

National Income

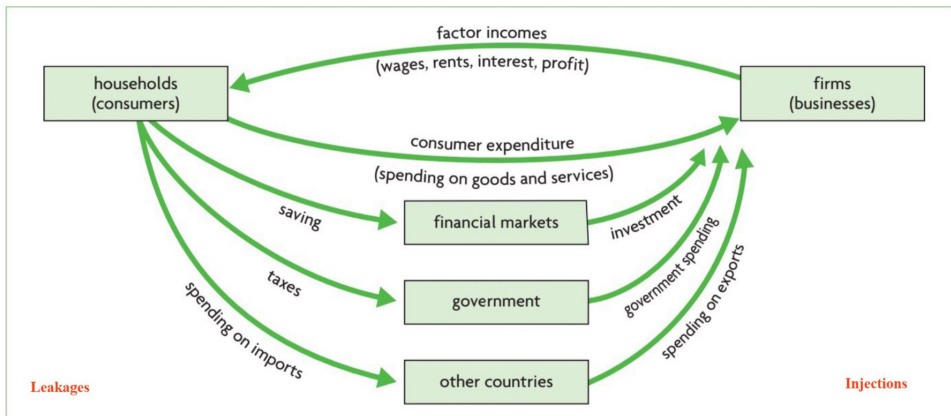
Theoretical Considerations

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Circular Flow of National Income



Leakages

- Taxation** the higher tax is, the less disposable income households/individuals have to spend in the economy **or** the less output businesses are willing to provide
- Savings** the more that's saved, the less that's spent
- Imports (M)** the more spent on foreign goods, the less that's spent on goods at home

Keynesian Multiplier

MULTIPLIER
Number of times an **injection** results in an **↑Y**

$$\frac{1}{MPS + MPM + MPT} \times \text{Injection}$$

Marginal Formulae

Marginal Propensity to Consume (C) or Save (S)
MPC or MPS

Fraction of extra (marginal) income which is consumed or saved

$$\frac{\Delta C \text{ or } S}{\Delta \text{Income (Y)}}$$

Marginal Propensity to Tax (T) or Import (M)
MPT or MPM

Fraction of extra (marginal) income which is paid in tax or used to buy imports

$$\frac{\Delta Y \text{ Spend on T or M}}{\Delta \text{Income (Y)}}$$

Theoretical Discussion just for a Simple Multiplier

Intuition

The intuition comes from the fact that the marginal propensity to consume (MPC) is positive. MPC is the money people spend when they get an extra dollar of income. When MPC = 0.8, for example, when people get an extra dollar of income, they spend 80 cents of it. So the Keynesian multiplier works as follows, assuming for simplicity, MPC = 0.8. Then when the government increases expenditure by 1 dollar on a good produced by agent A, this dollar becomes A's income. As MPC = 0.8, A will spend 80 cents of this extra income on something he wants to consume. Suppose A spends the 80 cents on a good produced by B, then B would have an extra income of 80 cents. B would then spend 0.8 of this 80 cents, i.e. 64 cents, on something else. This 64 cents becomes someone else's income, and this someone will spend 0.8 of it. The process repeats itself. The GDP added to the economy is the sum of all the spending, 1 + 0.8 + 0.64 + 0.512 + ... which has a larger effect than the 1 dollar that the government originally spent. In other words, the government spending is "multiplied".

Mathematically, the sum 1 + 0.8 + 0.64 + ... is a geometric series. When you sum them up, it takes the form

$$\frac{1}{1 - MPC} = \frac{1}{1 - 0.8} = 5. \text{ The effect of the government spending is multiplied 5 times, and thus the multiplier is } \frac{1}{1 - MPC}$$

Examcraft 2014

Use the information in the table to answer the questions below.

Marginal propensity to consume (MPC)	0.6
Marginal propensity to import (MPM)	0.2
Marginal propensity to pay tax (MPT)	0.2
Current equilibrium level of National Income	€100 bn
Level of National Income that would give full employment	€150 bn

Show your workings for all calculations.

- Define marginal propensity to consume (MPC).
- Calculate the marginal propensity to save (MPS).
- Calculate the value of the multiplier in this open economy **and** explain the economic meaning of the figure calculated.
- Calculate the size of the injection required to bring this economy to the full employment level.

[25]

Solution

MPS is the percentage saving of extra income. If Y increases by 100 euro, and aggregate savings by households is 40 euro. The MPS is 0.4. Savings are a leakage. The MPC=1-MPS.

- MPS=1-0.6=0.4
- Multiplier = $\frac{1}{MPS+MPT+MPM} = 1.25$
- We need NI to increase by 50 billion euro to reach full employment. Thus the injection needed will be 50=Injection x multiplier. Injection is 40 billion euro.

National Income Identity

Y, National Income

$$Y = C(Y, T) + I(i, Expectations) + G + X - M$$

- C - aggregate consumption by households depends on income, tax level and MPS. Also inflationary expectations.
- I - investment by private firms depends on the interest rate i for borrowing funds from financial institutions to invest in the purchase of capital goods. Vitaly important is corporate expectations of future consumer demand. Also Inflationary expectations.
- G - Government spending depends on mandate of the current government and their fiscal policy. They can be constrained by such factors as level of national debt and budget deficits
- X - foreign exchange rates, quality of Irish products and competitiveness and productivity of Irish exports. Also on economic health of global economy
- M - Currency exchange rates, Irish Y and our MPM. Energy prices, raw material prices also contribute.

2018 LCH

8. (a) The table shows National Income (Y), Consumption (C), Investment (I), Exports (X) and Imports (M) for 2016 and 2017.

	Y	C	I	X	M
2016	?	80,000	20,000	90,000	90,000
2017	150,000	100,000	30,000	120,000	?

Calculate the following, **showing all your workings**:

- the value of National Income in 2016
- the value of Net Exports in 2017
- the level of Savings in the economy in 2017
- the size of the Multiplier.

[20]

Solution

This may throw students, there is no G . Also there will be no MPT in the multiplier.

- In 2016, $Y = 100,000$.
- In 2017, $M = 100,000$, so net exports are 20,000
- Y increased by 50,000 but consumption only by 20,000. So net savings of 30,000. MPS=0.6. Imports went up by 10,000, so MPM=0.2. The multiplier will be $\frac{1}{MPS+MPM} = 1.25$

Snapshot of Irish Economy end 2019

Show Table: Table 5 Expenditure on Gross National Income at Current Market Prices

Table 5 Expenditure on Gross National Income at Current Market Prices

Description	ESA Code	€ million					
		2014	2015	2016	2017	2018	2019 ¹
79. Personal consumption of goods and services	P.3	88,599	92,016	97,001	100,501	105,626	111,631
<i>of which:</i>							
79(a) Final consumption expenditure of households and NPISHs		83,322	86,423	91,076	94,049	98,615	104,154
79(b) Final consumption expenditure of government		5,277	5,594	5,925	6,453	7,011	7,477
80. Net expenditure by central and local government on current goods and services	P.3	26,727	27,265	28,562	30,225	32,227	34,829
81. Gross domestic fixed capital formation	P.51 & P.53	40,247	63,175	97,015	99,517	92,749	162,362
82. Value of physical changes in stocks	P.51 & P.52	3,091	4,467	4,818	4,249	1,352	1,486
<i>of which</i>							
82(a) Net additions to the breeding stocks		2	129	36	54	-22	34
83. Exports of goods and services ² P.6		214,350	320,565	328,235	359,655	399,897	448,866
84. Imports of goods and services ² P.7		-179,164	-244,886	-285,882	-294,028	-307,110	-405,076
85. Statistical discrepancy (equals - Item 12, Table 1)		1,298	251	1,061	268	2,245	1,953
86. Gross domestic product at current market prices	B.1*g	195,148	262,853	270,809	300,387	326,986	356,051
87. Net factor income from the rest of the world	D.1 & D.4 (net to abroad)	-31,407	-62,043	-51,082	-62,251	-70,664	-81,721
88. Gross national product at current market prices		163,741	200,810	219,728	238,135	256,322	274,330
89. EU subsidies	D.3	1,318	1,571	1,479	1,504	1,566	1,589
90. EU taxes	D.2	-275	-327	-486	-433	-433	-456
91. Gross national income at current market prices	B.5*g	164,784	202,054	220,721	239,207	257,455	275,463

¹Preliminary

²Excluding factor income flows

Open in Excel: [National Income and Expenditure 2019 Table 5 \(XLS 24KB\)](#)

[Visit Table N1905 on Statbank](#)

Note that as a percentage of GNP, HH consumption is approximately 38%. Govt spending component of NI is 15% and net exports is approximately 15%. I prefer to use gross exports as the timeline above shows that since 2014 to 2020, total exports have doubled.

This chapter will review impact of Covid-19 on consumption, government flexibility to bridge the gap with current budget deficit projections in 2020.

Consumption and Household Wealth

Wealth is a different concept in economics than income but the two are ultimately related in the long run. Irish household wealth could simplistically be the value of their assets: property, savings and pension assets. In the event of Covid-19, the stock markets, credit markets took a huge hit, not unlike the situation post Lehman. But with government stimulus and continued large scale quantitative easing by CBs, worldwide, asset prices have rebounded

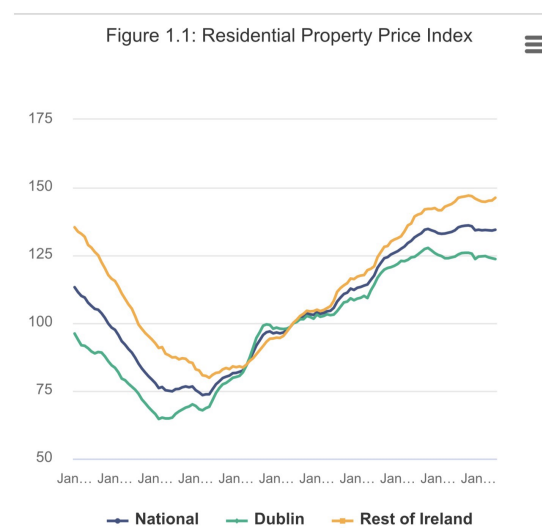


Albeit, not all Irish households have private pensions, Zurich Life estimates 70% of Irish workers over the age of 45, hold a private pension to supplement their state pensions. We have also seen a rebound in riskier credit assets and a substantial rally in government bonds.

On the housing front, there has not been a significant impact on home prices in any region of the Republic.

Residential Property Price Index

June 2020

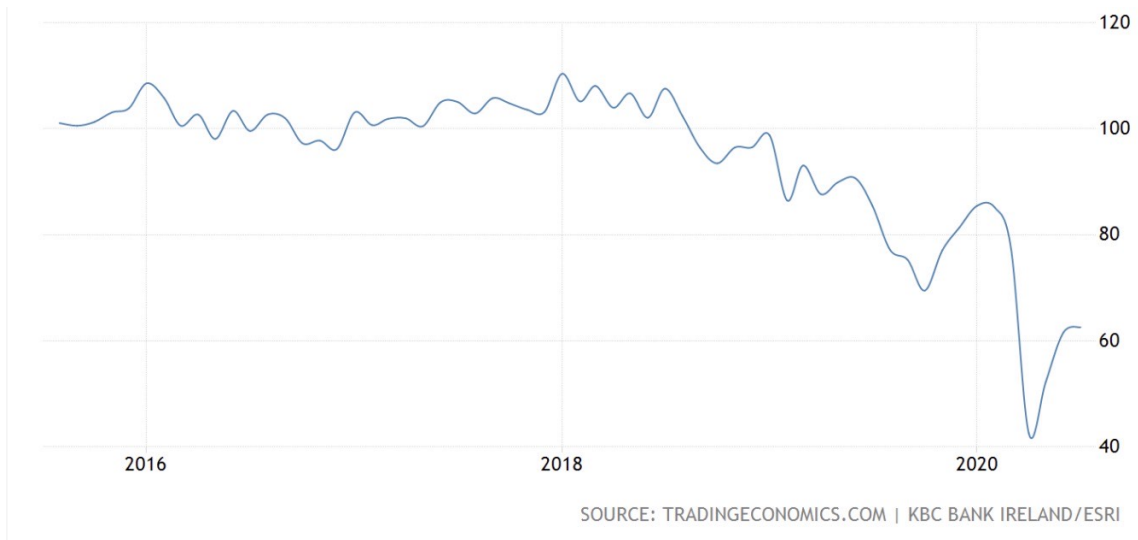


So, arguably, as these are recent data points, no deterioration so far in household wealth.

The Income Effect of Covid-19 due to the Consumer

In consumption trends going forward, the impact of a significant fall in HH consumption will have an effect on Irish economic growth and Irish fiscal policy through channels: fall in consumption effected by real income, savings rate, drop in VAT receipts. Unemployment rate which effects consumption and puts further pressure on fiscal flexibility.

An important potential forward indicator of savings versus consumption is consumer confidence. This is extremely weak and useful as a high frequency data set



Next Unemployment rate which although traditional unemployment rate has not increased substantially, the intervention of government gives an implicit COVID-19 UE rate

CSO statistical release, 05 August 2020, 11am

Monthly Unemployment

July 2020

	Seasonally Adjusted Figures		Non Seasonally Adjusted Figures	
	Number of persons unemployed	Unemployment rate (%)	Traditional Unemployment rate (%)	COVID-19 Adjusted Unemployment rate (%)
July 2019	123,800	5.1	-	-
June 2020	106,300	4.6	5.1	23.1
July 2020	114,600	5.0	5.5	16.7
		Percentage Points	Percentage Points	
Change in month	8,300	0.4	0.4	- 6.4
Change in year	-9,200	- 0.1	-	-

Finally, let's look at actual consumption data. Not surprising, this indicator registered a very steep decline. But recent data showed a jump to pre COVID-19 levels. This May shore up government tax receipts due to the dependency of the state on VAT receipts. This data set is useful as is a measure of retail sales volume.

Retail Sales Index

June 2020 (Provisional) May 2020
(Final)

Seasonally Adjusted Retail Sales Index - All Businesses

(Base Year 2015 = 100)

	Volume Index	Value Index
June 2019	118.2	110.1
May 2020	88.4	79.7
June 2020	122.4	110.0
Monthly % change	38.4	38.1
Annual % change	3.5	0.0

Volume of sales increased by 38.4% in June 2020 as more outlets reopened

Figure 1 Retail Sales Index - Seasonally Adjusted Volume



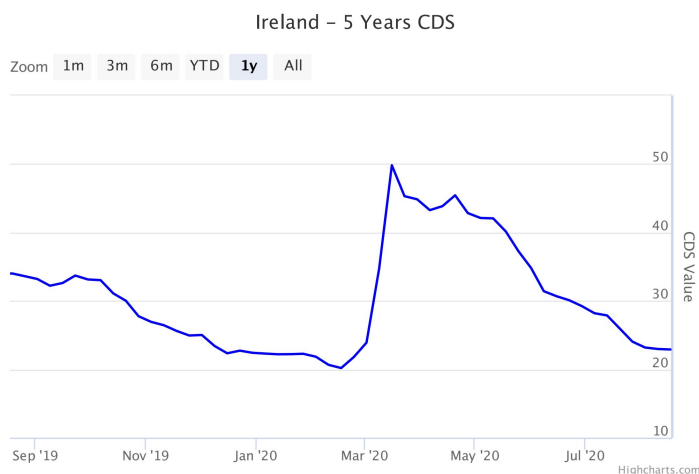
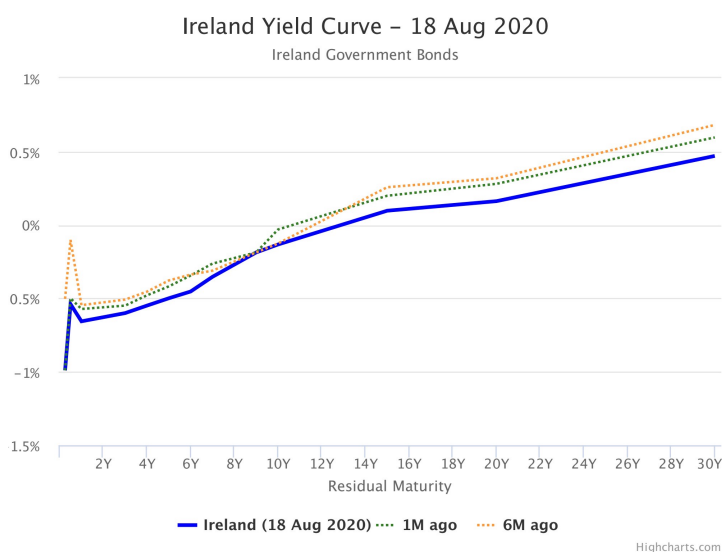
Source: CSO Ireland

A bleak picture from consumer confidence and potential real unemployment returning to GFC levels, but perceptions of Household wealth should remain constant and some return to normal sales volumes post lockdown. With all the caveats that if nation forced back into lockdown, and the economic disruption continues, these data sets could deteriorate.

Government Flexibility to Bridge the Gap

It is tempting to argue that as a small open economy with such high dependency on export markets for our economic growth, the Irish government would find it difficult to bridge a substantial budget deficit. In the short run, Ireland probably can but only to mitigate a social crisis and lessen the blow of a health crisis. But arguably if exports collapse, we will see a very large contraction in National Income. So arguably two arguments: can we fund a large budget deficit AND can we mitigate a collapse in GNP? Let's explore the first question.

The Ministry of Finance projects an upper end budget deficit of €30 billion for 2020. To finance such, the state must borrow. Mainly in international bond markets. The bond markets know this. How have they reacted?



Extremely benign reaction. This can be due to factors: ECB QE and also market perception that the current pandemic crisis will be sharp but brief in duration. Conclusion is bond markets, for now, will fund the deficit.

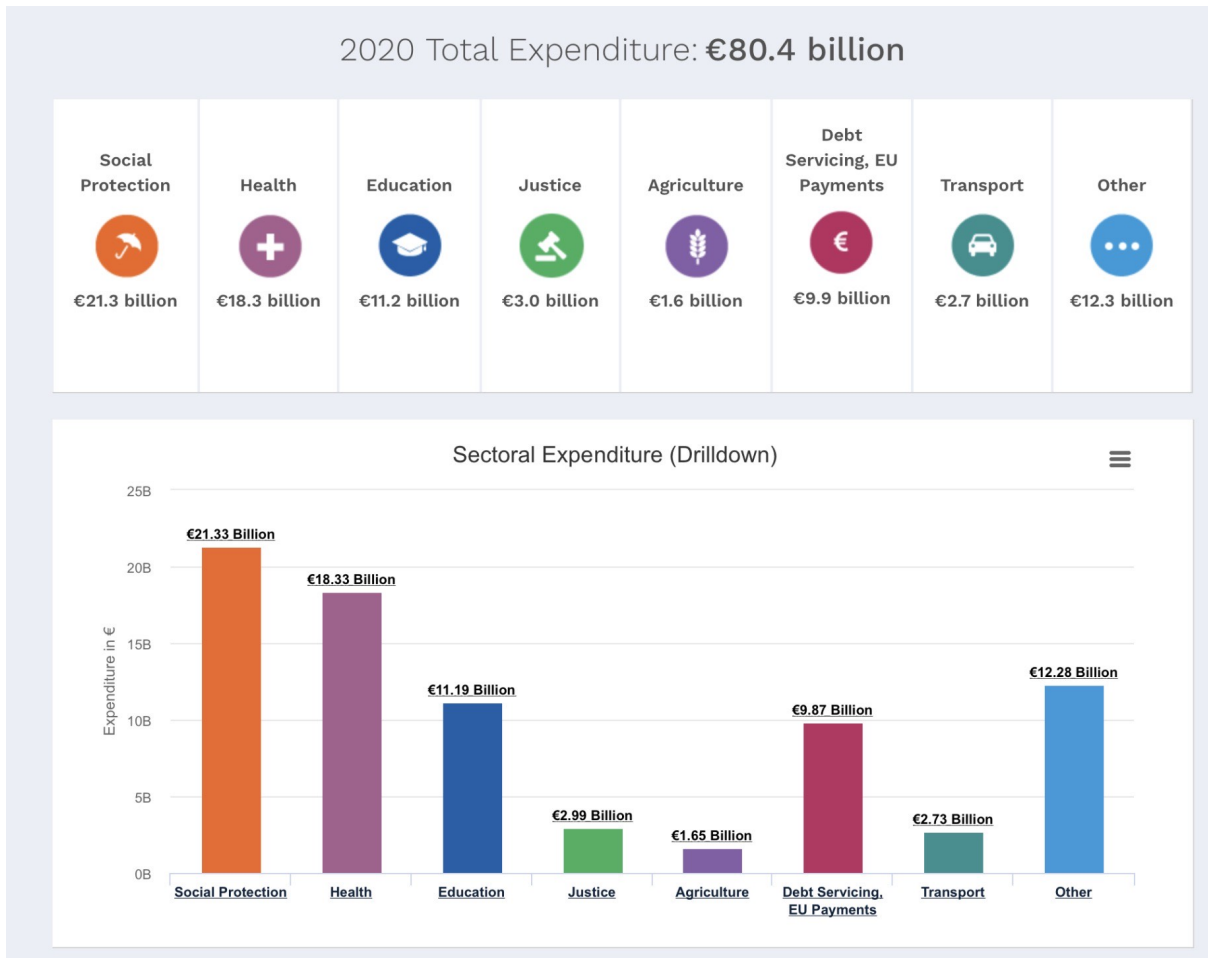
CURRENT RECEIPTS		
See footnote (1) Tax Revenue	2018 €m	2019 €m
Customs	343	364
Excise duty	5,620	5,770
Capital Gains Tax	943	996
Capital Acquisitions Tax	472	499
Stamp Duties	1,574	1,736
Income Tax	21,443	23,018
Corporation Tax	9,604	9,480
Value-Added Tax	14,090	14,570
Motor Tax	980	941
Total	55,069	57,374

For the first six months of 2020, income tax was slightly better than same period 2019, VAT was 20% down on same period but Corporation tax receipts (90% of which comes from MNCs) was far more buoyant. This came in at €5.9 billion in the first 6 months of 2020. Whether that can be sustained into the second half given the fall in 2nd quarter gdp of our main trading partners will be explored in the next chapter. There was also a transfer of €2 billion from NAMA. So from a receipts side, not as damaging as could have been.

It could be argued that the jump in retail sales volumes might restore some VAT stability in July-December 2020.

Where is the budget deficit forming

This is a snapshot of breakdown of Irish fiscal spending projections pre Covid-19



The two main sources of stress are social protection and health spending, €4.1 and €1.2 billion ahead of target.

Ireland may have some flexibility to offset expenditure by delaying transportation, social housing and other infrastructure spending. But as these are expenditures that appear in GNP or National Income accounts, this would be also a negative on growth?

At end 2019, the Irish National Debt stood at approximately €200 billion. Per capita, approximately €40k. Only behind Japan and the United States in the developed world. More importantly, is what the ratio of ND/GDP is



This has contracted considerably and Ireland might be perceived as a “good credit”. Eurostat projects an 8% decline in Ireland GDP for 2020. Assume 10% and €30 billion of increase in ND, this would lead to about %70 ND/GDP pushing us back to 2016/2017 period.

Conclusion: This is probably sustainable from a credit rating and market access perspective.

The next section, we will explore potential impact on our export markets and FDI in the National Income model.

Exports and Imports

Exports of merchandise goods has not been severely affected by Covid-19 as of June 2020. This might seem counterintuitive given the substantial GDP contraction of our major trading partners over Q2 2020.

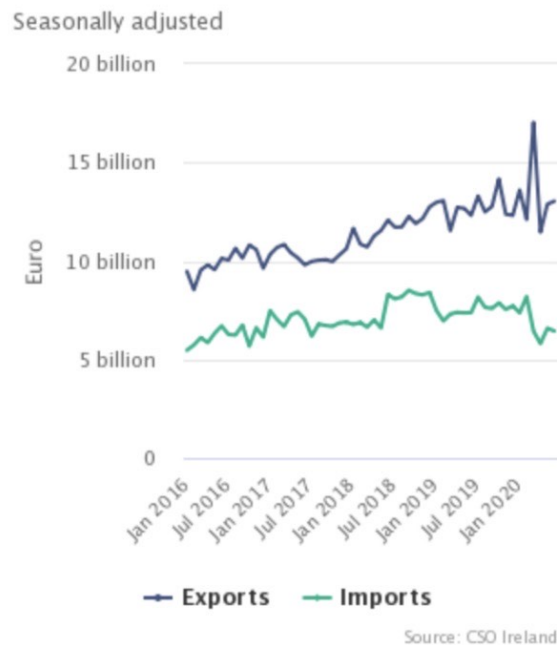
CSO statistical release, 14 August 2020, 11am

Goods Exports and Imports

June 2020

	<i>Seasonally adjusted</i>		
	€ million		
	Exports	Imports	Surplus
January 2020	13,597	7,365	6,232
February 2020	12,115	8,188	3,927
March 2020	17,029	6,434	10,595
April 2020	11,465	5,810	5,655
May 2020	12,885	6,580	6,305
June 2020	13,033	6,445	6,589

Figure 1 Goods Exports and Imports June 2020



However imports have fallen, in part due to the imports of aircraft. Ireland imports high numbers of aircraft, not for domestic use but part of financial services industry. Ireland is a major player in aircraft leasing. With collapse in global aviation, this market has contracted to a demand shock.

The (unadjusted)* value of goods exports for June 2020 was €13,876 million representing an increase of €1,830 million (+15%) when compared with June 2019. The value of goods exports for the period January to June 2020 was €81,963 million, an increase of €5,866 million (+8%) when compared with the first six months of 2019.

The reason for Ireland escaping such a demand shock for her exports may lie in the composition of her industrial output. Much of Ireland's export led recovery has been due to growth in pharmaceuticals and medical devices.

Exports of *Medical and pharmaceutical products* increased by €1,681 million (+45%) to €5,450 million, accounting for 39%

As we see, certain sectors did not perform as well. Notably control systems for industrial use. This may indicate a substantial fall in Investment by private firms in the economies of Ireland's major trading partners.

Exports of *Electrical machinery, apparatus and appliances* increased by €99 million (+14%) to €792 million in June 2020 compared with June 2019.

Exports of *Professional, scientific and controlling apparatus* decreased by €149 million (-27%) to €397 million over the same comparative period (see Table 3).

Imports, as noted, have contracted, the standout fall being aircraft purchases for Leasing.

Imports decrease by over €600 million in June

The (unadjusted) value of goods imports for June 2020 was €6,841 million, a decrease of €618 million (-8%) when compared with June 2019. The value of goods imports for January to June 2020 was €41,121 million, which is a decrease of €2,869 million (-7%) compared with the first half of 2019.

Imports of *Other transport equipment, including aircraft* decreased by €1,356 million (-60%) to €917 million in June 2020 compared with June 2019.

Imports of *Organic chemicals* increased by €200 million (+53%) to €581 million.

Geographic breakdown of Irish exports in June 2020

Exports to Great Britain decreased by €199 million (-18%) to €897 million in June 2020 compared with June 2019. Exports to Great Britain accounted for 6% of total exports.

The value of goods exports to Great Britain in the first six months of 2020 was €5,837 million, a decrease of €960 million (-14%) compared with January to June of 2019.

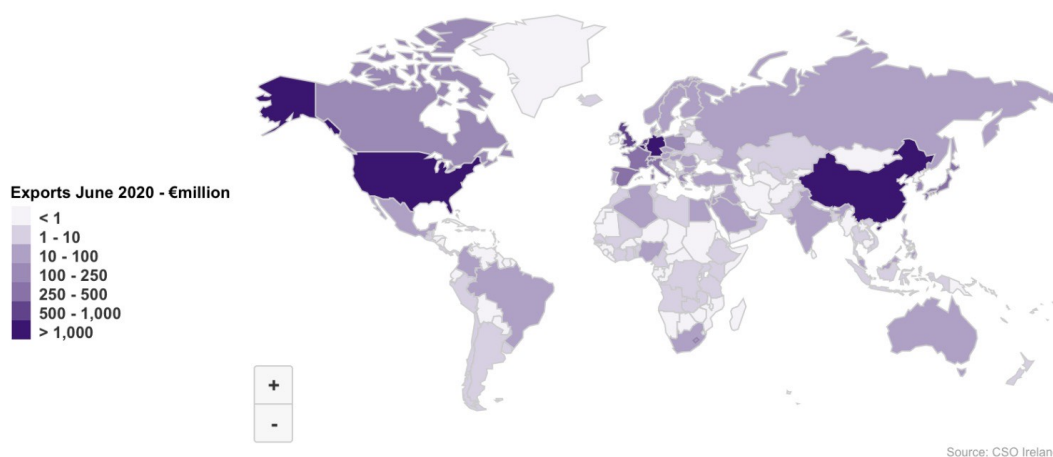
The EU accounted for €6,025 million (43%) of total goods exports in June 2020 of which €1,853 million went to Germany and €1,602 million went to Belgium. Total EU exports in June increased by €1,384 million (+30%) compared with June 2019. As the UK had exited the EU on January 31st 2020, this data compares EU trade excluding the UK for both periods for comparative purposes.

The USA was the main non-EU destination accounting for €3,473 million (25%) of total exports in June 2020.

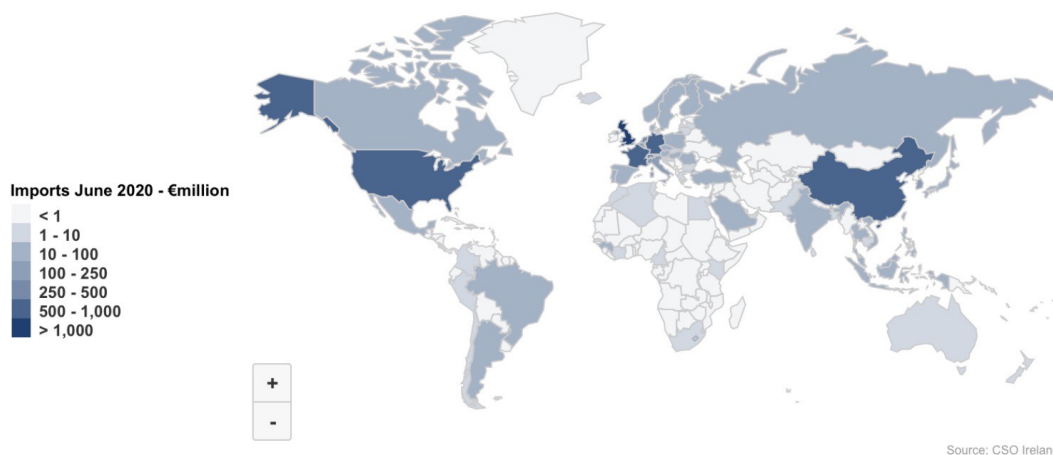
The EU accounted for €2,490 million (36%) of total goods imports in June 2020, which is a decrease of €267 million (-10%) compared with June 2019.

The USA with €917 million (13%), and China with €570 million (8%) were the other main non-EU sources of imports (see Table 4).

Map 1 Goods exports by country June 2020



Map 2 Goods imports by country June 2020



Economic Performance of our Trading Partners During Covid-19

UK

1. Main points

- UK gross domestic product (GDP) is estimated to have fallen by a record 20.4% in Quarter 2 (Apr to June) 2020, marking the second consecutive quarterly decline after it fell by 2.2% in Quarter 1 (Jan to Mar) 2020.
- When compared with Quarter 4 (Oct to Dec) 2019, UK GDP decreased by 22.1% in Quarter 2 2020.
- Despite the weakness in Quarter 2 2020, there was some pick up in June as government restrictions on movement started to ease; see [GDP monthly estimate, UK: June 2020](#).
- There have been record quarterly falls in services, production and construction output in Quarter 2, which have been particularly prevalent in those industries that have been most exposed to government restrictions.
- Private consumption accounted for more than 70% of the fall in the expenditure measure of GDP in Quarter 2 2020, falling by 23.1%; there were also notable falls in gross capital formation and government consumption.

USA

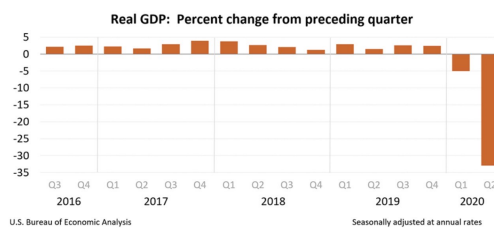
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BEA 20-37

Gross Domestic Product, 2nd Quarter 2020 (Advance Estimate) and Annual Update

Real gross domestic product (GDP) decreased at an annual rate of 32.9 percent in the second quarter of 2020 (table 1), according to the "advance" estimate released by the Bureau of Economic Analysis. In the first quarter, real GDP decreased 5.0 percent.

The GDP estimate released today is based on source data that are incomplete or subject to further revision by the source agency (see "Source Data for the Advance Estimate" on page 2). The "second" estimate for the second quarter, based on more complete data, will be released on August 27, 2020.



Coronavirus (COVID-19) Impact on the Second-Quarter 2020 GDP Estimate

The decline in second quarter GDP reflected the response to COVID-19, as "stay-at-home" orders issued in March and April were partially lifted in some areas of the country in May and June, and government pandemic assistance payments were distributed to households and businesses. This led to rapid shifts in activity, as businesses and schools continued remote work and consumers and businesses canceled, restricted, or redirected their spending. The full economic effects of the COVID-19 pandemic cannot be quantified in the GDP estimate for the second quarter of 2020 because the impacts are generally embedded in source data and cannot be separately identified. For more information, see the [Technical Note](#).

The decrease in real GDP reflected decreases in personal consumption expenditures (PCE), exports, private inventory investment, nonresidential fixed investment, residential fixed investment, and state and local government spending that were partly offset by an increase in federal government spending. Imports, which are a subtraction in the calculation of GDP, decreased (table 2).

The decrease in PCE reflected decreases in services (led by health care) and goods (led by clothing and footwear). The decrease in exports primarily reflected a decrease in goods (led by capital goods). The decrease in private inventory investment primarily reflected a decrease in retail (led by motor vehicle dealers). The decrease in nonresidential fixed investment primarily reflected a decrease in equipment (led by transportation equipment), while the decrease in residential investment primarily reflected a decrease in new single-family housing.

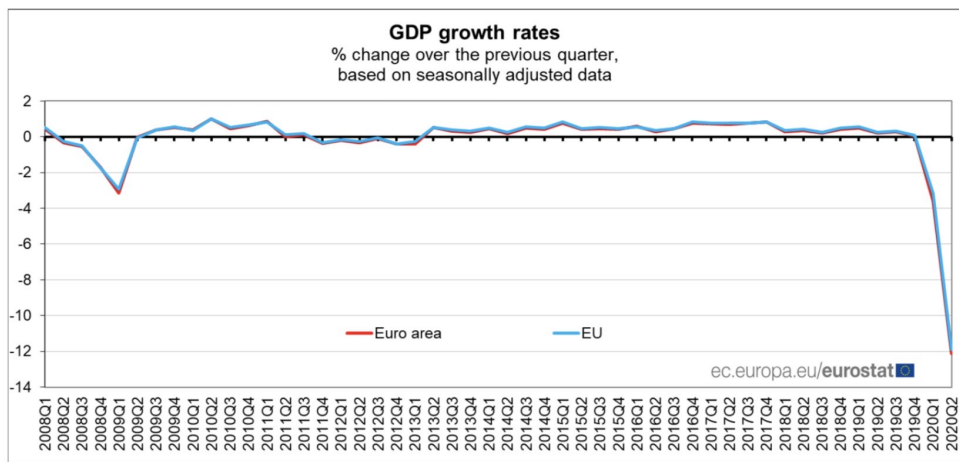
Preliminary flash estimate for the second quarter of 2020

GDP down by 12.1% in the euro area and by 11.9% in the EU

-15.0% and -14.4% respectively compared with the second quarter of 2019

In the second quarter 2020, still marked by COVID-19 containment measures in most Member States, seasonally adjusted GDP decreased by 12.1% in the **euro area** and by 11.9% in the **EU**, compared with the previous quarter, according to a preliminary flash estimate published by **Eurostat, the statistical office of the European Union**. These were by far the sharpest declines observed since time series started in 1995. In the first quarter of 2020, GDP had decreased by 3.6% in the **euro area** and by 3.2% in the **EU**.

These preliminary GDP flash estimates are based on data sources that are incomplete and subject to further revisions under the COVID-19 containment measures. The next estimates for the second quarter of 2020 will be released on 14 August 2020.



Published growth rates of GDP in volume up to 2020Q2*
(based on seasonally adjusted** data)

	Percentage change compared with the previous quarter				Percentage change compared with the same quarter of the previous year			
	2019Q3	2019Q4	2020Q1	2020Q2	2019Q3	2019Q4	2020Q1	2020Q2
Euro area	0.3	0.0	-3.6	-12.1	1.4	1.0	-3.1	-15.0
EU	0.3	0.1	-3.2	-11.9	1.6	1.2	-2.5	-14.4
Belgium	0.4	0.5	-3.5	-12.2	1.6	1.3	-2.4	-14.5
Czechia	0.5	0.4	-3.4	-8.4	2.3	2.0	-2.0	-10.7
Germany	0.3	0.0	-2.0	-10.1	0.8	0.4	-2.2	-11.7
Spain	0.4	0.4	-5.2	-18.5	1.9	1.8	-4.1	-22.1
France	0.2	-0.2	-5.9	-13.8	1.6	0.8	-5.7	-19.0
Italy	0.0	-0.2	-5.4	-12.4	0.5	0.1	-5.5	-17.3
Latvia	0.6	0.1	-2.9	-7.5	1.8	1.0	-1.5	-9.6
Lithuania	0.8	1.1	-0.3	-5.1	3.8	3.9	2.4	-3.7
Austria	-0.2	-0.2	-2.4	-10.7	1.4	0.4	-2.8	-13.3
Portugal	0.3	0.7	-3.8	-14.1	1.9	2.2	-2.3	-16.5

* See "Methods and definitions"

** Growth rates to the previous quarter and to the same quarter of the previous year presented in this table are generally both based on seasonally and calendar adjusted figures since unadjusted data are usually not transmitted for the compilation of GDP flash estimate.