

### An economic trinity

An economy can be viewed as a series of processes in which three 'things' are created, distributed, accumulated, and eventually destroyed: wealth, debt, and work (or: things, money, and people – *gent, argent i froment*).

- **Definition 1.** Wealth, understood in a broad sense, refers to 'things' that can be used to satisfy some human purpose, need, or desire: material goods, immaterial goods (such as knowledge and information), and services (the term 'goods' will designate all three categories together).
- **Remark 1.** Items qualifying as wealth possess 'intrinsic value': they are capable of getting something done (except for what can be done by the item debt).
- **Definition 2.** The concept of debt represents any instrument by which liabilities are created: debt is conceptual (but not a real) substitute for wealth.
- **Remark 2.** At a basic level, debt can be viewed as a promise to deliver wealth in the future in exchange for receiving wealth at the present moment. As debt is capable of building upon itself, in general, debt is rather expressed in terms of delivering some kind of debt in the future in exchange for getting the same or other kind of debt in the present. Ultimately, the value of debt depends on the wealth underlying the debt.
- **Definition 3.** Work captures the ability of people to create and transform wealth: it is through work that, directly or indirectly, material goods are produced, immaterial goods are developed, and services are provided.
- **Remark 3.** Wealth also builds upon itself: work is in general combined with previously accumulated wealth (called 'capital') to create or transform wealth.

### Gross domestic product (GDP)

The gross domestic product (GDP) of an economy is the market value of all the (new) final goods (a final good is not used to produce other goods) produced in the economy during a given period of time.

- **Remark 1.** GDP is a crude measure of wealth created in an economy in a period of time. Part of that wealth is used up in the period. The term 'wealth' is commonly applied to the union of the goods remaining from previous periods and the remaining wealth created in the period.
- **Remark 2.** GDP is the most common measure of aggregate production and also a crude estimator of how rich and how big an economy is. More properly, it should be merely viewed as a measure of economic performance: a rough quantitative evaluation of aggregate economic activity.
- **Remark 3.** It is practically impossible to compute GDP according to the definition because of the complexity involved in collecting all the necessary information (in a modern economy millions of goods are produced) and because prices of the same good may differ across regions of an economy (a solution would be to consider the same good produced in two regions a different good). In practice, then, GDP is an estimated value itself. The actual calculation of GDP involves a large amount data (statistics on employment, trade, industrial production, tax revenue, transportation...) and the participation of many organizations (surveys of manufacturers, builders

and retailers, and surveys from trade and financial flows). For details, see J. S. Landefeld et al. (2008): "Taking the pulse of the economy: measuring GDP," *Journal of Economic Perspectives* 22(2).

- **Remark 4.** Now that you know the news it is time to tell the truth: macroeconomic statistics is a branch of politics. There is a lot of arbitrariness in the estimation of GDP. The figures are continuously revised, as many estimates rely on industrial surveys conducted decades ago. The quality of the GDP estimate depends crucially on the organizations that produce the statistics, and these organizations are typically deficient in poor countries. Any gap between the official GDP figure and more accurate measures of GDP can easily be attributed to 'statistical discrepancies'.

- **Example 1. Dramatic revisions to GDP estimates.** On 5th November, 2010, Ghana revised GDP from 25.6 to 44.8 billion cedi. Ghana was followed by Kenya, Nigeria (whose GDP estimate went nearly a 100% up), Tanzania, Uganda, and Zambia. Morton Jerven, in *Poor Numbers: How We Are Misled by African Development Statistics and What to Do about It* (2013), suggests that GDP figures of some African countries have been deliberately lowballed to qualify for foreign aid.

- **Example 2.** Li Keqiang China's current head of government (Premier of the State Council of the People's Republic of China) and an economist by training is reported to have said that Chinese GDP data is unreliable and man-made. He considers more trustworthy proxy measures that are more difficult to fake than GDP figures, like electrical power production and freight traffic.

<http://www.baldingsworld.com/2015/09/02/why-i-dont-believe-chinese-gdp-data/>

- **Example 3.** In 2006 Greece's GDP suddenly turned out to be 25% higher than previously held, as it was decided to include in the GDP activities of the underground economy.

- **Remark 5.** There are probably two kinds of economists: those who do not want to know anything about GDP numbers and those who do not question GDP.

- **Remark 6.** GDP uses prices as a measure of what is worth or valuable: if the price of a good is 2 instead of 1, you get a higher GDP. Prices dictate the importance of goods.

- **Remark 7.** GDP has become one of the key (if not the key) macroeconomic variable because of the general perception that it is a key variable (Tinkerbell effect). Macroeconomic policy, in particular, is mostly driven by the policy maker's perception of reality through the dynamics of GDP.

- **Remark 8.** The US Department of Commerce declared GDP one of the great inventions of the 20th century and the development of the national income and product accounts (NIPA) the department's achievement of the century.

[https://www.bea.gov/scb/account\\_articles/general/0100od/maintext.htm](https://www.bea.gov/scb/account_articles/general/0100od/maintext.htm).

- **Remark 9.** This is a short list of what GDP does not factor in or ignores (list of accusations).

- (1) Negative byproducts and externalities of economic activity, like pollution or crime. In fact, polluting activities (such as burning fossil fuels or emissions from industrial facilities) increase GDP. And GDP rises again when conducting activities to clean up pollution. Hence, creating a bad is like creating two goods, as a bad generates a double impact on GDP.
- (2) How GDP itself is distributed among the agents of the economy. GDP does not worry about inequality or equity. Top 10% earners tend to make around 60-70% of income; see Credit

Suisse's Global Wealth Report 2016, <https://www.credit-suisse.com/us/en/about-us/research/research-institute/news-and-videos/articles/news-and-expertise/2016/11/en/the-global-wealth-report-2016.html>.

- (3) The exhaustion of natural wealth. The depletion of natural resources is good for GDP: destroying the environment (clean water, breathable air, virgin landscapes) enlarges GDP. GDP computes the new wealth created but not the wealth destroyed in the process.
  - (4) Structural changes in the economy tend to make obsolete the way GDP is estimated. Conceptually, GDP seems to presume that all wealth created in an economy is physical wealth (manufactured goods). Yet most economic activity in modern economies (perhaps anything between 50% and 80%) involves services, which in general do not create a tangible physical output and therefore difficult to measure. Estimates of the contribution of services to GDP must rely on extrapolation from past trends of data for services.
  - (5) All the changes brought in by the transition to an information-based digital economy, strongly relying on information-based services, do not seem to be properly reflected nor captured by the GDP calculation methodology. The information sector contributes marginally to the computation of GDP (less than 5%?), just as a generation ago. In that respect, GDP looks like a concept more suited for a 20th century economy than for a 21st century economy.
  - (6) GDP does not properly account for changes in the quality, novelty, and diversity of the goods manufactured and services provided. Moreover, should services that merely contribute to create and circulate debt instruments (and make the economy more vulnerable to a financial or debt crisis) be considered equivalent to services that increase wealth?
  - (7) Home production and do-it-yourself activities. GDP does not value goods such as the quality of education, life expectancy, income inequalities, pollution, social and political institutions, leisure time, moral values, loss of natural resources, environmental damage...
  - (8) The shadow economy. Underground, hidden, black market and illegal economic activities are excluded, as they are not taxed, not reported, or illegal (like prostitution and the illegal drug trade).
  - (9) Second-hand sales, since such sales involve production already counted in previous periods.
- **Remark 10.** GDP figures are not complemented with an estimation of the error of calculation. In fact, that error is with all likelihood larger than the rate of change of GDP itself.
  - **Remark 11.** In the end, though it is clear what official institutions claim GDP is about, it is actually no clear what GDP is about nor what is being measured. Is it a bad measure that is wrongly defined, measured, interpreted, and applied?
  - **Remark 12.** In 1990, the United Nations defined the Human Development Index, a combination of life expectancy, education, literacy, educational participation, and GDP. <http://hdr.undp.org/en/>
  - **Remark 13.** It is often claimed that GDP is, after all, a reasonable good approximation of social welfare and the standard of living in an economy. But the why this may be so is not explained in detail: what is offered is a set of correlations with welfare factors. Even granting that GDP is a measure of welfare, it is a biased one: GDP looks like an example of bad accounting, as it counts goods but not bads. Destruction raises GDP: if your car crashes and you buy exactly the same type of car, GDP goes up (and therefore welfare?), despite the fact that you have merely replaced a loss (and moreover you have lost the goods not acquired by spending your funds in the same car).

• **Example 4.** How artificial GDP to quantify economic activity? Imagine a poor country, with two villages producing their own food; for instance, foodstuff  $x$  and  $y$ . The government forces the villages to specialize in one product: one village only produces  $x$ , the other  $y$ , and food exchanges between villages are mediated by money. It could then be than the total amount of food produced has not changed but, in any case, GDP goes up, because the food sales are included in GDP.

• **Remark 14.** To what extent is GDP growth a measure of economic success? Is it in Example 4?

• **Remark 15.** GDP is an odd way of measuring, because the GDP of different economies cannot be compared. It is even difficult to compare the GDP of the same economy in two moments of time. The situation is similar as if we used personal measure of height. I conclude that my height is 150, that yours is 50, yet I cannot tell which one is larger, since their units of measurement are different.

**Nominal GDP (GDP<sup>n</sup>)** Nominal GDP (GDP<sup>n</sup>) values production at current prices.

• **Remark.** Changes in nominal GDP are misleading: they reflect changes in production and prices.

**Real GDP (GDP<sup>r</sup>)** Real GDP (GDP<sup>r</sup> or GDP at constant prices or GDP adjusted for inflation) values production each period using the prices of one fixed period (called “base period”).

• **Remark.** By valuing the production in two periods using the same set of prices, changes in real GDP can only be attributed to changes in the amount of goods produced.

**Real vs nominal GDP : an example** This example computes GDP in an ideal situation. The table on the right presumes that there are only two goods (1 and 2) and lists, for two periods, the amount  $q$  produced of each good  $i$  and its price  $p$ .

| time $t$ | $p_1^t$ | $q_1^t$ | $p_2^t$ | $q_2^t$ |
|----------|---------|---------|---------|---------|
| 1        | 4       | 6       | 2       | 8       |
| 2        | 9       | 5       | 3       | 5       |

• Nominal GDP in  $t = 1$ .  $GDP_1^n = p_1^1 \cdot q_1^1 + p_2^1 \cdot q_2^1 = 4 \cdot 6 + 2 \cdot 8 = 40$  (monetary units of  $t = 1$ ).

• Nominal GDP in  $t = 2$ .  $GDP_2^n = p_1^2 \cdot q_1^2 + p_2^2 \cdot q_2^2 = 9 \cdot 5 + 3 \cdot 5 = 60$  (monetary units of  $t = 2$ ).

From  $t = 1$  to  $t = 2$ , GDP<sup>n</sup> has increased by 50% : the rate of growth of nominal GDP is  $\widehat{GDP^n} = \frac{60-40}{40} = \frac{1}{2} = 0.5 = 50\%$ .

• Real GDP in  $t = 1$  at constant prices of period  $t = 1$  is  $GDP_1^{r,t=1} = p_1^1 \cdot q_1^1 + p_2^1 \cdot q_2^1 = 4 \cdot 6 + 2 \cdot 8 = 40$  (monetary units of  $t = 1$ ). Conclusion:  $GDP^r = GDP^n$  at the base period (this always happens).

• Real GDP in  $t = 2$  at constant prices of period  $t = 1$  is  $GDP_2^{r,t=1} = p_1^1 \cdot q_1^2 + p_2^1 \cdot q_2^2 = 4 \cdot 5 + 2 \cdot 5 = 30$  (monetary units of  $t = 1$ ).

From  $t = 1$  to  $t = 2$ , GDP<sup>r</sup> has fallen a 25%:  $\widehat{GDP^r} = \frac{30-40}{40} = -\frac{1}{4} = -0.25 = -25\%$ . What if the base period is  $t = 2$ ?

• Real GDP in  $t = 1$  at constant prices of  $t = 2$  is  $GDP_1^{r,t=2} = p_1^2 \cdot q_1^1 + p_2^2 \cdot q_2^1 = 9 \cdot 6 + 3 \cdot 8 = 78$ .

• Real GDP in  $t = 2$  at constant prices of  $t = 2$  is  $GDP_2^{r,t=2} = p_1^2 \cdot q_1^2 + p_2^2 \cdot q_2^2 = 9 \cdot 5 + 3 \cdot 5 = 60$ .

Hence, by taking the base period to be  $t = 2$ , GDP *has fallen* by 23%.

• **Remark 1.** What is 'actually' the change in real GDP? There is no answer for this question. Real GDP solves the problem of the dependence of nominal GDP on the change of prices but real GDP has the shortcoming of depending on the base period chosen.

• **Remark 2.** The impossibility of telling the 'actual' change in real GDP opens the room for manipulation by people whose interests are affected by economic information, as such people may have an incentive to disclose information selectively. In the context of the above example, a government will be probably interested in informing citizens of only the increase in nominal GDP. The leading party of the opposition would instead like to stress the fall in real GDP. And if forced to mention real GDP changes, the government would prefer to take period 2 as the base period (due to the smaller reduction in real GDP in comparison with choosing 1 as the base).

#### Nominal variable

A nominal variable is a variable measured in terms of current prices.

• **Remark.** Changes in current prices may affect a nominal variable. The typical nominal variable is measured in (current) monetary units.

• **Example.** Typical nominal variables are GDP at current prices, money stock, (nominal) interest rate, (nominal) exchange rate, and consumer price index (see below).

#### Meanings of the term 'rate'

The term 'rate' may mean:

- (i) 'amount', as in 'wage rate';
- (ii) 'ratio' or 'relative price' as in 'exchange rate'; or
- (iii) 'relative change' or 'percentual change', as in 'GDP growth rate', defined as

$$\widehat{\text{GDP}} = \text{GDP growth rate (from period } t - 1 \text{ to period } t) = \frac{\text{GDP}_t - \text{GDP}_{t-1}}{\text{GDP}_{t-1}}.$$

The formula above gives the rate of change per one. To get a percentage, multiply by 100. If  $\text{GDP}_{t-1} = 40$  and  $\text{GDP}_t = 50$ , the rate of change is  $\frac{50-40}{40} = \frac{10}{40} = \frac{1}{4} = 0.25$  (per one); that is, 25%.

#### Real variable

A real variable is a variable measured in physical quantities or a variable that measures physical quantities.

• **Remark 1.** Real variables are not affected by current prices.

• **Example.** Some real variables, like total employment or the unemployment rate, need no price to be defined. Others are defined by fixing prices, like GDP at constant prices, which measures production using the prices of a base period. Still others come from nominal variables by removing the effects of prices, like the real interest rate.

- **Remark 2.** Economic variables are meaningless without specifying its units of measurement (if any). For instance, nominal GDP is measured in monetary units of the current period and employment is measured in number of persons (also possibly in hours of work).

### Stock vs flow variable

A stock variable is measured in levels at a given point in time. A flow variable is measured in rates per unit of time.

- **Example.** GDP is a flow variable, since it measures production during a period of time (so GDP is production per unit of time). Population at a given moment of time is a stock variable. Wealth is also a stock variable.

### Potential GDP and output gap

Potential GDP refers to the maximum GDP level that an economy can sustain over time (however that value is supposed to be determined). Output gap is the difference between potential GDP and actual GDP.

- **Example.** The output gap can be interpreted as a measure of the degree to which an economy is performing well. When GDP is below potential, some production inputs must lie idle (remain unused). The more it is below, the higher unemployment is expected to be.

### GDP per capita

Real (nominal) GDP per capita is the ratio of real (nominal) GDP to the population of the economy.

- **Remark.** Real GDP per capita is interpreted as (i) an indicator of the development or prosperity of an economy and (ii) a measure of the average standard of living in the economy.
- **Remark.** Real GDP per capita seems to be positively correlated with many indicators of economic development and the quality of life: life expectancy, subjective well-being, education, health care expenditure... It appears to be positively correlated with the Human Development Index. <http://hdr.undp.org/en/> · <http://www.gapminder.org/>

### Short run

'Short run' refers to a relative short period of time (a few months to a few years).

- **Remark 1.** What defines the short run is the existence, during that period, of factors or variables (like technology or population) that are essentially constant.
- **Remark 2.** Short-run macroeconomics focuses on explaining the oscillations of real GDP (the business cycle).

### Long run

'Long run' refers to a sufficiently long period of time (from decades to generations and centuries) in which everything in an economy may change.

- **Remark.** Long-run macroeconomics tries to explain the dynamics of real GDP per capita (long-run economic growth). From a historical point of view, one of the most important events in the evolution of real GDP per capita is the so-called Rise of the West. This expression refers to Western Europe being the place where the modern regime of sustained growth in real GDP per capita started. Related to the Rise of the West is the Great Divergence, the increase in the prosperity gap between Western Europe (and the Western offshoots: Australia, Canada, New Zealand, and the United States) and most of the rest of the world. Another related question is the Needham puzzle: why was modern science invented in Western Europe when, for centuries, Chinese science and technology appeared far more advanced than European science?

### Price index

A price index is a measure of the general price level of an economy. This level can be thought of as a weighted average of the prices of all the goods.

- **Remark 1.** By assuming the fiction that there is a unique, aggregate good in the economy (the domestic product), if GDP measures the quantity of the good, then the price level would represent the price of the aggregate good.
- **Remark 2.** As distinguished from GDP, price indices have no units and the value by itself means nothing. It is the rate of change of the index that is informative (or, in any case, relevant).

### GDP deflator

The GDP (implicite price) deflator is the price index defined as

$$\text{GDP deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}}.$$

- **Remark 1.** The GDP deflator measures the changes in prices in all the goods produced in an economy between the base period used to calculate the real GDP and the current period.
- **Example.** If  $\text{GDP}_{2015}^n = 100$ ,  $\text{GDP}_{2015}^r = 80$ ,  $\text{GDP}_{2016}^n = 135$ , and  $\text{GDP}_{2016}^r = 90$ , then  $\text{GDP}_{2015} \text{ deflator} = 100/80 = 1.25$  and  $\text{GDP}_{2016} \text{ deflator} = 135/90 = 1.5$ . The fact that  $\text{GDP}_{2016} \text{ deflator} > \text{GDP}_{2015} \text{ deflator}$  indicates a general price increase between 2015 and 2016.

### Consumer price index (CPI)

The CPI is a measure of the cost of purchasing a fixed basket of goods of a consumer considered representative. The  $\text{CPI}_t$  in period  $t$  is defined as

$$\text{CPI}_t = \frac{\text{value of the basket at prices of period } t}{\text{value of the basket at prices of the base period}}.$$

- **Remark 1.** For the index to have base 100, multiply the right-hand side by 100.
- **Remark 2.** Criticisms analogous to those levied on the GDP concept could be presented against the CPI concept, its definition and the way in which it is in practice implemented.

• **Example.** Suppose the basket of goods is given by  $(x, y, z) = (3, 2, 1)$ , where the numbers represent the amounts of each of the three goods. The table below shows the prices of the goods in four periods and the value of the basket in each period.

| period | $p_x$ | $p_y$ | $p_z$ | $V_t = \text{basket value in period } t$ | $\text{CPI}_t$ | $\text{CPI}_t \text{ (base 100)}$ | $\pi_t$ |
|--------|-------|-------|-------|--|----------------|-----------------------------------|---------|
| 1      | 1     | 4     | 5     | $3 \cdot 1 + 2 \cdot 4 + 1 \cdot 5 = 16$ | 1              | 100                               | –       |
| 2      | 2     | 1     | 8     | $3 \cdot 2 + 2 \cdot 1 + 1 \cdot 8 = 16$ | 1              | 100                               | 0%      |
| 3      | 3     | 1     | 1     | $3 \cdot 3 + 2 \cdot 1 + 1 \cdot 1 = 12$ | 0.75           | 75                                | –25%    |
| 4      | 2     | 5     | 4     | $3 \cdot 2 + 2 \cdot 5 + 1 \cdot 4 = 20$ | 1.25           | 125                               | 66.6%   |

Taking  $t = 1$  as the base period,  $\text{CPI}_1 = \frac{V_1}{V_1} = 1$  (or 100 in base 100);  $\text{CPI}_2 = \frac{V_2}{V_1} = \frac{16}{16} = 1$ ;  $\text{CPI}_3 = \frac{V_3}{V_1} = \frac{12}{16} = 0.75$ ; (75 in base 100); and  $\text{CPI}_4 = \frac{V_4}{V_1} = \frac{20}{16} = 1.25$  (125 in base 100).

**Inflation rate**

The inflation rate  $\pi$  associated with the price index  $P$  is the rate of change of the price index  $P$ :

$$\pi_t = \frac{P_t - P_{t-1}}{P_{t-1}}$$

where  $\pi_t$  is the inflation rate from period  $t - 1$  to period  $t$ ,  $P_t$  is the price index in the current period  $t$ , and  $P_{t-1}$  is the price index in the immediately preceding period  $t - 1$ . To express the inflation rate as a percentage, multiply by 100 the right-hand side of the formula.

• **Example 1.** If  $P_t = 50$  and  $P_{t-1} = 40$ , then  $\pi_t = \frac{50-40}{40} = \frac{1}{4} = 0.25$  (= 25%): the price index has been pushed up a 25%.

• **Example 2.** The last column in the table above shows the inflation rate  $\pi_t$  from  $t - 1$  to  $t$ . The values are obtained as follows:

•  $\pi_1$  is not defined (since there is no  $\text{CPI}_0$ );

•  $\pi_2 = \frac{\text{CPI}_2 - \text{CPI}_1}{\text{CPI}_1} = \frac{1 - 1}{1} = 0$ ;

•  $\pi_3 = \frac{\text{CPI}_3 - \text{CPI}_2}{\text{CPI}_2} = \frac{0.75 - 1}{1} = -0.25$  (or – 25%);

•  $\pi_4 = \frac{\text{CPI}_4 - \text{CPI}_3}{\text{CPI}_3} = \frac{1.25 - 0.75}{0.75} = \frac{2}{3}$  (or 66.6%).

If  $\pi$  were calculated, for instance, from  $t = 1$  to  $t = 4$ , then  $\pi_{1 \rightarrow 4} = \frac{\text{CPI}_4 - \text{CPI}_1}{\text{CPI}_1} = \frac{1.25 - 1}{1} = 0.25$  (25%).

**Differences between CPI and GDP deflator**

- (i) The CPI generally includes imported goods. The GDP deflator does not: it only includes the goods produced in the economy, not abroad.
- (ii) The basket of goods in the GDP deflator may vary from period to period. The basket in the CPI generally does not.

• **Remark.** Despite the theoretical differences, when the two indices are computed from empirical data, both indices appear to be strongly correlated and tend to move in parallel.



## Inflation concepts

- **Inflation.** As an economic phenomenon (not as a number), the term 'inflation' refers to the sustained increase in the CPI. It occurs for periods during which the inflation rate is positive.
- **Deflation.** Deflation is the phenomenon opposite to inflation: it is a sustained reduction in the CPI (negative inflation rates, not negative CPI values).
- **Disinflation.** Disinflation takes place when, during an inflation, the inflation rate diminishes, but remains positive.
- **Reflation.** Reflation refers to a period of inflation in which the inflation rate increases. By association, it is also said that the economy itself 'reflates' when the inflation rate increases (since, typically, when economy activity expands, the inflation rate tends to go up).
- **Hyperinflation.** Hyperinflation occurs with astronomical inflation rates (monthly inflation rates of at least 50%). Under a hyperinflation, inflation is out of control.
- **Core inflation rate.** Core inflation rate is an inflation rate computed by excluding the prices of food and energy prices, which tend to be very volatile. Core inflation rate (as opposed to headline inflation rate) is a measure of underlying long-term inflation and can also be used as an indicator of future inflation.

## Data sources

### General

- <http://www.tradingeconomics.com/>
- <http://ec.europa.eu/eurostat/data/database>
- <http://www.imf.org/external/pubs/ft/weo/2016/02/weodata/download.aspx>
- <http://data.worldbank.org/>
- <http://www.oecd-ilibrary.org/statistics>

### US

- <https://fred.stlouisfed.org/>
- [http://www.presidency.ucsb.edu/economic\\_reports.php](http://www.presidency.ucsb.edu/economic_reports.php)
- <https://bea.gov/>
- <https://www.usa.gov/statistics>

### India

- <http://www.indiastat.com/default.aspx>
- <http://data.worldbank.org/country/india>
- <http://www.mospi.nic.in/>

### Indonesia

- <http://data.worldbank.org/country/indonesia>
- <http://www.oecd.org/indonesia/>

### Ecuador

- <http://data.worldbank.org/country/ecuador>
- <https://www.cia.gov/library/publications/the-world-factbook/geos/ec.html>

### Argentina

- <http://data.worldbank.org/country/argentina>

### Italy

- <http://www.oecd.org/italy/>
- <http://data.worldbank.org/country/italy>
- <http://www.istat.it/en>

### France

- <https://www.insee.fr/en/accueil>

### Spain

- <http://www.ine.es/>