

# POTENTIAL GROWTH OF THE SPANISH ECONOMY AFTER THE PANDEMIC

PILAR CUADRADO  
MARIO IZQUIERDO  
DANILO LEIVA  
ENRIQUE MORAL-BENITO  
JAVIER QUINTANA

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*"Assessment of output gaps and potential output in the context of the COVID-19 pandemic and its aftermath"*

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### 1. Impact of COVID19 on potential output

- Shock nature
- Different mechanisms

### 2. Alternative estimate approaches

- Production function methodology
- Sectoral analysis
- Statistical methodology

- **Non-economic character shock, completely exogenous**
  - Nevertheless, possible long-term impact due to intensity and persistency
- **Effects on both supply and demand**
  - Impact on factors of production and possible structural changes in demand
- **Very different effects between sectors**
  - Concentration in sectors with high social interaction and labor-intensive sectors
- **Key role of economic policies in mitigating the effects of the crisis**

- Analysis of the effect of the pandemic on potential growth through its **determinants**:
  - Total Factor Productivity
  - Labour
  - Capital
- It can be **distinguished**:
  - Short-term effects
  - Long-term effects (*scarring effects*)

# Total Factor Productivity

- Clearly **negative** effects in the **short term** due to lower use of installed capacity
  - Restricted worker mobility and disruption of supply chains
- **Ambiguous long-term** effects
  - Changes within the company:
    - Breakdown of worker-company or customer-supplier matchings
    - Adoption of new technologies: digitalization and e-commerce
  - Inter-firm shifts and business demographics:
    - Lower entry rate of new companies due to poorer economic conditions
    - High number of companies in financial difficulties: risk of an excessive level of liquidations
    - + Exit of less productive firms (empirical evidence in the EBAE)
    - + Estructural change towards sectors with higher contribution to productivity growth

## Labour

- Hysteresis effects:
  - Increase in NAIRU due to **mismatches** between labor demand and supply
  - Workers with low qualifications or close to retirement **leave the labor market**
  - International restrictions on mobility **reduce migratory flows**
  - Long-term negative effects of school closings on **human capital** accumulation

## Capital

- **Reduced incentives** to invest in new capital
- **Early obsolescence** of existing capital due to demand changes
- + Decreased capital depreciation and increased useful life due to **lower utilization**

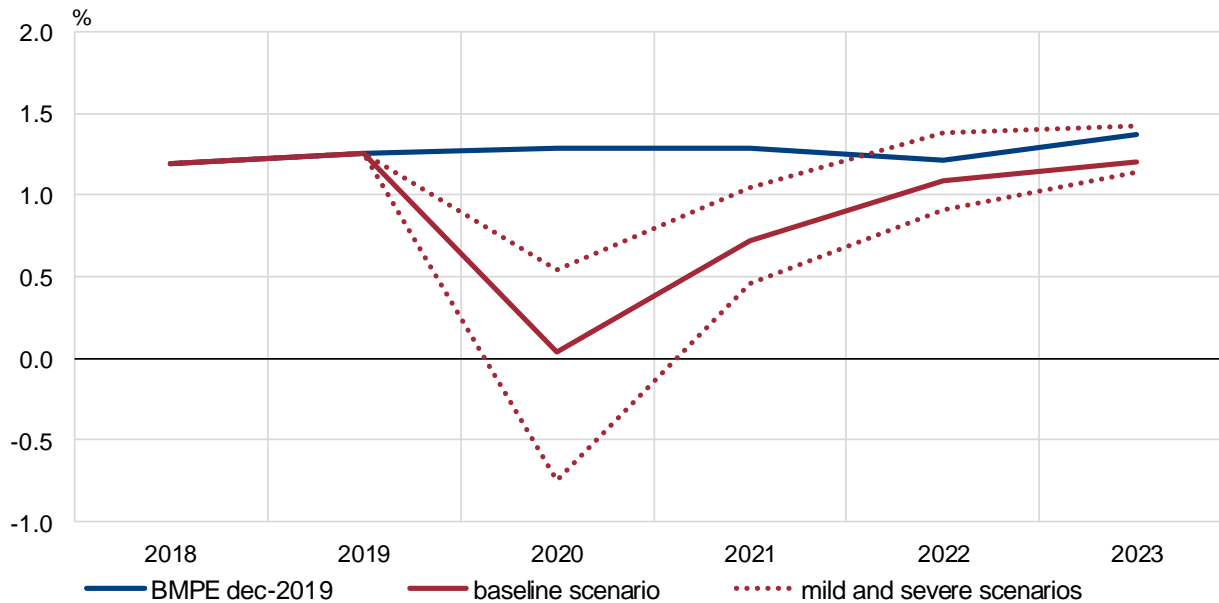
# Production Function Methodology

- Contribution to potential growth of each growth factor
  - Labour
    - *NAIRU - neo-Keynesian Phillips curve estimation (Galí, 2011)*
    - *Working-age population - INE projections*
    - *Participation rate*
    - *Worked hours per worker*
  - Capital
  - Total Factor Productivity
- Three scenarios (baseline, mild and severe) based on the outlook for the severity and duration of the pandemic
  - Based on the official macroeconomic projections of the Bank of Spain
- Projection horizon to 2023

### Baseline scenario:

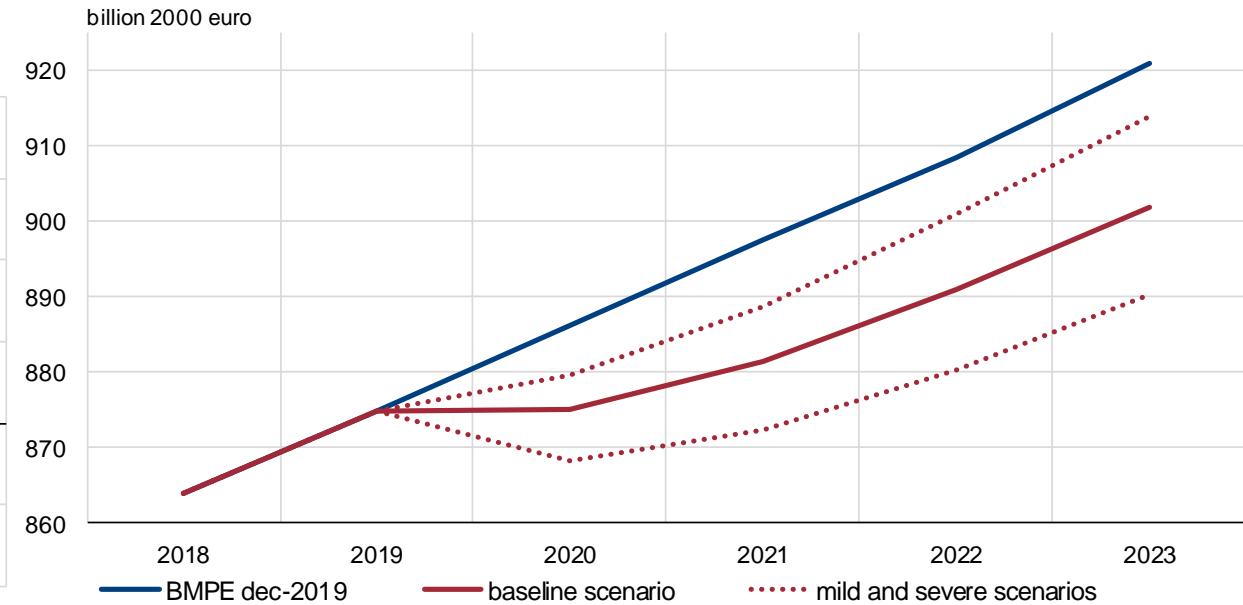
- Potential growth rates only slightly lower, from 2022 onwards, than the previous scenario
- Permanent lower level of potential GDP (around -2%)

**POTENTIAL GDP GROWTH IN SPAIN  
(Production Function Methodology)**



Sources: BMPE dec-2019 and BMPE nov-2020.

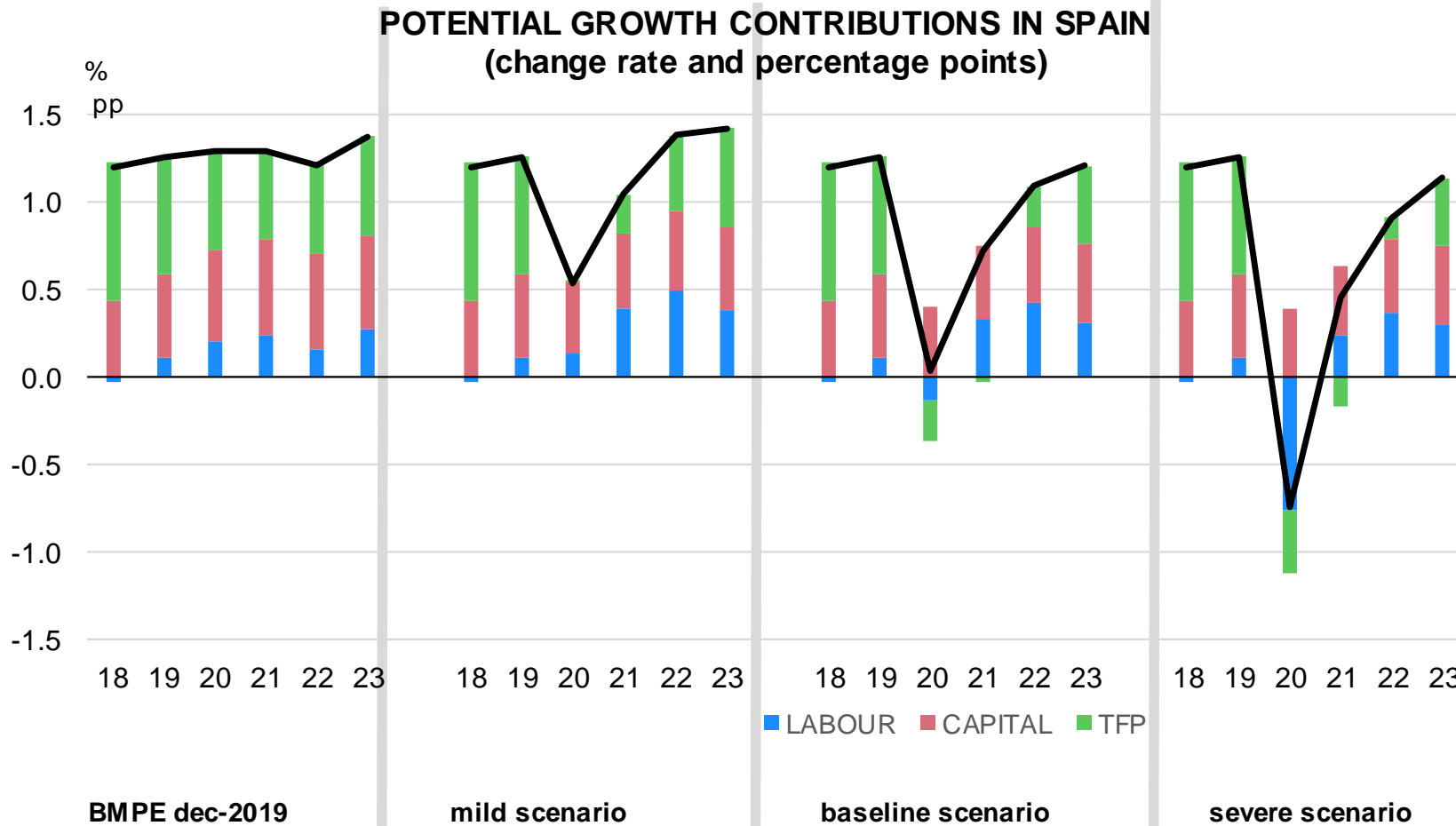
**POTENTIAL GDP LEVEL IN SPAIN  
(Production Function Methodology)**



Sources: BMPE dec-2019 and BMPE nov-2020.



- **Labour**
  - **NAIRU increase** to about 16% between 2020 and 2023
  - **Fall in the working-age population**
    - *Reduction of net inflows of immigrants in 2020*
  - **Significant drop in activity rate and hours worked per employee**
    - *Recovery in following years*
- **Capital**
  - **Positive contribution**, although slightly lower
    - *Delayed investments due to increased uncertainty*
- **TFP**
  - **Severe drop in 2020** due to production disruptions
    - *Recovery of pre-Covid contribution by 2023*



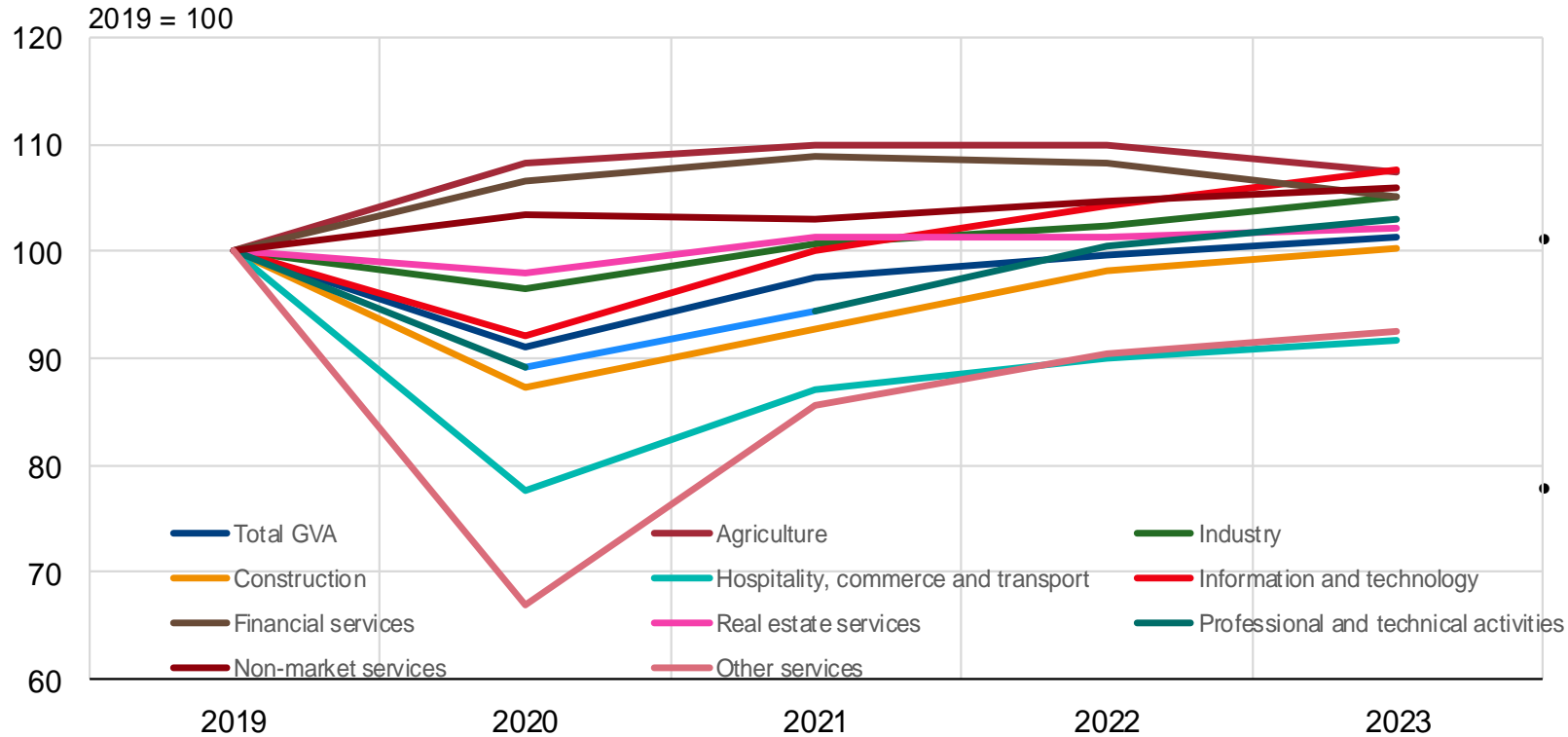
Sources: BMPE dec-2019 and BMPE nov-2020.



# Sectoral analysis

- Large differences in the impact of the pandemic according to productive sectors
  - Greater intensity and persistence in sectors with a higher component of social interaction
- Two-step methodology:
  1. Setting unequal paths of recovery of the pre-covid activity level for each branch of activity based on the responses obtained in the EBAE
    - *The disaggregation by sector of the aggregate GVA forecast is made according to the percentage of companies that state that they are able to recover the pre-covid level of activity in 2021, as of 2022 or that there is too much uncertainty to respond*
  2. Estimated potential growth by industry based on Hodrick-Prescot filter
    - *Calibrated lambdas that replicate the aggregate level of potential pre-Covid product*

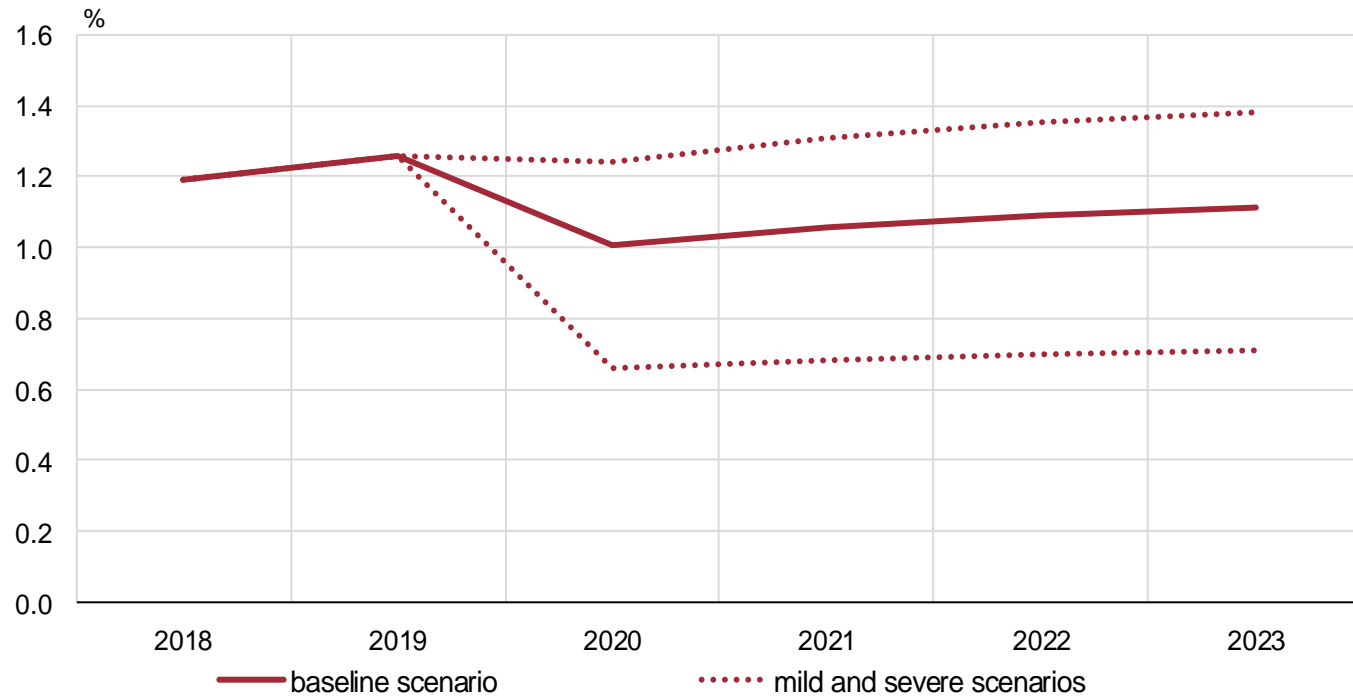
**Projected recovery paths by branches after COVID-19**  
**Baseline scenario**



- **Hotels, transport and commerce and Entertainment services**
  - do not recover their pre-pandemic level in 2023 in the central scenario
- **Information and communication, Financial services and Education, Health and Public Administrations.**
  - will maintain sustained growth paths
- **Negative effects are concentrated in labor-intensive sectors with a high level of social interaction**

Source: Banco de España.

**POTENTIAL GDP GROWTH IN SPAIN  
(Sectorial Approach)**



Source: Banco de España.

- **Baseline scenario**

- Potential growth of around 1% in 2023
- Slightly lower than the 2019
- Pre-COVID level not recovered

- **Mild scenario**

- Positive effects on potential in the long term

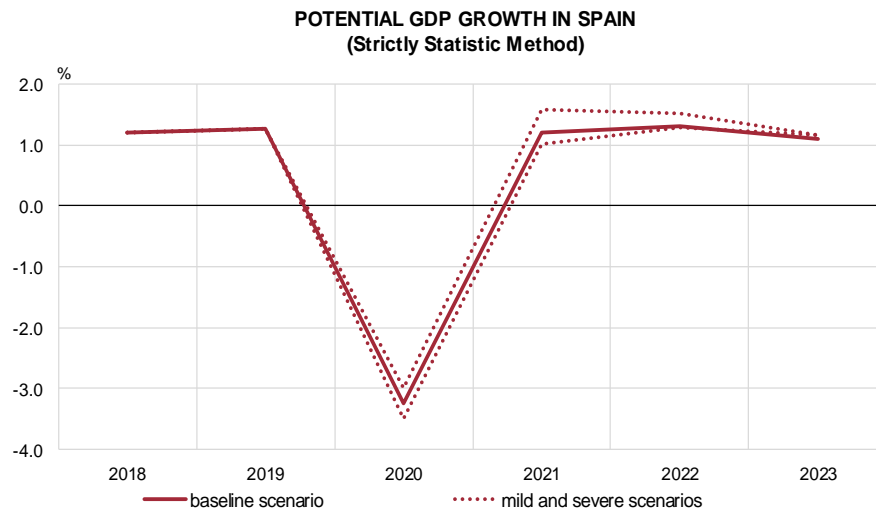
- **Severe scenario**

- Severe drop in the short term
- The drop in potential is both in growth rates and levels

# Statistical methodology

- **Problem with non-parametric models (such as Band-Pass or Hodrick-Prescott filters):**
  - The huge fall in GDP in 2020 Q1-QT2 implies **large revisions** to potential output in **pre-pandemic periods**
  - It is **difficult** to justify an **endogenous nature** of the COVID-19 shock
- **Possible solution: Unobserved components models**
  - Modeling of the **cyclical and trend components** of GDP
  - Including a **component associated with the effect of the active pandemic**
    - *It prevents the estimation of the cycle and the trend from being distorted by the exogenous shock*
    - *And reduces potential product revisions of prior periods*
  - Incorporating information on **working conditions** for greater accuracy





Source: Banco de España.

- After the sharp downturn in 2020, potential output would quickly recover positive and pre-pandemic-like growth rates under all three scenarios
- The "pandemic" shock negatively influences 2020 GDP, with a similar magnitude in all three scenarios

# Conclusions

Similar results from the three approaches. In the **baseline scenario**:

- **Significant drop in the potential growth rate in 2020**
- **Recovery of pre-pandemic rates towards the end of the projection horizon**
- **Permanent effect on the level of potential output**

According to the production function approach, **deterioration due to**:

- **Hysteresis effects in the labour market**
- **Significant drop in TFP in the short term**

Projections subject to **high uncertainty**: **health and economic policy developments**



THANK YOU FOR YOUR ATTENTION



## Metodología Estadística

$$y_t = \tau_t + c_t + p_t, \quad p_t \sim N(0, \sigma_{p,t}^2) \quad (1)$$

$$u_t = \bar{u}_t + \theta_1 c_t + \theta_2 c_{t-1} + v_{u,t}, \quad v_{u,t} \sim N(0, \sigma_u^2) \quad (2)$$

$$\sigma_{p,t}^2 = \begin{cases} 0 & \text{If } t \notin T_{pandemia} \\ \sigma_p^2 & \text{If } t \in T_{pandemia} \end{cases} \quad (3)$$

$$\tau_t = \tau_{t-1} + \delta_{t-1} + \eta_{\tau,t}, \quad \eta_{\tau,t} \sim N(0, \sigma_\tau^2) \quad (4)$$

$$\delta_t = \delta_{t-1} + \eta_{\delta,t}, \quad \eta_{\delta,t} \sim N(0, \sigma_\delta^2) \quad (5)$$

$$c_t = \phi_1 c_{t-1} + \phi_2 c_{t-2} + \eta_{c,t}, \quad \eta_{c,t} \sim N(0, \sigma_c^2) \quad (6)$$

$$\bar{u}_t = \bar{u}_{t-1} + \eta_{\bar{u},t}, \quad \eta_{\bar{u},t} \sim N(0, \sigma_{\bar{u}}^2) \quad (7)$$

- **Componente tendencial,  $\tau_t$** 
  - Paseo aleatorio
  - Tasa de crecimiento como paseo aleatorio
- **Componente cíclico,  $c_t$** 
  - Proceso autorregresivo
- **Componente pandémico,  $p_t$** 
  - Activo solo a partir de 2020
- **Desempleo tendencial,  $\bar{u}_t$** 
  - Paseo aleatorio

