

An Economic Study of Egypt's Economic Indicators from 1995 to 2018

Analyzing the State of the Economy and Comparing with 3 Other Countries and the World Using Inflation, Unemployment, and GDP Growth Data."

Research Questions

1. Is inflation caused by unemployment?
2. How is Egypt's overall economic performance?
3. Is Egypt's economy improving?
4. Comparison with other countries?

Before answering those questions, let's first understand the data.

Data

Introduction

- The data is collected from World Bank, downloaded on the metrics:
 - Unemployment
 - Inflation
 - GDP Growth

Preprocessing

- After Downloaded, The data is preprocessed to the scope of the project using MS Excel:
 - Exclude irrelevant data parts
 - Focus on the required country
 - Focus on the required time (ensuring no gaps or NULLS)
 - Convert, aggregate, and prepare data for a simple model before downloading each dataset file.

Data Before Preprocessing:

Country Code	Region	IncomeGroup	SpecialNotes	TableName						
ABW	Latin America & Car	High income		Aruba						
AFE			26 countries, stretch period for national accounts data is designated as either calendar year basis (CY) or fiscal year basis (FY). For this country, it is fiscal year-based (fiscal year-end: March 20). Also, an estimate (PA.NUS.ATLS) of the exchange rate covers the same period and thus differs from the official exchange rate (CY). In addition, the	Africa Eastern and Southern						

Data After Preprocessing:

Year	Area	Unemployment	Inflation	GDP growth
1991	Africa Western and Central	4.1578931395	1.7418878593	1.1181189587
1992	Africa Western and Central	4.2467135579	-0.062999006479	2.2891688636
1993	Africa Western and Central	4.3670332954	0.55345572354	-1.3255543729
1994	Africa Western and Central	4.3900972021	31.841016842	-0.22879269088
1995	Africa Western and Central	4.3927688784	10.563288669	1.8516368924
1996	Africa Western and Central	4.3261340161	4.9142397264	4.6218220522
1997	Africa Western and Central	4.2961178431	3.9971417044	4.3878209973
1998	Africa Western and Central	4.3042009977	4.4711254385	3.6155976306
1999	Africa Western and Central	4.4896772913	0.37226617031	1.5179946432
2000	Africa Western and Central	4.5308434819	2.5307751674	3.8121611504
2001	Africa Western and Central	4.4651955617	4.3615291401	5.2486832407
2002	Africa Western and Central	4.2737064857	3.1886933022	9.9433071225
2003	Africa Western and Central	4.1679789388	1.760904101	5.6263606477
2004	Africa Western and Central	4.0868914612	0.69433630595	8.0714734505
2005	Africa Western and Central	4.0964646768	5.6316335136	5.7974337195
2006	Africa Western and Central	3.9692794111	4.4158998417	5.2871710421
2007	Africa Western and Central	3.9480584198	3.6073676798	5.4475304356

Final Data

YEAR	AREA	UNEMPLOYMENT	INFLATION	GDP GROWTH
1991	Africa Western and Central	4.1578931395	1.7418878593	1.1181189587
1992	Africa Western and Central	4.2467135579	- 0.062999006479	2.2891688636
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Understanding Data

YEAR	AREA	UNEMPLOYMENT	INFLATION	GDP GROWTH
1991	Africa Western and Central	4.1578931395	1.7418878593	1.1181189587
1992	Africa Western and Central	4.2467135579	- 0.062999006479	2.2891688636
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Data have number 4, 1, 3.6 Of what???what do we exactly mean by each metric?

Explanation of metrics and units:

- **Inflation**: Percentage change in prices (e.g., 5 means prices increased by 5% over the year).
- **Unemployment**: Percentage of labor force (People who are working) that is unemployed (e.g., 4 means 4% of labor force is unemployed).
- **GDP Growth**: Percentage change in real GDP (e.g., -5 means the economy contracted by 5%).

Given the numbers are percentage, the most suitable Power BI summarization for most plots is: Average.

Now, Do we want 0 inflation and unemployment? Which value is good? Which is bad?

Normal/Target Ranges:

Unemployment: Low is good, but 0 is unrealistic. Acceptable range: 3-5% (lower is better, >10% is critical, varies by country economic strength).

Inflation: Low is good, but not 0. Healthy range: ~2% (encourages investment). >15% is critical.

GDP Growth: Higher is better. Ranges:

- <0: Contraction
- 0-1: Stagnation
- 1-5: Growth
- > 5: Rapid growth (emerging economy)

Analysis

Now, the questions will be answered by comparing them with expectations, to better answer them let's rephrase the questions and answer step by step.

Unemployment-Inflation Relationship & Expectation (Phillips Curve)

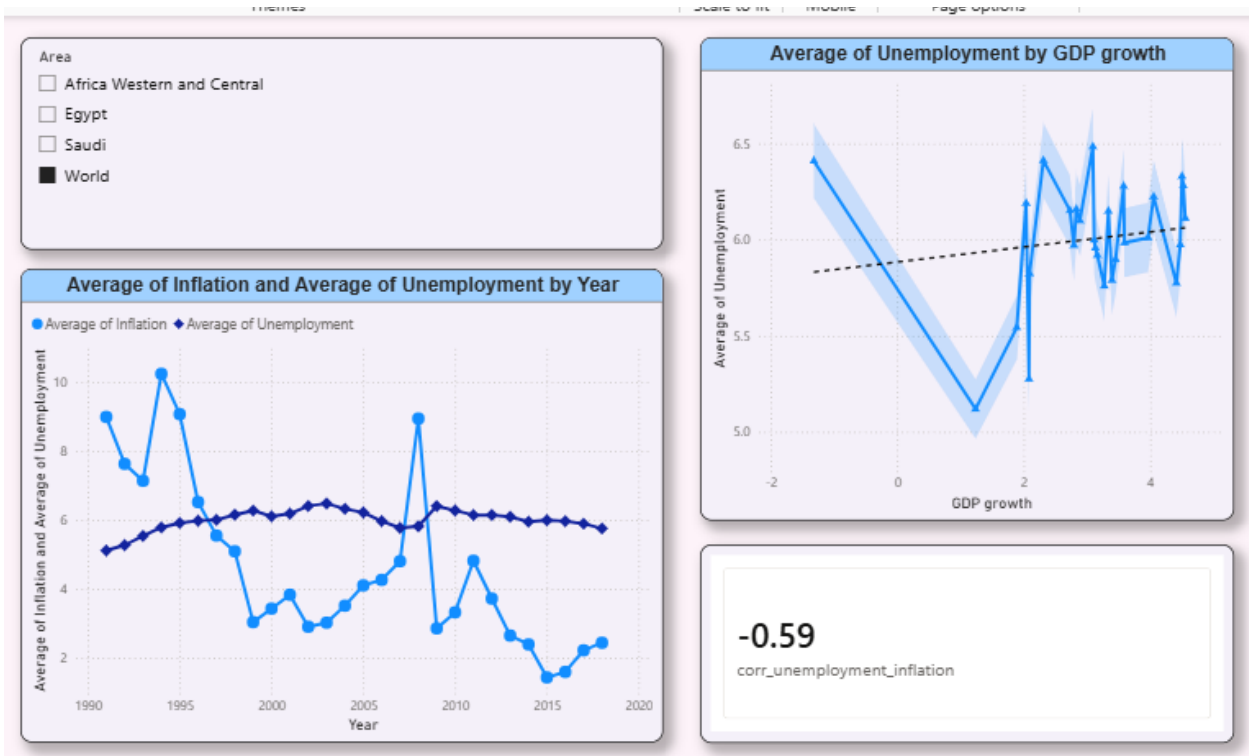
Comparison

Theory:

- When unemployment is low → more jobs → more spending → prices rise → inflation increases.
- When unemployment is high → less spending → prices stable → inflation low.

Expected: Inverse relationship between inflation & unemployment (in normal conditions, without other factors).

Observation from data (Average of Inflation and Average of Unemployment by Year Plot):



Country	Phillips Curve
Egypt	<ul style="list-style-type: none"> ○ Mostly follow except from 1995-2005 ○ The overall correlation between inflation and unemployment in Egypt is weak (0.21). However, visual inspection of the plot suggests an inverse relationship. This discrepancy may be explained by structural differences across sub-periods,

	particularly between 1995–2005 and the later years.
SAUDI	Don't follow the Curve, meaning that the inflation was not caused by only the labor market but may to other reasons like Oil Market
Africa, Western and Central	Const Unemployment, so the main changing factor is inflation
World	Follows, especially after 1997 become more clearer

Unemployment & GDP Growth Relationship and comparing to Expectation (Okun's Law):

Theory:

GDP growth \uparrow \rightarrow more jobs \rightarrow unemployment \downarrow (inverse relationship).

Expected: Inverse relationship between GDP growth & unemployment (in normal conditions, without other factors).

- Observations:

Observation from data (Average of Unemployment by GDP growth Plot):

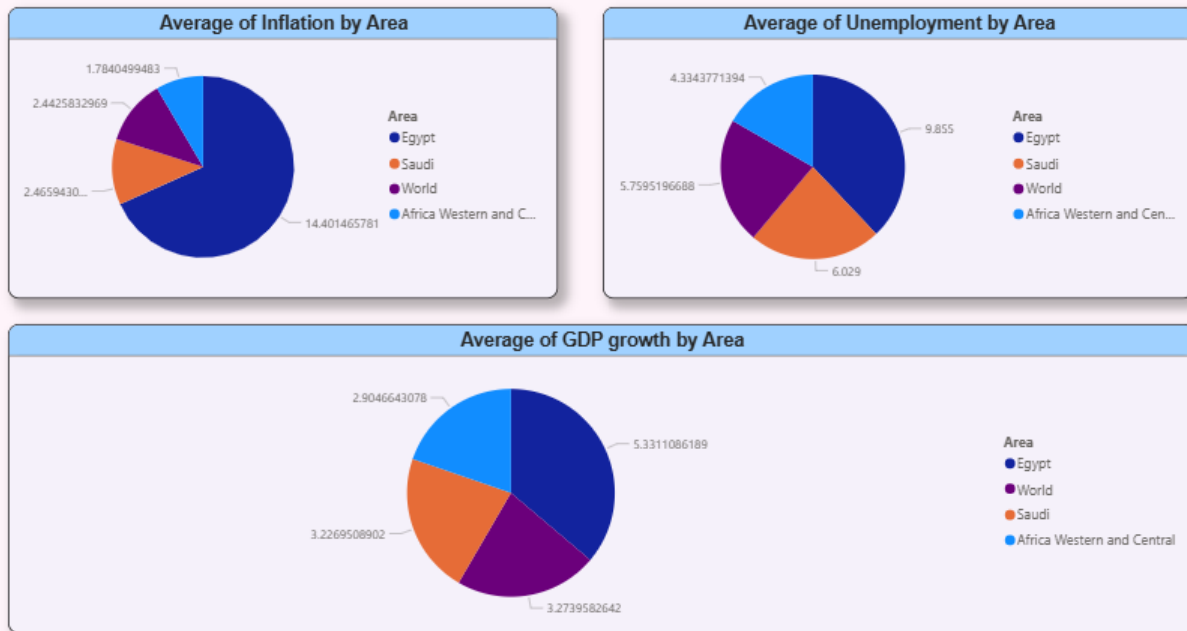


Country	Okun's Law
Egypt	Inverse (matches Okun's Law)
SAUDI	Slight positive (Contrads Okun's Law)
Africa, Western and Central	Inverse (matches Okun's Law)
World	Slight positive (Contrads Okun's Law)

- Possible reasons for mismatch:

- Growth driven by oil sector
- Tech-driven growth
- Capital-driven growth

What are the current rates of unemployment, GDP growth, and inflation (latest year)?



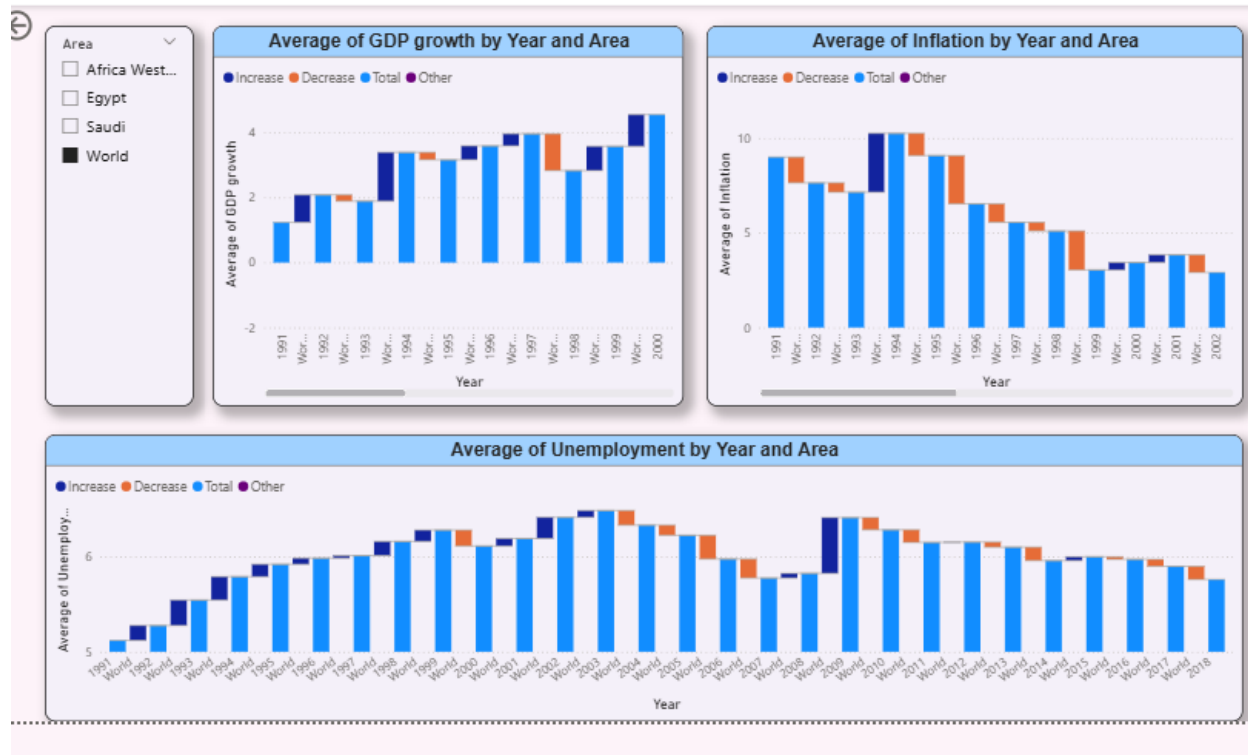
The plot represents the rates of unemployment, GDP growth, and inflation in 2018 (last year of data).

From this Plot and understand of the data (understanding data section), We can estimate the rates range of last year.

Country	Unemployment	Inflation	GDP Growth
Egypt	Very High	Very High	High (growing)
SAUDI	Medium	Low	Medium
Africa, Western and Central	Low	Very Low	Medium
World	Medium	Low	Medium

Is Egypt's economy improving economically?

By analyzing the report page of “Change in economic factors”.



Country	Unemployment	Inflation	GDP Growth
Egypt	Decreased till 2001, then increased	Increased & decreased, ended high	Increased & decreased, ended medium-stable
SAUDI	General decrease with some increases	Decreased	Increased some years, then started decreasing
Africa, Western and Central	Decreased, then started increasing	Decreased	Increased some years, then started decreasing
World	Increased till 2003, then decreased	Decreased	Notable increase till 2007, then sharp decrease, then slight

Summary of Economic Indicators of Egypt

This final sub section will summary the results of Egypt.

- Unemployment and inflation indices show fluctuation over the years, decreasing in some years and increasing in others, with generally high values.

- This is not solely due to the Phillips Curve but is also affected by other factors like economic crises and structural shocks.
- However, a continuous increase in growth rate is observed, indicating the economy is in a growing and developing phase.
- According to Okun's Law, when economic growth increases, unemployment tends to decrease, as shown in the data.
- Comparing this relationship with other countries, Okun's Law and Phillips Curve application varies depending on each country's economic conditions.
- For example, in major crises like the COVID-19 pandemic, inflation or unemployment may rise without reflecting the traditional relationship with economic growth.
- Specific sectors like oil in Saudi Arabia or technology in developed countries can lead to economic growth that doesn't necessarily create jobs, or inflation not linked to the labor market, making the traditional Phillips Curve unclear.

After answering the questions, the next sections will explain other aspects of the report and analysis.

Optimization of The Report

- Use Performance Analyzer to analyze the loading time of visuals.
- Modified Data Model Accessibility: Used **FLAT TABLE** for optimized fast querying.

Accessibility

- **Add markers:** Include markers (e.g., indicators, labels) to highlight key insights on the dashboard.
- **Logical tab order:** Organize tabs in a logical sequence for better navigation.
- **Mobile screen:** Optimize the dashboard for mobile screens for better accessibility on smaller devices.

Problems Faced and Solution

Data Structure Problem

Although the data was available on the website as tabular, the table schema is hard as each metric is XLSX with 2 sheets / 2 CSV files , include all countries as rows with unnecessary columns, include large scope of time making some rows have NULLs

Solution:

Preprocessed the data, selected suitable range ,transposed data and merged per country making flat file data.
