



Session I: The Foundations of Economic Development

Caserta, 4 July 2022

Key Concepts

1. Measurements of economic activity and economic development
2. Production versus productivity
3. The factors of production and productivity
4. The concept of competitiveness
5. Comparative advantage
6. Relative capabilities



Measurement of economic activity – the GDP

- The standard measure of economic activity at country level is the **Gross Domestic Product (GDP)**.
- Gross domestic product (GDP) is the total market value of all the finished goods and services produced within a country's borders in a specific time period, (usually one year or one quarter).
- The GDP is at the same time a measurement of three basic economic dimensions:
 1. the total country's production (or output or value added) measured using a production approach,
 2. the income generated in the country, measured using the income approach),
 3. or the total expenditure/ domestic demand, measured using the expenditure approach.

The three methods of calculation of GDP should, at least, theoretically, produce the same results.



Gross Domestic Product

- **Definition of Gross Value Added:** gross market value of output minus value of intermediate consumption.
- The market value of output is equal to the value of the total sales of goods and services, including taxes, plus the value of changes in the inventory.
- The output of the business sector is calculated by adding the value added produced by every single enterprise measured at market prices.
- The contribution to GDP of the public administration is calculated by adding the total salaries received by public sector employees, as there are no market prices for most of public services.



GDP per capita

- **GDP per capita** is a standard measure of a country living standard and a proxy for the country level of development.
- GDP per capita is calculated by dividing the GDP figure at current prices by the number of country inhabitants.
- An even better measure of a country living standard is **the GDP per capita measured at Purchasing Power Parity**, which takes into account differences in prices across countries.
- In this way distortions in international comparisons are significantly reduced, as prices in developing economies are often much lower than in developed one.



World Bank country classification

The World Bank classifies countries according to the per capita income in current USD into four groups: low income, lower middle income, upper middle income and high income countries.

Group (USD)

Low income

Lower-middle income

Upper-middle income

High income

July 1, 2021

Up to 1,045

1,046 – 4,095

4,096 -12,695

➤ 12,695

Source: <https://blogs.worldbank.org/opendata/new-world-bank-country-classifications-income-level-2021-2022>



Libya's classification

- **Libya's GDP was equal to USD 52.1 billion in 2019.** There has been a sharp drop in 2020, followed by a recovery in 2021.
- If we take 2019 as reference year, the Libyan economy had approximately the same size as the economies of Slovenia, Serbia or Panama.
- GDP data for Libya show very large fluctuations due the impact of oil and gas export volumes, the security situation and the oil and gas price variations.
- **Libya is classified** by the World Banks as a **Upper Middle Income Country**.



Libya's classification

- The IMF estimates that the Libyan **GDP per capita (in current USD) is 2022 is forecast to reach USD 7,177**, ranking Libya in the 109 positions over 2016 countries and territories, in the same range of Thailand, Azerbaijan and Iraq .
- Its income per **capita in PPP (USD current) was 15,815** in 2019, but dropped USD 10,846 in 2020, according to the World Bank. No data are available for 2021.



GDP Growth

- **GDP growth is measured by comparing changes in GDP over two periods**, after discounting for inflation (**GDP in real terms**).
- Countries show medium to long term growth paths (GDP growth trend), but in the short term GDP tends to fluctuate around the growth trend due to business cycle dynamic.
- Growth path can be enhanced or reversed due to the impact of structural changes in a country's economy, changes in the external conditions or by effect of non-economic factors (wars, civil unrest and natural disasters).
- Long term country growth trends may produce very divergent performances. Even relatively modest differences in growth rates may produce very different performance over the long term, due to the effect of accrued growth rates
- Egypt and South Korea had a similar income per capita in the 60s. Today South Korea is a high income country while Egypt is a lower middle income country.



GDP growth data for Libya show that the country went through a strong economic phase until 2011. Since then GDP growth halted and GDP growth rates have shown great fluctuations due the impact of the political instability and changes in oil ang gas prices.

Changes in Libya’s GDP

	2015	2026	2017	2018	2019	2020	2021*	2022**
Change % In GDP	-8.9	-2.8	+26.7	+15.1	+2.5	- 31.3	+5.7	+ 3.5

Sources: World Bank: 2015-2020 – Economist Intelligence Unit (estimate): 2021 – IMF (forecast): 2022

GDP and economic development

- But GDP is not an exhaustive indicator of the country well being and social and economic development
- The level of social and economic development is related on how the value added produced by a country is distribute and spent.
- For instance a large share of the income produced may be going to a small minority, creating a significant income inequality. The standard measure of income inequality is the Gini Index varying between absolute inequality = 1 and absolute equality= 0.
- National income may be spent on unproductive goods (weapons, luxury goods for the elite), or in productive investment (private sector investment, physical infrastructure, institutional building) or on social expenses (health, education and training).
- A good synthetic indicator of the level of social and economic development is provided by the UN Human Development scoreboard.
- In 2020 Libya occupied the 105th position (over 189 countries and territories), with an index of 0, 724 over 1. For instance Thailand was ranked 79, Azerbaijan 88 and Iraq 123.



GDP growth and externalities

- Another important element to consider is that the country's income (GDP) can be produced by depleting the country's wealth, in terms of extraction of non-renewable resources, such as oil and gas, and by damaging the environment.
- Those negative effects, called in economics **negative externalities**, are not reflected in the GDP calculation. The destruction of infrastructure or the waste of human capital caused by conflicts are also not entering the GDP calculation, as GDP measures the flows of goods and services produced over a period, not the stock.
- But there are also **positive externalities** associated to education, training, human capital development and Research and Development expenditures, equally not properly measured by GDP.
- Following this introduction , we now look at what are the determinants of economic growth.
- A first step is to introduce the concept of factors of production and the production function.



Key concepts:

1. Production

- a) **Production at company level:** expressed by company *turnover*
- b) **Production at industry level:** *gross turnover/value added by sector (i.e. industry, manufacturing, services)*
- c) **Production at economy level:** *value added/GDP*

2. The factors of production

- a) Land, labour (L) and capital (K)
- b) Factors are combined to generate output/value added, i.e.:
- c) Cobb-Douglas Production function: $Y = aL + bK$

a and b: relative contributions of labour and capital to production and also the share of national income that goes to labour and to capital (profits), under a set of conditions



Production

- Firms → productive activities
 - For example: seeds + land + fertiliser + labour = corn
 - Or: energy + raw materials + labour + machinery = tractor
- Various productive activities → Industries or sectors and value chains
 - For example: the hydrocarbons industry, the car industry, Hollywood.
 - Value chains: various firms producing different stages of a product or service:
 - R&D + design + auto parts + assembly + car dealers = car sold



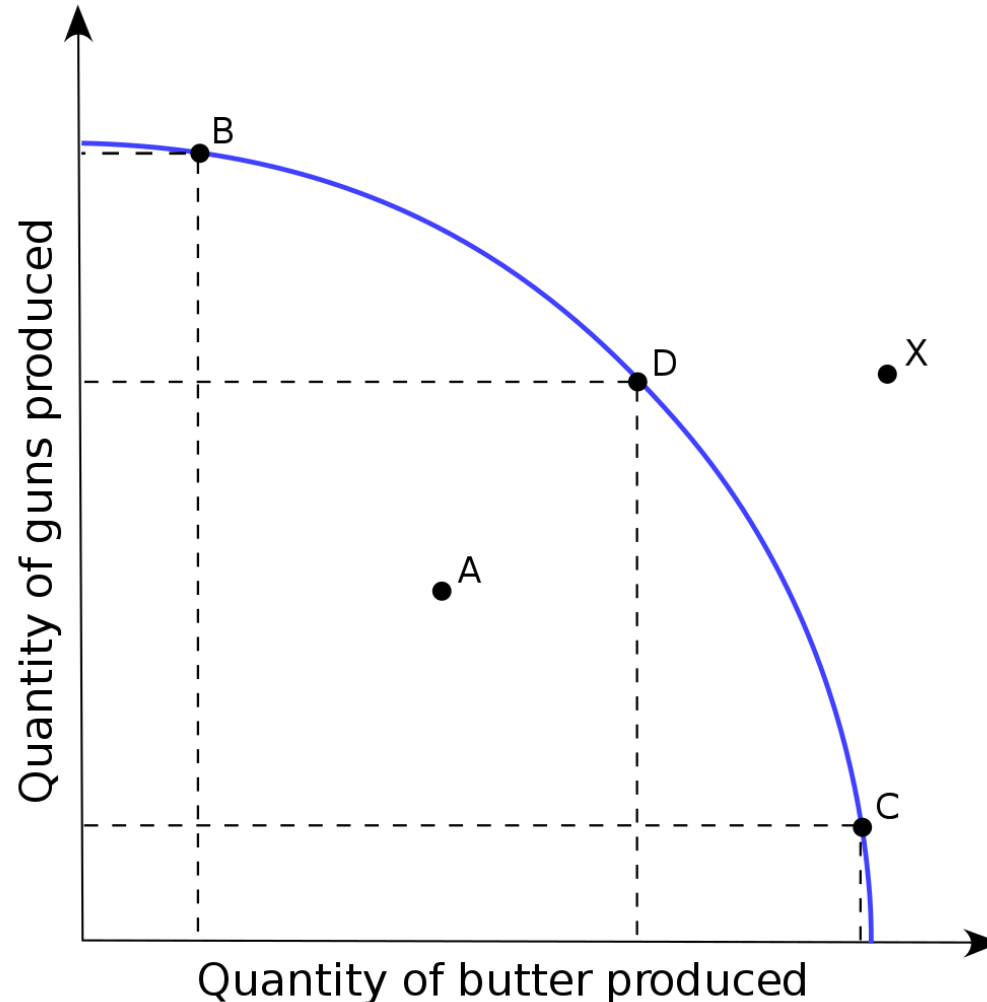
The Factors of Production

- “Land”: more generally, natural resources, include land for farming, land for productive units (e.g. factories), energy resources, minerals, etc.
- Labour: Human time spent in production.
- Tangible Capital: Durable goods to produce yet other goods (e.g. machines, roads, computers, software, trucks, etc.).
- Intangible Capital: Brand names, trade marks, patents, licenses, software, etc...



The Production Possibility Frontier

When production factors are efficiently combined the country operates at the production frontier, with different product mix (points B-D-C)



Productivity

The second key concept is that of productivity.

Productivity is a measure of efficiency and it is the main determinant of economic growth.

Productivity is commonly defined as a ratio between the volume of output and the volume of inputs. In other words, it measures how **efficiently production factors such as labour and capital** are being used in an economy to produce a given level of output.

The total level production is determined by the quantity of factors and the degree of efficiency at which the factors are combined. But factors, labour and capital, have decreasing returns. Adding more workers to the same plant only marginally increases production.



Total Factor Productivity

Economies are expected to grow by adding labour and capital inputs in a proportional way.

When economists conducted empirical studies on economic growth, they found out that labour and capital inputs could not fully explain historical output growth. The casual correlation between inputs and output was not perfect. It left out a residual, expressed by the symbol ε , as reported in the linear production function below.

$$Y = aL + bK + \varepsilon$$

- The residual ε is very important and represents what we don't know about economic growth. It is normally associated to technical progress that improves the level of efficiency of factors combination. But, there is much more in ε . ε is called **Total Factor Productivity (TFP) and it is the key drive of economic growth.**



Why Total Factor Productivity is so relevant

Single factor productivity indicators and in particular the aggregate **labour productivity indicator** is the simplest proxy of a country productivity performance. It is easy to calculate, by dividing:

Y = total output in year t by L = total number of hours worked in year t

But also gives a partial and distorted view of the determinants of different cross country productivity performances.

The **Total Factor Productivity** (also called Multi-Factor Productivity) allows for a more in-depth analysis of the productivity determinants, but it is much more complex to calculate as it requires an extensive database, and the parameters are the results of econometric estimates.



More about Total Factor Productivity

The residual ε represents the contribution to the total production that is not explained either by labour or by capital. This coefficient is called total factor productivity and is a broad indicator of how efficiently the others factors are combined.

The residual may have several determinants:

1. In the economic literature ε is often considered a proxy for technological progress. The application of new technologies may increase the efficiency of the production process. The same applies to introducing innovations in the production system (but this did not happen so far for digital technologies) or by improving management methods.
2. ε may also be determined by factors external to the production system, such as the quality of the business environment, the presence of heavy administrative burdens or the poor quality of infrastructure. In the presence of heavy administrative burdens, a high share of labour is wasted in administrative tasks instead of being employed to produce goods and services and capital is not fully utilized.
3. Production factors qualitative improvements also lead to higher productivity, as in a more skilled labour force. If not reflected in the data related to L and K they will be caught by a higher ε .

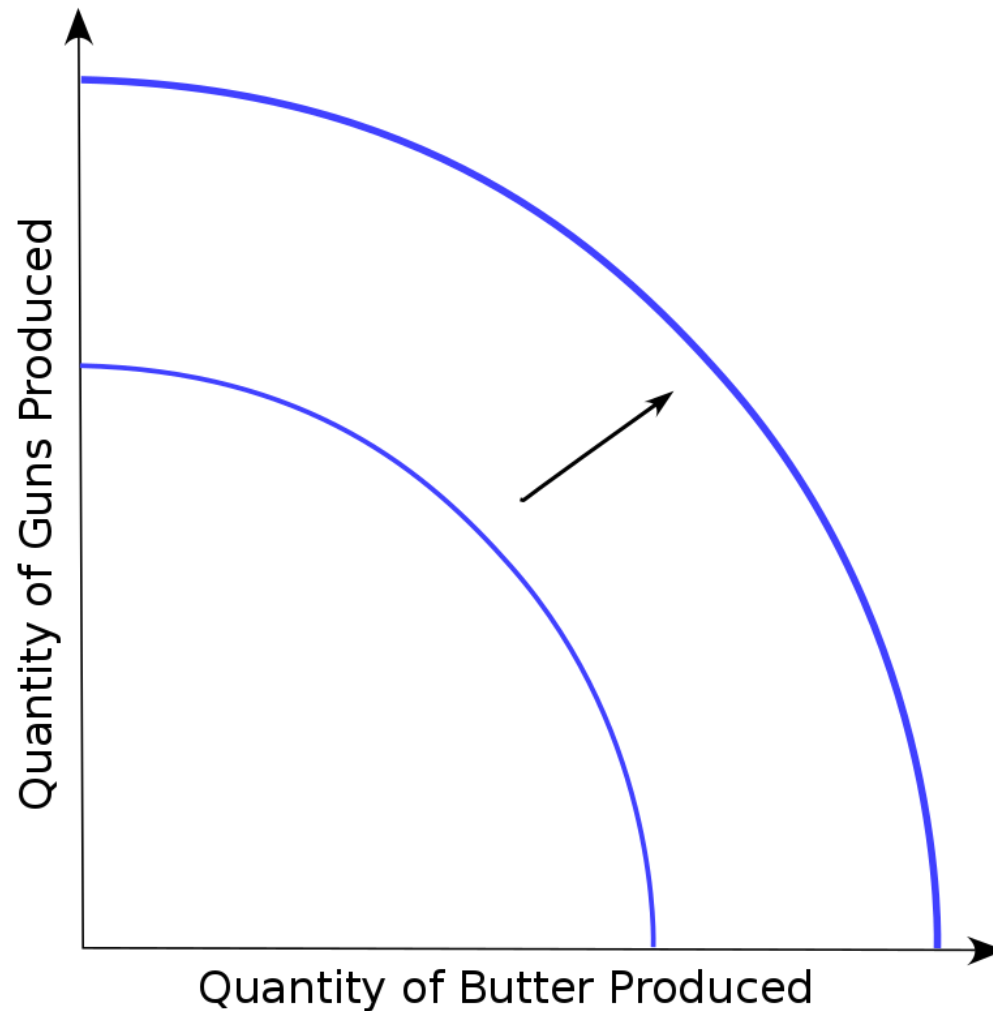
The analysis of total factor productivity across countries and time is for understanding changes in country competitiveness and different growth paths.

TFP trends: University of Groningen data base - Values: World Bank Global Productivity data base



Productivity and the production possibility frontier

The production frontier expands as productivity increases



Measuring productivity



<https://www.oecd.org/sdd/productivity-stats/oecd-compendium-of-productivity-indicators-22252126.htm>

- **Labour productivity:** GDP per hour worked (and not headcount).
- **Capital input:** flow of productive services (capital services) that can be drawn from the cumulative stock of past investments.
- **Total factor productivity:** Residual growth after accounting labour and capital → represents efficiency in the combination of those inputs



Productivity and economic growth

- The ultimate economic objective of a country is to improve the well being of its inhabitants by promoting economic growth.
- Productivity growth is a key determinant of economic growth, together with labour supply and capital investment.
- Productivity growth accrued effects can be impressive.
- Real GDP per capita in China increased from USD 1,767 in 2000 to 10,261 in 2019, increasing a little less than six times in 20 years.
- Real GDP per capita in Egypt increased from USD 1,981 in 2000 to 2,818 in 2017, an increase of 42% in the same period.

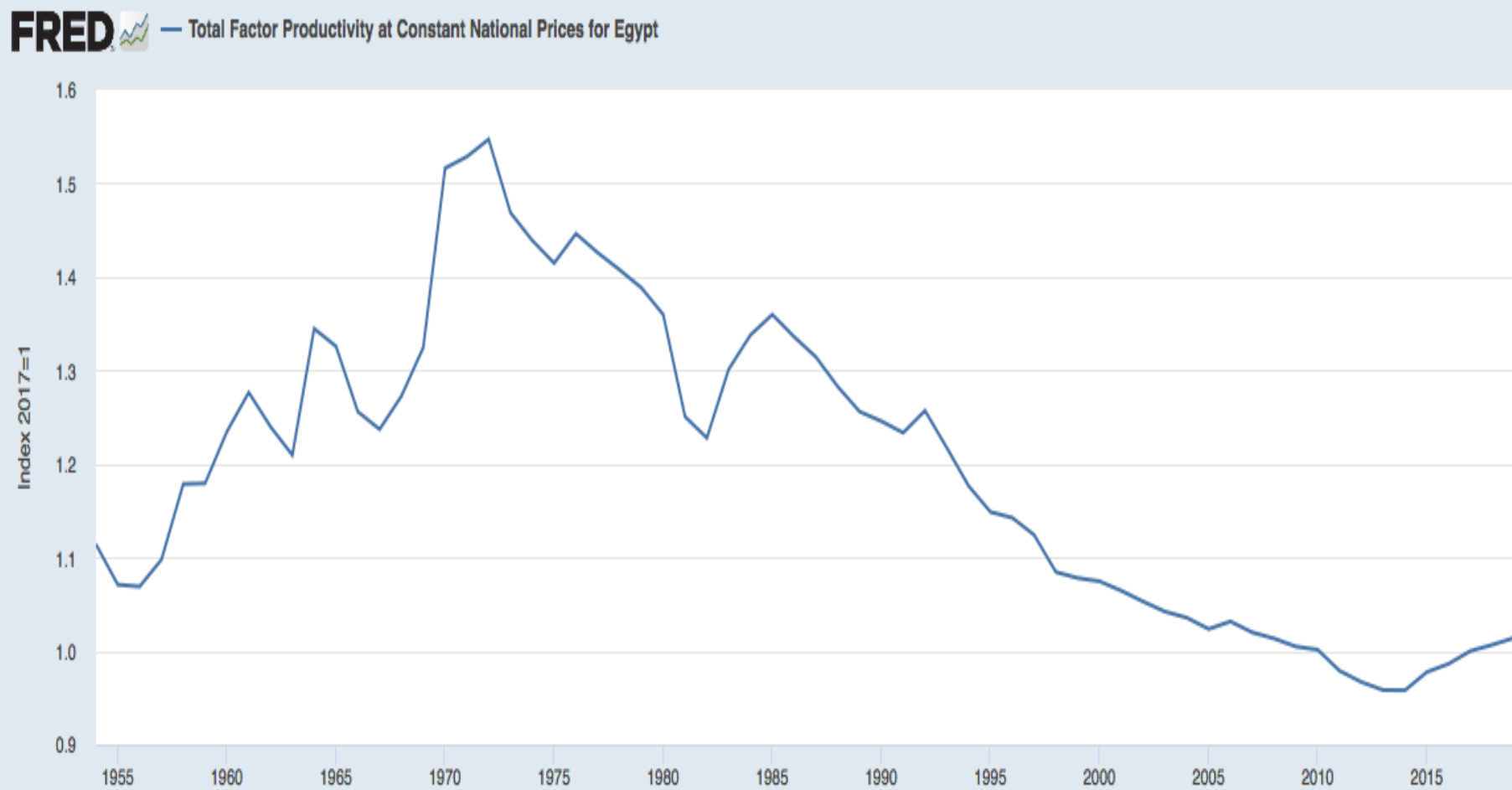


More about Total Factor Productivity

Trend in Total Factor Productivity: **Egypt**

2017: 0.35*

Index: 2017=1



Sources: University of Groningen; University of California, Davis

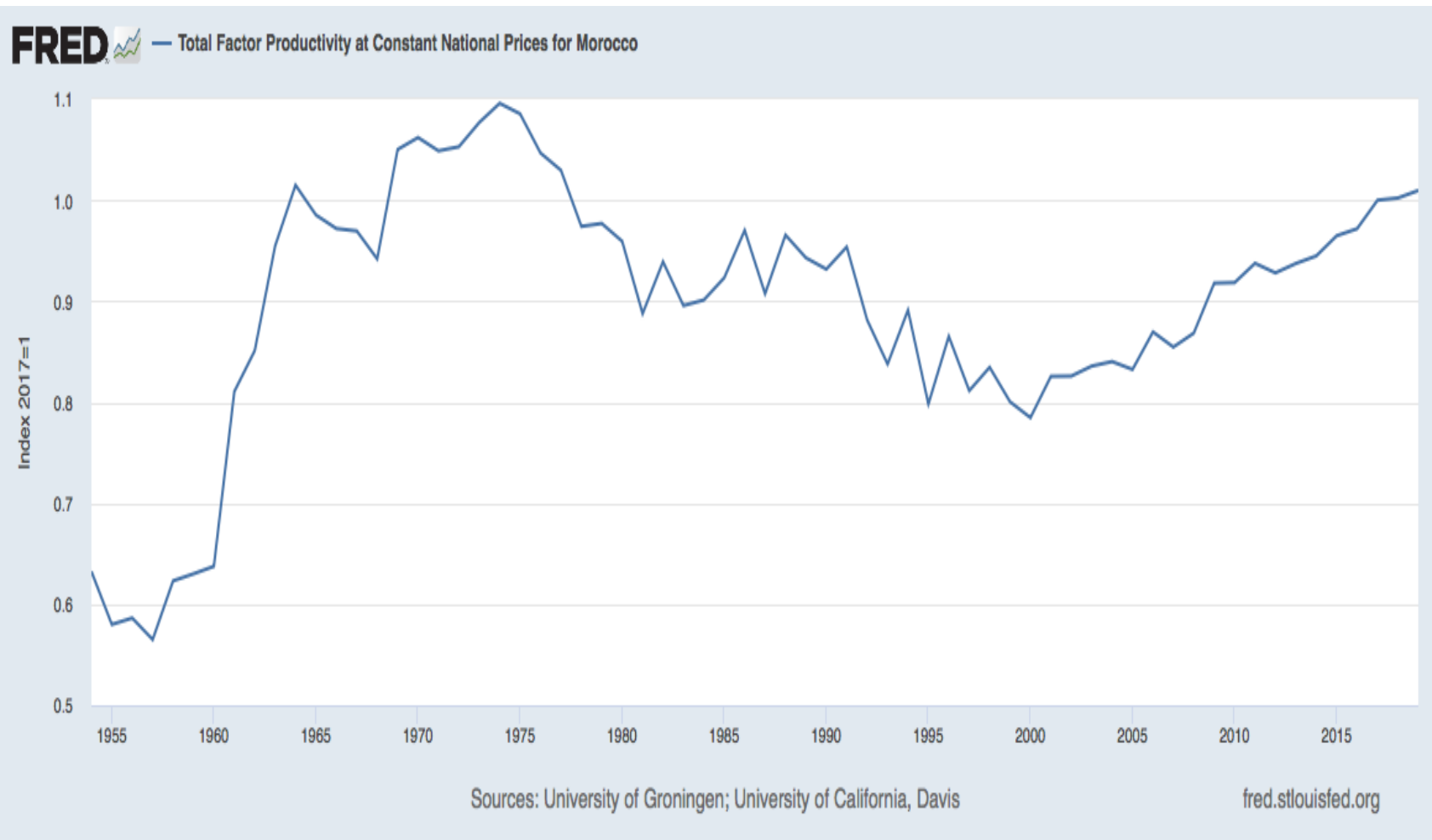
fred.stlouisfed.org

More about Total Factor Productivity

Trend in Total Factor Productivity: **Morocco**

2017: 1.51*

Index: 2017=1



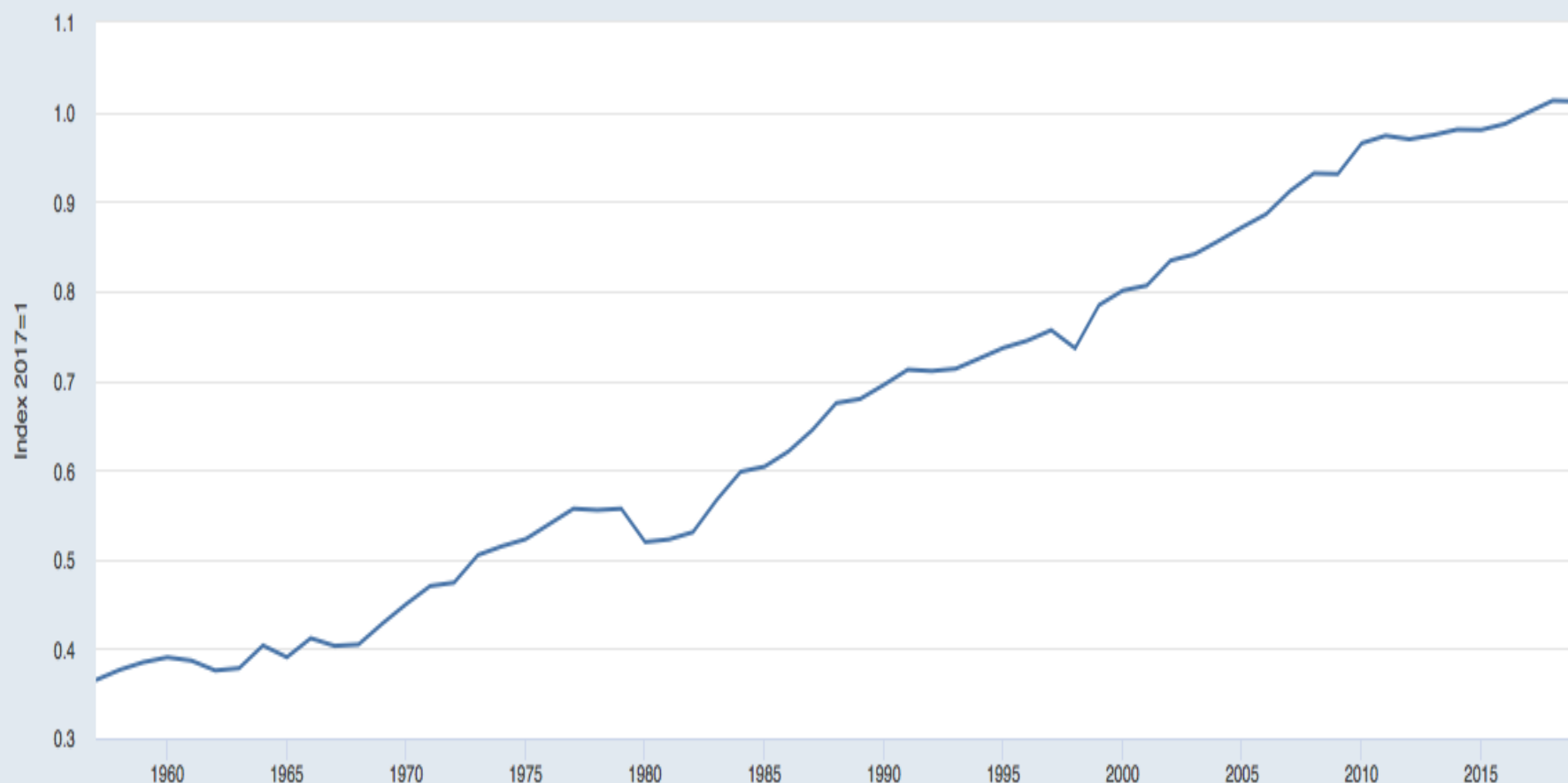
More about Total Factor Productivity

Trend in Total Factor Productivity: **South Korea**

2017: 0.69*

Index: 2017=1

FRED — Total Factor Productivity at Constant National Prices for Republic of Korea



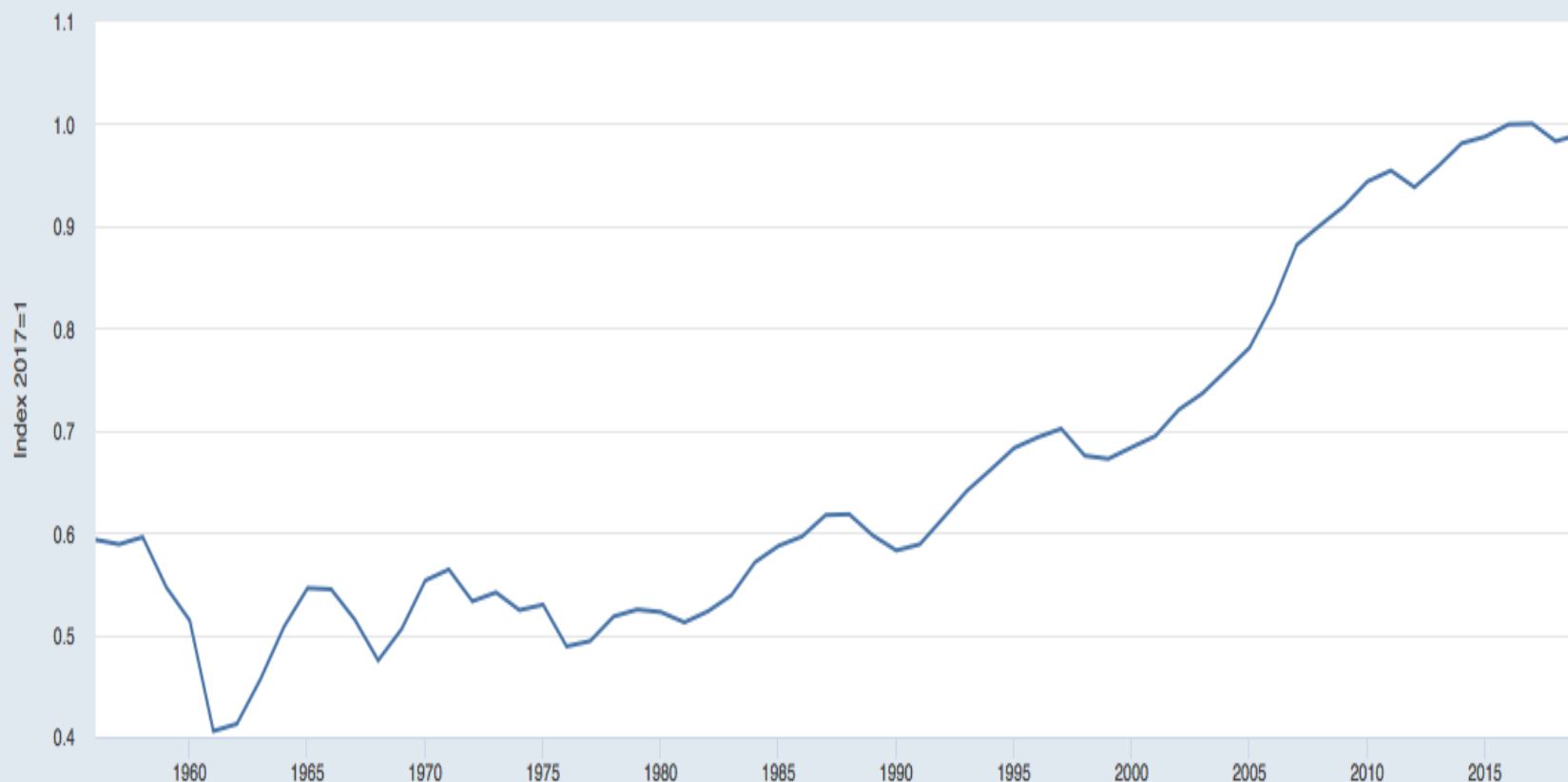
More about Total Factor Productivity

Trend in Total Factor Productivity: **PR China**

2017: 3.13*

Index: 2017=1

FRED — Total Factor Productivity at Constant National Prices for China



Sources: University of Groningen; University of California, Davis

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What is the role of the state in fostering economic development?

- Private sector certainly plays a central role in generating value added and economic growth. But the private sector can do it alone. Public institutions and public policies also play a an essential role in promoting economic activity and fostering economic growth.
- What are their key contributions:
 1. The State defines the legal framework within which the private sector operates. The State is the guarantor of the “rule of law”. It is expected to maintain security, protect private property and capital and, through the commercial courts, to ensure the correct execution of business contracts. In countries with a poor degree of “rue of law”, private enterprise have to sustain high costs to secure their property and investment and conduct business transactions only with secure counterparts.



What is the role of the state in fostering economic development?

2. The State is the developer and, sometimes, also the operator of basic infrastructure without which private firms can not operate (in i.e. energy generation and distribution, road and railway systems, port, airports, water distribution, etc.). It also set the terms for developing those infrastructure in cooperation with private sector investors through concessions or other contractual forms.
3. Specialized state institutions regulate private sector operations, controlling for health risks and negative externalities and for making sure that markets remains competitive and transparent.
4. Public educational institutions are the main contributor to the accumulation of human capital
5. The Central Bank is the ultimate guarantor of bank deposits and the stability of the national currency.



What is the role of the state in fostering economic development?

- We are all well aware that the State can act both as an essential promoter as well as a major obstacle and as a great distorter of economic growth.
- Public institutions may be captured by power groups, the state may embark on wrong public policies, incompetence, corruption and personal interests may undermine the rule of law.
- It is therefore essential that State activity is subject to external controls (free press, independent judiciaries, democratic elections, public-private dialogue).
- It has been proved that inclusive institutions have long lasting positive effects on economic growth, while extractive institutions have deep detrimental effects.
- It takes long time to build inclusive, democratic and efficient institutions, but it takes relatively little to destroy them.



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