# Week One

# EPA143A

# THE CORONA-LOCKDOWN RECESSION

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## ANSWERS

### QUESTION 1:

1. The entry gives the value (of €55 billion) of supplies of intermediate inputs produced by manufacturing (such as steel, cement, wooden frames, bricks) to the (using) construction industry. The other entry (of €413 billion) consists of the supply of ICT products and services produced by 'Information' to the final demand of consumers (households).
2. French GDP in 2015 is €2566 billion. It is the sum of all value added generated in the ten industries (in the row VA).
3. French GDP in 2015 is €2566 billion. It is the sum of final demand for all ten industries (or the column sum of FD).
4. GDP is a measure of income and therefore a measure of living standards. Gross output can be a misleading measure of "economic welfare"; for example, suppose we use more intermediate inputs (because we work less efficiently); gross output will increase, whereas value added stays the same. Our income does not increase.

### QUESTION 2:

1. C/Y = €1580/€2566 x 100% = 61.6%
2. The trade balance = value of exports – value of imports = E – M = € 582 b. - € 580 b. = + € 2 billion → a trade surplus. The trade surplus is very small, only 0.08% of GDP.

3. Cars: Renault; Peugeot; Citroën. Or chemicals/pharmaceuticals: Rhône-Poulenc; Sanofi.
4. Investment demand I is the demand by firms for capitals goods. One example of a capital good is a machine (or robot) used in automobile manufacturing. A 2nd example is a truck used by a transportation firm. Here are a few pictures of capital goods which are part of I:

## QUESTION 3

1. The inflation rate in Spain during 1960-2000 was 8.7% per year (= 13.2% - 4.5%)
2. The rate of nominal GDP growth in the Netherlands during 2000-19 was 3.4% per annum (= 1.7% + 1.7%).
3. The rate of real GDP growth in the U.K. during 2000-19 was 1.8% per year (= 3.8% - 2%).
4. The annual rate of inflation in Italy was much higher (8.4% per year) than the Dutch rate of inflation (4.2% per annum). This difference in inflation explains the gap in nominal income growth.

## QUESTION 4

1. The 'single-deflation' method will give a lower estimate of real value added because it deflates higher intermediate input prices $p_i$ using the (lower) gross output price $p_j$. This can be seen from: $y_j = Y_j/p_j = x_j - [(\frac{p_1}{p_j})\, a_{1j} + (\frac{p_2}{p_j})\, a_{2j} + \cdots .. + (\frac{p_n}{p_j})\, a_{nj}]$
2. The GDP deflator rises when there is inflation. The GDP deflator *p* = 1 in the base year. If *p* increases to 1.03, inflation is 3%. Hence, in the case of deflation, the GDP deflator goes down. Again, if *p* = 1 and then declines to 0.98, deflation is 2%.

## QUESTION 5

1. $u = \frac{12\ million + 2.7\ million\ unemployed}{155.3\ million + 2.7\ million} \times 100\% = 9.3\%$ (instead of 7.7%). U6 = 9.3% for the Eurozone-12.
2. The official unemployment rate U3 will sharply increase due to the corona-virus lockdown recession. It is difficult to predict what will happen, but most observers agree that U3 will rise to more than 20%. The number of discouraged workers will likely rise more in the U.S.A than in the Eurozone-12. In the U.S.A., more workers will lose their jobs, because many are employed on temporary, flexible contracts; many of those who become unemployed will not actively look for jobs (because there are none). In the Eurozone, many countries have a system called "Kurzarbeit" (in German), in which firms can reduce working hours (by 50% or so), without firing employees; workers will receive lower pay, but receive some compensation from the firms and from government; this way, the costs of the economic shock are shared by workers, firms and government.

## QUESTION 6

1. When governments borrow, they issue 'debt paper', which is called a bond. Suppose the Italian government has to borrow € 350 billion this year – which is the actual situation – and suppose that each bond has a nominal value of € 10.000. The Italian Treasury will issue 35 million bonds (each with a nominal value of € 10.000). These bonds are purchased by banks (in Italy and abroad), pension funds (in Italy and abroad), financial investors (such as BlackRock) and households. The buyers of these bonds will receive an annual interest payment for the duration (the maturity) of the bond. Suppose the Italian bonds have a maturity of three years, which means that the Italian government will pay back the 'loan' of € 10.000 at the end of the three years.

   The buyers of the Italian bonds will assess the risk of lending money to the Italian state. The main risk is that the bond will not be (fully) repaid after three years. This is the default risk. The credit risk associated with (Italian) bonds is evaluated by (commercial) credit-rating agencies. If the credit risk of a bond is believed to be relatively high, the credit-rating agencies will give these bonds a low rating. Bond investors will in that case

demand that the government in question pays a higher rate of interest – as a compensation (they will claim) for their willingness to accept a higher risk exposure if they lend to this government.

The average interest rate on public debt of Italy and Portugal is higher than that of Germany, because bond investors and credit-rating agencies perceive the credit risk associated with Italian and Portuguese bonds to be (considerably) higher than the risk associated with German bonds. The difference between bond interest rates is called the interest rate spread; the interest rate spread between a German and an Italian bond (in the example) is 1.16 percentage points. What it means is that it is considerably more expensive for the Italian government to borrow money than it is for the German state.

2. The interest-rate burden (as a percentage of GDP) of Germany can be calculated by multiplying Germany's debt-to-GDP ratio (0.59) and the average interest rate paid on public debt: 0.59 x 1.74% = 1.03%. In 2019, interest paid by the German government amounted to 1.03% of GDP. For Italy, we get: debt-to-GDP ratio (1.36) x 2.9% = 3.94%; and for Portugal we have: debt-to-GDP ratio (1.2) x 3.11% = 3.73%. Interest paid by the Italian and Portuguese government amounts to almost 4% of GDP – almost 4 times as much as in the case of Germany.

3. In Portugal, tax revenues are 40% of GDP and interest paid by the state is 3.73% of GDP. This implies that more than 9% of tax revenues is used to pay interest on public debt. The interest is paid to the owners of Portuguese government bonds; these include banks, pension funds, financial investors – in Portugal and abroad. In general, one can say that taxes are paid by all citizens and firms, whereas interest paid on public debt is received by the wealthiest (richest) 15% of the population. The high Portuguese debt and the high interest payments on that debt therefore lead to a considerable redistribution of income from lower-income groups to the highest-income group.

## QUESTION 7

1. $\hat{y} = \left( \left[ \frac{1916.9}{606.4} \right]^{\frac{1}{50}} - 1 \right) \times 100\% = 2.33\%$ for the U.K. (1965-2015).

2. $\hat{y} = \left( \left[ \frac{1720.3}{432.2} \right]^{\frac{1}{59}} - 1 \right) \times 100\% = 2.37\%$ for Italy (1960-2019).

3. $y = \lambda \times h \rightarrow \log(y) = \log(\lambda) + \log(h) \rightarrow \Delta\log(y) = \Delta\log(\lambda) + \Delta\log(h) \rightarrow$

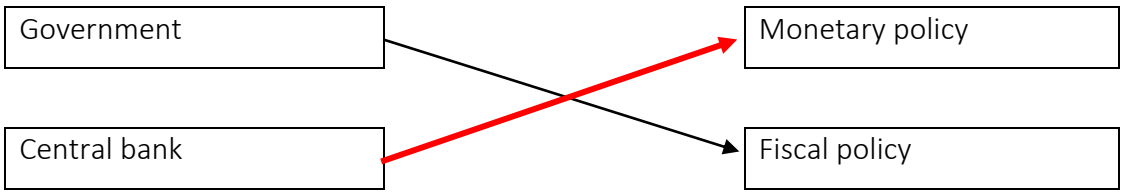
   $\hat{y} = \hat{\lambda} + \hat{h}$ or the growth of real GDP = the growth of labour productivity + the growth of total hours worked in the economy.

4. Consider the following table, and calculate the 3 (instantaneous) growth rates.

| | 2018 | 2019 | $\Delta \ln(.)$ | growth rate (%) |
|---|---|---|---|---|
| $Y$ | €1200 b. | € 1452 b. | | |
| Ln (y) | 7.090077 | 7.280697 | 0.1906 | 19.06% |
| $\lambda$ | €120 | €132 | | |
| Ln ($\lambda$) | 4.787492 | 4.882802 | 0.0953 | 9.53% |
| $h$ | 10 billion | 11 billion | | |
| Ln ($h$) | 2.302585 | 2.397895 | 0.0953 | 9.53% |

## QUESTION 8 (easy)

1. When it comes to macroeconomic policy, we can distinguish two policy actors – government and the central bank – and two categories of macroeconomic policy – monetary policy and fiscal policy. Which policy actor is responsible for which macroeconomic policy?




2. Indicate which changes in policy instruments (on the right) correspond to the macroeconomic policy positions (on the left).