks: response to shocks experienced through 3Q21

## SPAIN. IMPACT OF UNDERGONE SHOCKS THROUGH 3Q21 (QOQ PP)



## EMU. IMPACT OF UNDERGONE SHOCKS THROUGH 3Q21 (QOQ PP)



Source: BBVA Research.

Bottlenecks already subtracted -0.1pp and -0.2pp of Spanish QoQ GDP growth in 2Q21 and 3Q21, respectively. The impact on the European economy was close to -0.15 in 2Q21 and -0.3pp in 3Q21.

# Bottlenecks: response to shocks experienced through 3Q21

## IMPACT OF UNDERGONE SHOCKS THROUGH 3Q21

(PP)

GDP			CORE CPI		
SPA	EMU		SPA	EMU	
2021	-0.26	-0.45	2021	0.13	0.10
2022	-0.98	-1.13	2022	0.04	0.16

Source: BBVA Research.

We cannot rule out that margin restraint is significantly limiting the impact on activity. Results point to a limited impact on inflation.

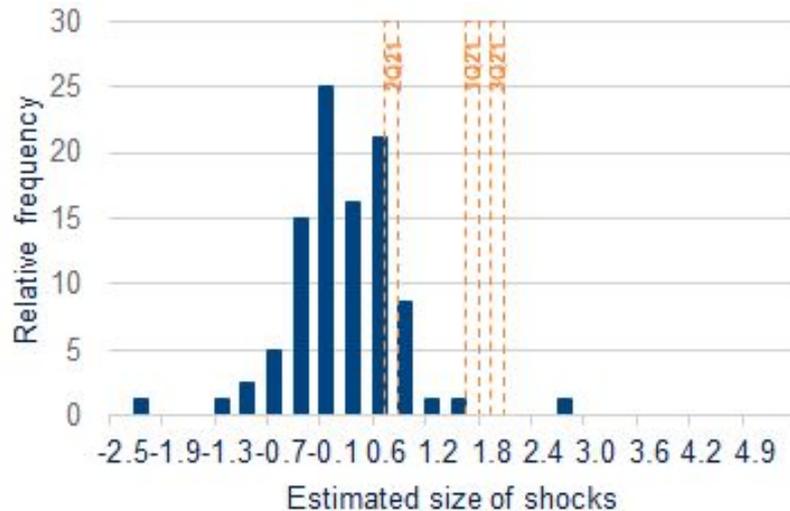
- The Spanish economy could grow 0.3pp more in 2021 in the absence of the bottlenecks registered until 3Q21, while the impact on the European economy is close to 0.45pp.
- If the shocks do not reverse in 4Q21 they could subtract close to 1.0pp of 2022 growth in both Europe and Spain.

# 03

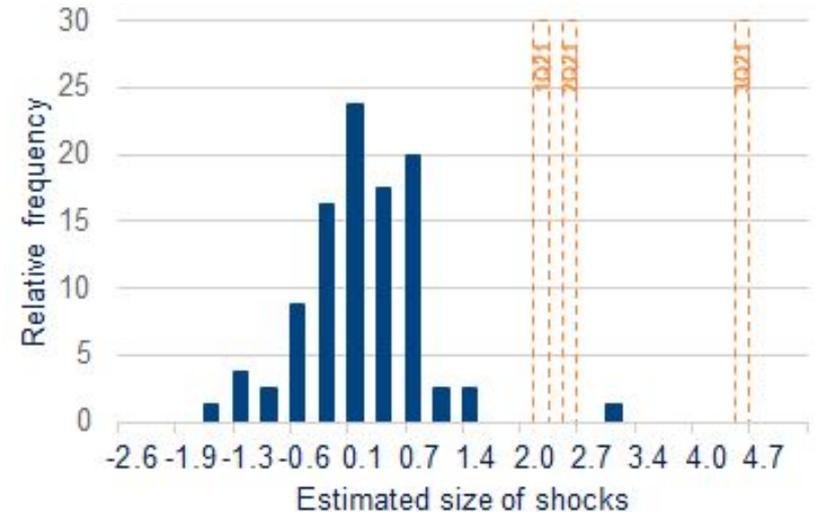
## The potential cost of additional bottlenecks' shocks in 2022

# Bottlenecks: the potential cost of additional shocks in 2022

**SPAIN. BOTTLENECKS SHOCKS 2001-2020  
EMPIRICAL DISTRIBUTION AND 2021 SHOCKS**



**EMU. BOTTLENECKS SHOCKS 2001-2020 EMPIRICAL  
DISTRIBUTION AND 2021 SHOCKS**



Source: BBVA Research

Our estimates suggest that current shocks are unprecedented for both Spain and especially for EMU. Moving forward, we simulate the impact of different time-span sequence of shocks, all of them equivalent to the average of those observed in 2021.

# Bottlenecks: the potential cost of additional shocks in 2022

## IMPACT OF SHOCKS EXTENSION UP TO 4Q21

GDP			CORE CPI		
SPA	EMU		SPA	EMU	
2021	-0.26	-0.47	2021	0.14	0.11
2022	-1.22	-1.49	2022	0.10	0.22

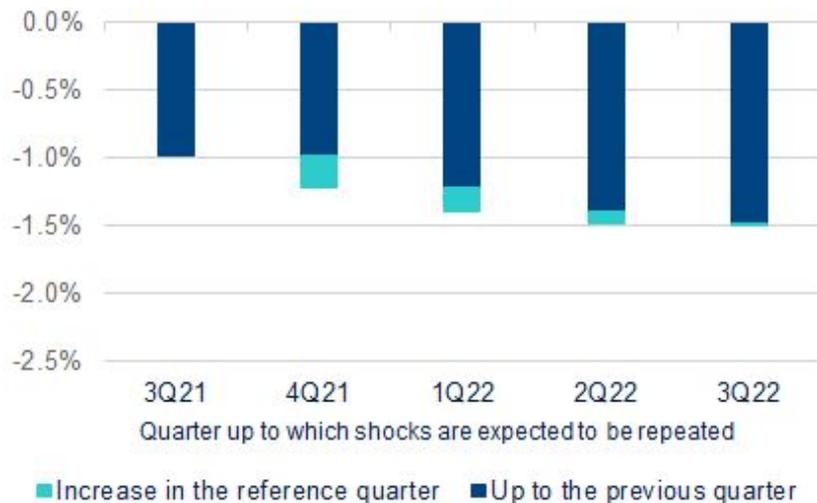
Source: BBVA Research.

We cannot rule out that margin restraint is significantly limiting the impact on activity. Results point to a limited impact on inflation.

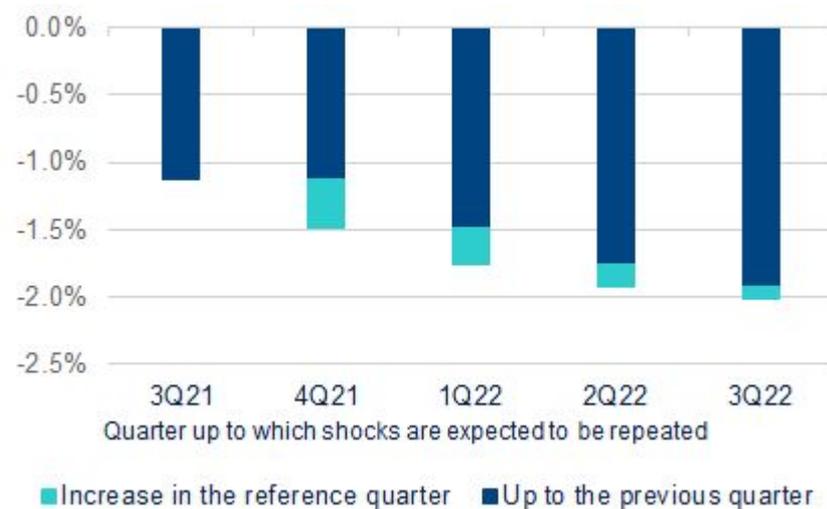
- If shocks of a magnitude similar to the average of those observed between 1Q21 and 3Q21 materialize in the fourth quarter of the year, the impact on the growth of the Spanish economy could reach 1.2pp, while the impact for Europe would be 1.5pp.
- Results still point to a limited impact on inflation.

# Bottlenecks: the potential cost of additional shocks in 2022

## SPAIN: BOTTLENECKS EXTENSIONS ADDITIONAL COST FOR 2022 GDP GROWTH



## EMU: BOTTLENECKS EXTENSIONS ADDITIONAL COST FOR 2022 GDP GROWTH



Source: BBVA Research

If bottlenecks shocks last another year they could subtract up to 1.5pp from 2022 growth in Spain and up to 2.0pp in Europe.

# Takeaways



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