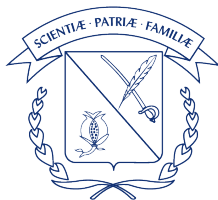


Economic Growth

Luis Francisco Gómez López

FAEDIS

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UNIVERSIDAD MILITAR
NUEVA GRANADA

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- Check the message **Welcome greeting** published in the News Bulletin Board.
- Dear student please edit your profile uploading a photo where your face is clearly visible.
- The purpose of the virtual meetings is to answer questions and not to make a summary of the study material.
- This presentation is based on (Cardenas 2020, chap. 3)

Analyze the determinants of economic growth

- Economic growth can be define as an increase in the quantity and quality of products that a society produces and consumes (**Roser 2013**)
- The definition of economic growth is straightforward but this concept is extremely difficult to measure (**Roser 2013**)
- Economists often measure economic growth as an increase in Gross Domestic Product per capita by applying inflation adjustments. Furthermore, if international comparisons are necessary also purchase power parity (PPP) adjustments are applied (**Roser 2013**)
- From the long-term perspective of social history economic growth is a recent phenomena (**Roser 2013**)
- For data related to economic growth from a long-term perspective check out (**Bolt and Van Zanden 2024b**) and (**Bolt and Van Zanden 2024a**)

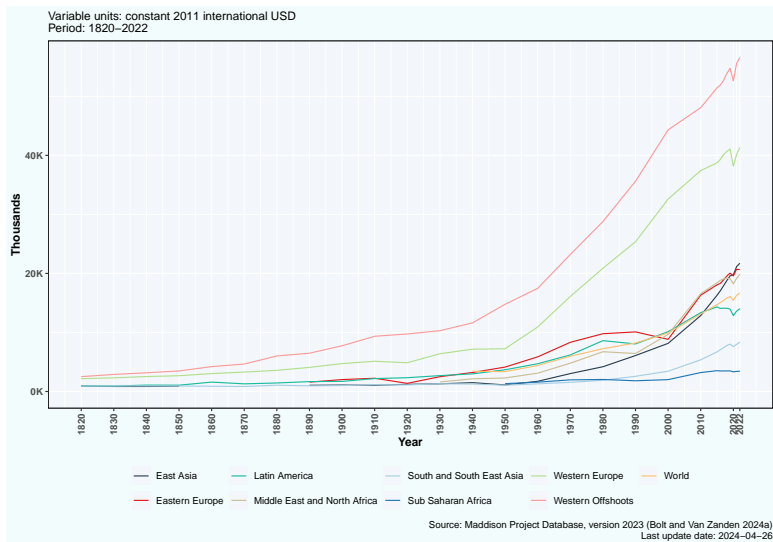
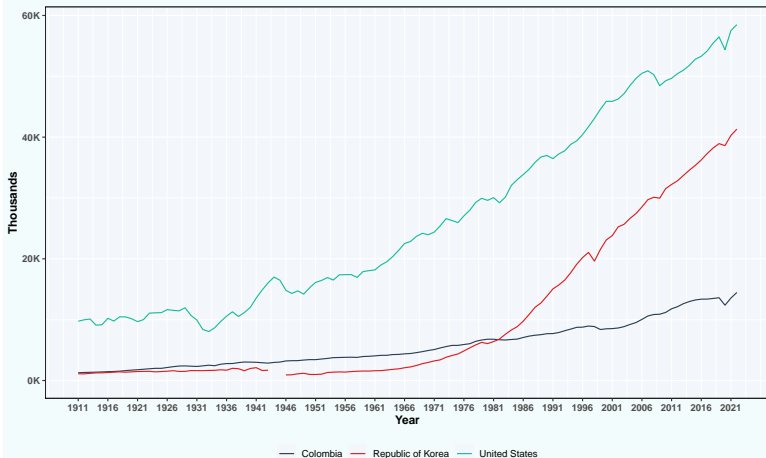


Figure 1: GDP per-capita purchasing power parity, Latin America and the World

Variable units: constant 2011 international USD
 Period: 1911–2022
 No information for South Korea in 1944–1945



Source: Maddison Project Database, version 2023 (Bolt and Van Zanden 2024a)
 Last update date: 2024-04-26

Figure 2: GDP per-capita purchasing power parity, Colombia, USA and South Korea

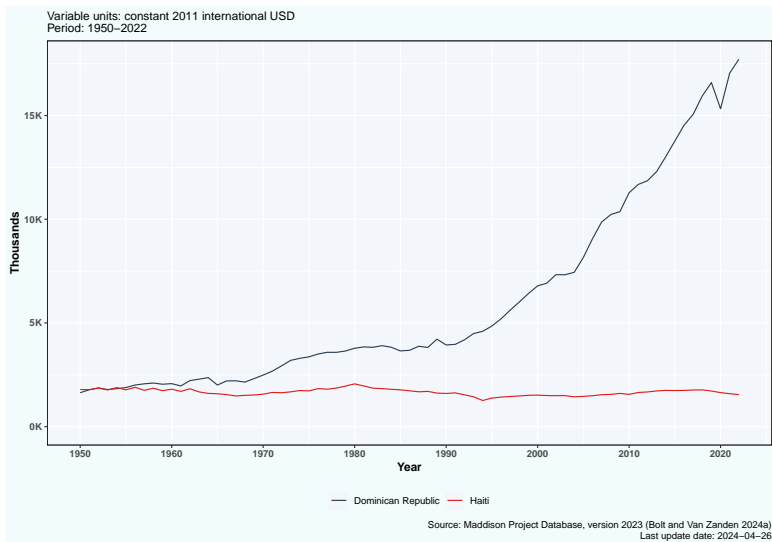


Figure 3: GDP per-capita purchasing power parity, Haiti and Dominican Republic

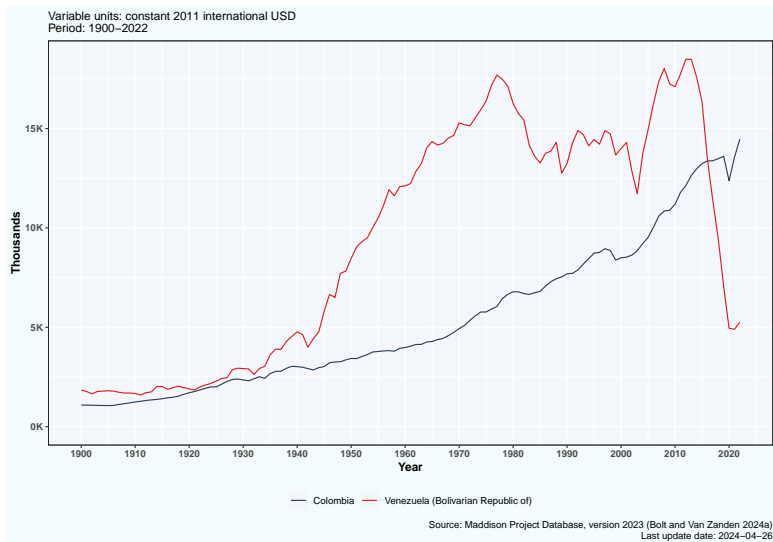


Figure 4: GDP per-capita purchasing power parity, Colombia and Venezuela



(a) 1987



(b) 2013

Figure 5: Shanghai's financial district of Pudong (Taylor 2013)

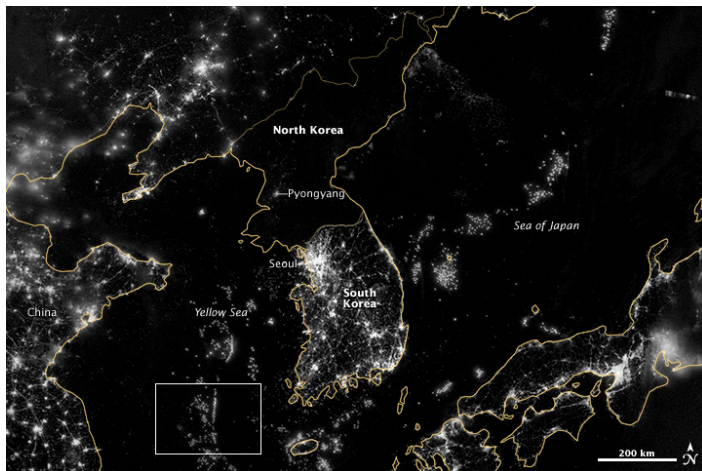


Figure 6: Korean peninsula, nocturnal luminosity: September 24, 2012
(Observatory, Allen, and Simmon 2012)

- Google Earth Timelapse Dubai, UAE check out¹:
 - <https://youtu.be/pjM26oRlay0>
- Explore about Timelapse at:
<https://earthengine.google.com/timelapse>
 - Urban growth
 - Dalian, Liaoning, China
 - Las Vegas, Nevada, USA

¹Timelapse is a global, zoomable video that lets you see how the Earth has changed over the past 32 years.

Gross domestic product is obtained by using the following inputs:

- Labor
 - Quantity of labor:
 - Employment²
 - Hours worked
 - Quality of Labor:
 - Employment by educational attainment
 - Compensation by educational attainment

²Includes individuals employed aged 15 years or over where this age range is necessary for international comparisons.

Gross domestic product is obtained by using the following inputs:

- Produced non-financial fixed assets³
 - Dwellings
 - Buildings other than dwellings
 - Other structures
 - Land improvements
 - Transport equipment
 - Information and Computer Technology (ICT) equipment
 - Other machinery and equipment
 - Weapons systems
 - Cultivated biological resources

³Other non-financial assets can be included but these are the ones that are usually measured. For more information check out ([OECD 2009](#)) and ([OECD 2001](#))

Other factors that affect the Gross Domestic Product different from labor and produced non-financial fixed assets

- These factors are not directly observable but are used in growth accounting to calculate **Total Factor Productivity/Multifactor productivity** as an approximation to technological change
 - Technological change is defined as changes in the Gross Domestic Product that are not due to changes in inputs

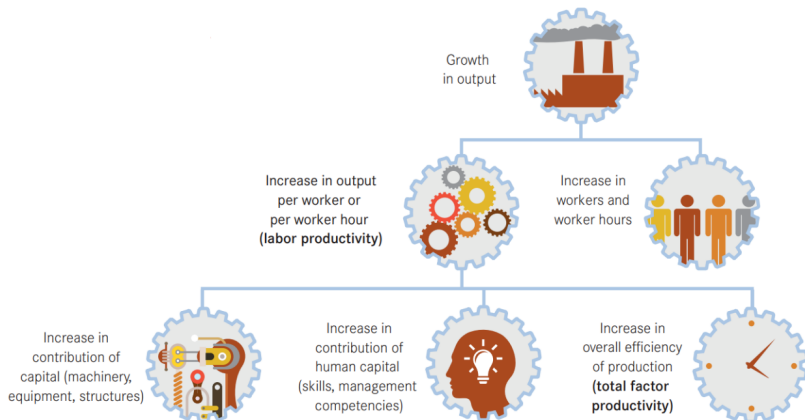


Figure 7: Labor productivity and total factor productivity (Vries and Azeez Erumban 2017, 21, fig 3)

Table 1: Growth accounting applied to Colombia for selected years

Measure	1990	2010	2020	2024
Growth in real GDP	4.08	4.40	-7.53	2.00
Contribution of Labor Quantity to real GDP growth	1.43	1.94	-13.53	0.66
Contribution of Labor Quality to real GDP growth	0.80	1.08	1.97	0.24
Contribution of Total Capital Services to real GDP growth	1.23	2.49	0.83	1.78
Growth of Total Factor Productivity	0.63	-1.12	3.20	-0.69

Source: Total Economy Database - Growth Accounting and Total Factor Productivity

Last update: 2024

- Proximate determinants

- Increase in workers and worked hours
- Increase in produced non-financial fixed assets
- Increase in educational attainment, experience and skills (lifelong learning)
- Increase in overall efficiency of production (total factor productivity)

- Fundamental determinants
 - Better institutions (Cardenas 2020, chap. 4)
 - Integration into the global economy (Cardenas 2020, chap. 5)
 - Geographical conditions

- To my family that supports me
- To the taxpayers of Colombia and the **UMNG students** who pay my salary
- To the **Business Science** and **R4DS Online Learning** communities where I learn **R** and **π -thon**
- To the **R Core Team**, the creators of **RStudio IDE**, **Quarto** and the authors and maintainers of the packages **tidyverse**, **knitr**, **janitor**, **kableExtra**, and **tinytex** for allowing me to access these tools without paying for a license
- To the **Linux kernel community** for allowing me the possibility to use some **Linux distributions** as my main **OS** without paying for a license

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