مؤسسة النقد العربي السعودي
Saudi Arabian Monetary Authority

THE COST OF UNEMPLOYMENT

By: Abdulelah Alrasheedy

Economic Research Department- Economic Modeling Division

Agenda

- Problem Statement
- The Proposed Original Contribution, Methodology and goals
- Introduction
- Literature Review
- The Cost of Unemployment
- Findings and Solution

Problem Statement

- **Saudi Arabia, a "young" country with significant oil resources, suffers from a high rate of unemployment that reached.....12.9% NOW**

- **The Saudi labor force exhibits aspects that are not normally found in other countries such as:**

  - Low female participation rate in the labor force.
  - A high proportion of native-born employees in the public sector versus a low proportion in the private sector.
  - Most of those unemployed are highly educated.

- **As a result of this high rate of unemployment, Saudi Arabia could suffer from significant social and economic costs unless some action are taken.**

PROPOSED ORIGINAL CONTRIBUTION, METHODLOGY AND GOALS

This Paper Seeks to:

- Examine the causes behind unemployment.
- Explain the historically-based reasons behind unemployment within the Saudi Arabian labor force.
- Illustrate the actual linkages between unemployment and the losses in the Gross Domestic Product (GDP) by utilizing Okun's law and alternative approach " Average Product" method.
- Develop an approach that helps achieve full employment, thereby resulting in significant economic benefits for the society.

INTRODUCTION

Brief History of Saudi Economy

Changing Structure of the Economy

Two key events

- The Unification of fragment regions of the peninsula under one country called Saudi Arabia
- The discovery of oil

Before
A nomadic lifestyle

The Structure of current Saudi Arabian economy
Oil has become the primary economic resources

In the wake of the oil crisis of 1986, Saudi policy-makers have made attempts to diversify the economy by increasing development of the non-oil sector

The Demographic Feature of the Population of Saudi Arabia

- Standard of living
- Life expectancy
- Increased fertility rates, and lower death rates

Education System

The education system is one of the most influential factors in shaping and forming the beliefs and actions of the human capital that will be so essential for future economic development and growth.

Saudi Labor Force

- Efforts of the Ministry of Labor and Social Development

- Labor force: the Saudi Arabian labor force includes aspects that are not normally found in other countries.

5%
3.5%

In the period of 1975 to 1985, the average annual growth of the domestic labor force was 5%, whereas the population growth was 3.5%

25%

The share of the total foreign people to the total Saudi population is equal 25%.

84.5%

The share of the total foreign worker to the total private sector employees is equal 84.5%.

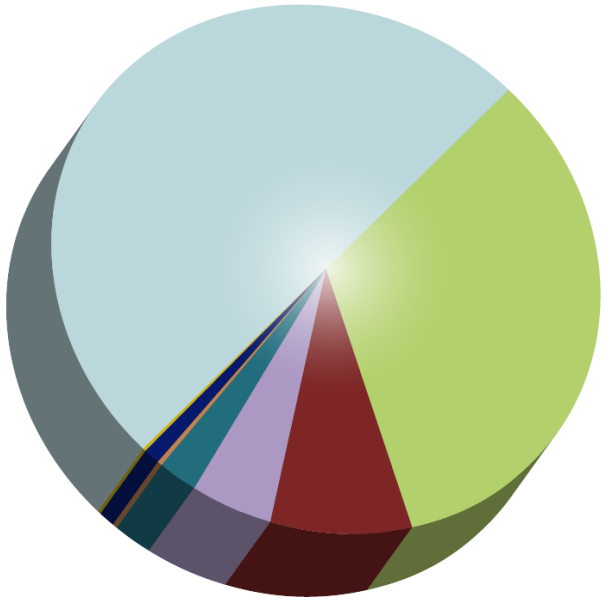
Clearly the nation needed to give some degree of urgency to try to solve the problem of the imbalance in foreign and native workers.

نطاقات
برنامج لتحفيز المنشآت للتوطين الوظائف
حافز

"Nitaqat" program, "Hafiz" program, and Saudization Program.

Structure of Unemployment

Distribution of Saudis Unemployed (15 years and above) by education status.



0.05%	Phd
0.4%	Illitrate
0.8%	Read & Write
2.3%	Primary
4.7%	Intermediate
33.4%	Secondery or Equilevnt
8.2%	Diploma
50%	Bachelor Degree

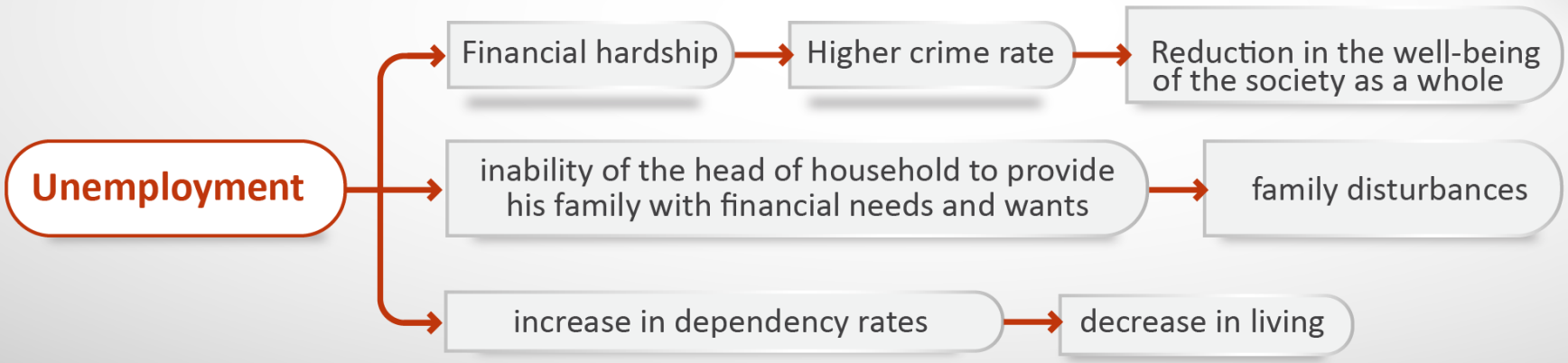
LITERATURE REVIEW

Previous Studies on Unemployment

- Provide a brief assessment and overview of relevant literature (theoretical and empirical) covering the topic of unemployment in Saudi Arabia.
- Previous studies focused on the government interventions for high rate of unemployment but ignored the causes and the cost of unemployment.
- Previous studies blamed the education system in that the Saudi education system does not prepare Saudi citizens for the types of jobs that are available in the Saudi labor market (Alogla,1990; Al-Asmari, 2008; Shabon, 1981, Fakeeh, 2009; Eldemerdash, 2014; Al-Dosary & Rahman 2005).

THE COST OF UNEMPLYEMNT

The Social Cost of Unemployment



THE COST OF UNEMPLYEMNT

The Economic Cost of Unemployment

Theoretical

Unemployment

- Low economic growth
- A significant reduction in spending (sharp drop or even elimination of potential purchasing power)
- lower sales → Reduction in overall business profits → Increase unemployment rate even more
- Low incentives for businessmen to innovate new goods and services
- Labor skills will deteriorate → Will negatively impact productivity

THE COST OF UNEMPLYEMNT

The Economic Cost of Unemployment

Empirically

- The Economic Cost in Terms of Output Loss (Okun's Law)
- Okun's Law is used to measure the relationship between the change in unemployment rate and the change in the GDP growth rate of the country
- The motivation for using Okun's law
- Okun's law is empirically valuable because it has been shown to be worthwhile for both forecasting and policy-making

THE COST OF UNEMPLYEMNT

Okun's Law

Model specification and data

$$\Delta Yit=\alpha+\beta*X1it+\beta*X2it+uit$$

$$u\sim i.i.d.N(0,\ \sigma 2)$$

Where ΔYit stands for the real growth of GDP for all six countries
X1it represents the rate of unemployment for all six countries and X2it denotes the oil price
Where i is individual dimension (i =1,2,3,4,5,6) and t is the time dimension (t=1,2, …,21)

The Cost of Unemployment, Empirically

Econometric Techniques

Table 1. Unit root test

Variables	LLC	IPS	ADF	PP	HZ	Order of Integration
GGDP	-3.741 (0.000)	-3.075 (0.001)	29.375 (0.003)	44.947 (0.000)	0.0127 (0.494)	I(0)
UN	-3.0588 (0.001)	-2.131 (0.016)	24.800 (0.015)	25.049 (0.0146)	4.771 (0.000)	I(0)
OP	-7.122 (0.000)	-6.624 (0.000)	62.431 (0.000)	129.757 (0.000)	2.460 (0.006)	I(1)

The Cost of Unemployment, Empirically

Econometric Techniques

Table 2. Pooled Model Result

	Coefficient	Std. Error	t-ratio	p-value
Constant	7.632	0.834	9.140	0.000
Un	-0.706	0.184	-3.829	0.000
D(OP)	0.023	0.0142	1.635	0.001

The Cost of Unemployment, Empirically

Econometric Techniques

- **Testing for model properties**
- Test for Heteroskedasticity
- H0: No Heteroskedasticity
- H1: there is heteroskedasticity
- Test statistic: LM = 16.8529 with p-value = P(Chi-square(5) > 16.8529) = 0.00478731

The Cost of Unemployment, Empirically

Econometric Techniques

- **Feasible Generalized Least Squares (FGLS) Estimator**
- What is the condition for this method to be used?
- T > i
- *Table 3. The Feasible Generalized Least Squares (FGLS) Estimator*

	Coefficient	Std. Error	t-ratio	p-value
Constant	5.766	1.010	5.707	0.000
Un	-0.522	0.148	-3.526	0.000
OP	0.026	0.010	2.430	0.016

The Cost of Unemployment, Empirically

Econometric Techniques

- **Testing the Model Properties after the FGLS was Implemented**
- **Testing Model Properties**
- Test for Heteroskedasticity
- H0: No Heteroskedasticity
- H1: there is heteroskedasticity
- Test statistic: LM = 9.0932 with p-value = P(Chi-square(9) > 9.09321) = 0.428715
- **Panel Diagnostic**
- what is the appropriate model between pooled OLS regression model, Fixed Effect Model, and Random Effect Model?
- **joint significance of differing group means**
  - H0: pooled model is the appropriate model
  - H1: fixed effect is the appropriate model
  - F(5, 112) = 4.845 with p-value 0.000

The Cost of Unemployment, Empirically

Econometric Techniques

- **Fixed Effect model**

Table 4 Fixed effect Model Result

	Coefficient	Std. Error	t-ratio	p-value
Constant	4.822	2.657	1.814	0.072
Un	0.037	0.694	0.053	0.956
OP	0.111	0.032	3.468	0.000

The Cost of Unemployment, Empirically

Econometric Techniques

- **What is the the appropriate model among fixed effect model and random effected model?**
- Hausman test statistic:
- H0: Random-effect is appropriate
- H1: Fixed-Effects is appropriate
- H = 0.981 with p-value = prob(chi-square(2) > 0.981) = 0.612

The Cost of Unemployment, Empirically

Econometric Techniques

- **Random effect model**

Table 5 Random Effect Model result

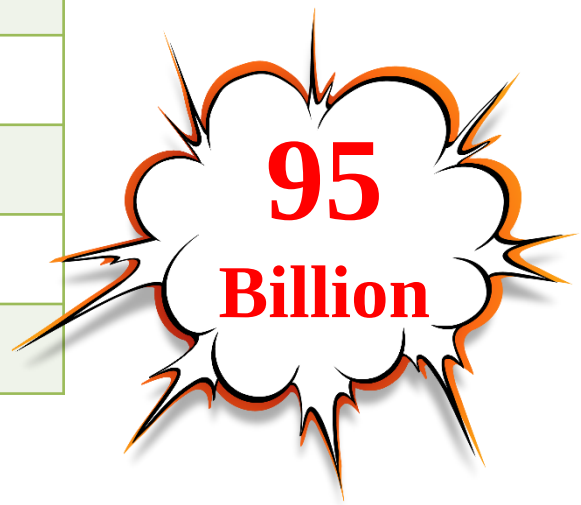
	Coefficient	Std. Error	t-ratio	p-value
Constant	7.004	1.683	4.161	0.000
Un	-0.540	0.361	-1.495	0.137
OP	0.113	0.032	3.531	0.000

Alternative Approach

- **Average Product Method**

Table 6 Economic Cost of unemployment using "average product" Method on the Real GDP in US $

Total Real GDP	690,549,935,000
Total Labor Force	13,944,732
Total Employment	12,257,419
Real GDP Per Workers	56,337
Total of unemployed	1,687,313
Total loss in GDP	95,058,152.5

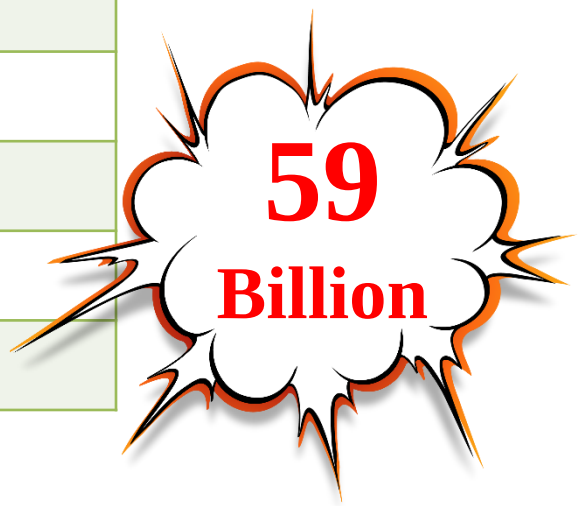


Alternative Approach

- **Average Product Method**

Table 7 Economic Cost of unemployment using “average product” Method on the Real GDP of non-Oil Sector in US $

Total Non-oil Real GDP	380,995,090,000
Total Labor Force	13,944,732
Total Employment in Non-oil Sector	10,844,585
Non-oil Real GDP Per Workers	35, 132
Total of unemployed	1,687,313
Total loss in Non-Oil GDP	59,2791,672



Knowledge Based Economy

- Solution for Saudi Unemployment Depends on the reforms of the Saudi Economy.
- A knowledge-based economy (KBE).
- Current case of Saudi private sector.
- One composed of low-knowledge, low-skilled workers who are easily imported from foreign nations, leaving no room for the nation’s citizens.

THE SAUDI ECONOMY STRUCTURE

Highly depends on capital-intensive ⟶ even if there is increase on this sector there would not ⟶ a significant direct reduction on unemployment rate

High dependency of oil ⟶ high susceptible to the " Dutch Disease"

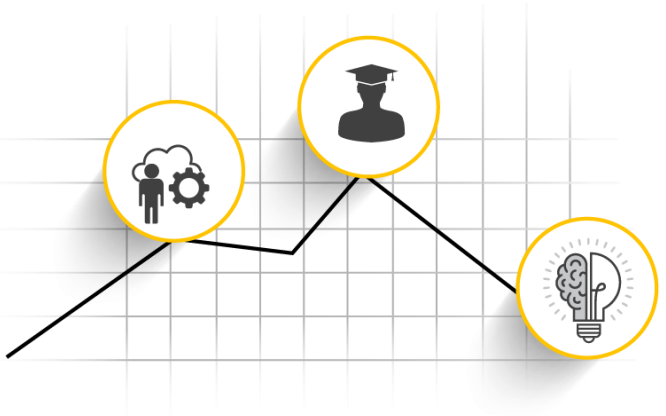
Dependency On Oil

- Necessity of diversity through a KBE.
- Pillars of a knowledge-based economy.
- An economic and institutional administration.
- A highly skilled and educated population seeking to create, use, and to distribute knowledge.
- Information Communication Technology (ICT) facilitating invention, innovation, production, and creativity .
- Significantly innovative systems of organizations, such as universities, research institutes, and some other institutions.

Saudi's performance

on the four pillars of a KBE

According to Debnath (2015), who investigated Saudi Arabia's performance in the four areas of a knowledge-based economy, found that the country has been doing well in education, ICT, economic incentives and institutional administrations, yet is doing poorly in terms of innovation.



What is the benefit from shifting to a Knowledge-based economy?

employing highly educated unemployed people → increase research and development → increases innovation of production → lowers the cost → increase the sales → increases profit → increase employment rate → increases purchasing Power → increase consumption → increases aggregate demand

Main Findings

- **Despite being a wealthy and a young country, Saudi Arabia has suffered from a substantial increase in unemployment.**
- **Saudi labor force possesses unique features.**
- **It has been recognized that the Saudi unemployment rate has risen steadily in conjunction with three other factors that have changed rapidly since the discovery of oil:**

- The nation's population has continued to swell since the 1970s which has led to an increase in the number of job seekers .
- There is additionally an increase in the number of students graduating from universities each year and entering into the workforce.
- There has been a distinct lack of job creation in recent years.

Main Recommendations

- This Paper concluded that the problem of unemployment was not rooted in a lack of financing policies to employ job-seekers. Rather, the issue at hand is the lack of sufficient research to uncover the root causes of unemployment, in conjunction with a dearth of innovative ideas to remedy the problem. This study provides the entire Saudi economy with a comprehensive policy that would effectively achieve full employment without bringing about additional costs to any entity.

- In fact, full-employment could be achieved through shifting the economy as a whole to become a KBE in order to gain the myriad benefits stored within the highly-educated Saudi youth.

THE COST OF UNEMPLOYMENT

By: Abdulelah Alrasheedy
Monetary Policy and Financial Stability Department

Saudi Labor Force

The Saudi Arabian labor force includes aspects that are not normally found in other countries.

- In 1975 to 1985, the average annual growth of the domestic labor force was 5%, whereas the population growth was 3.5%, thus there was a need for importing some foreign workers to fill in the gaps.
- The share of the total foreign people to the total Saudi population is equal 25%.
  The share of the total foreign worker to the total private sector employees is equal 84.5% .
- The nation needed to give some degree of urgency to try to solve the problem of the imbalance in foreign and native workers. "Nitaqat" program, "Hafiz" program, and Saudization Program.

Economic and Social Impact

The Economic Cost of Unemployment

Theoretical

Unemployment

- Low economic growth.
- A significant reduction in spending (sharp drop or even elimination of potential purchasing power) → Lower sales → Reduction in overall business profits → Increase unemployment rate even more.
- Labor skills will deteriorate → Will negatively impact productivity.
- Low incentives for businessmen to innovate new goods and services.

Empirically

Okun's Law

The Economic Cost in Terms of Output Loss (Okun's Law)

- It used to measure the relationship between the change in unemployment rate and the change in the GDP growth rate of the country.
- The motivation for using Okun's law.
- It is empirically valuable because it has been shown to be worthwhile for both forecasting and policy-making.

Econometric Techniques

- Testing for model properties
- Feasible Generalized Least Squares (FGLS) Estimator
- Testing the Model Properties after the
- FGLS was Implemented
- Panel Diagnostic
- Joint significance of differing group means
- Fixed Effect model
- Random effect model

Finding of this part

Okun's law does not hold true for the case of saudi arabia

Alternative Approach

Average Product Method

Findings in terms of **total** GDP

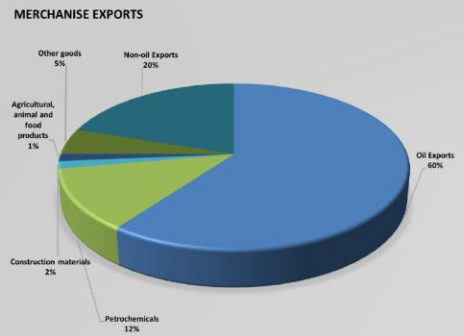
- The total loss of Saudi output is $ 95.3 billion (13.7) % of the total real GDP) per year as a result of 1,687.313 Saudis unemployed.
- These estimates were based on the total real GDP of which the oil sector contributes 44 %.

Findings in terms of **non-oil** GDP

Results in this section reveal an estimation of economic cost (losses in the real GDP of non-oil sector) from the number of unemployed people in 2016. The loss of real GDP of non-oil sector is 52.4 billion per year (13.1 percent of the total real GDP of non-oil sector).

The Saudi Economy Structure

Dependency on Oil

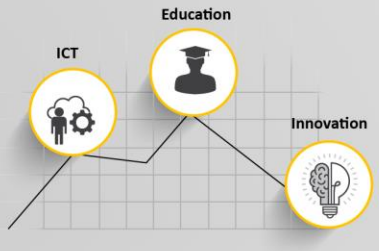


As a matter of fact, the oil sector is primarily capital-intensive, meaning that this sector does not have a significant direct effect on reducing unemployment rates.

The Solution for the Problem

Knowledge-based economy

Policy-makers must adapt an effective approach to provide full employment, such as Saudi 2030 Vision that is able to attain and maintain full employment and environmental sustainability transferring the Saudi economy from oil-based economy to Knowledge-based economy.



This study is based on the 2016 data

Takeaways

- Based upon the above method, Saudi economy has been suffering greatly from high rates of persistent unemployment.
- To conclude, Saudi policy-makers must tackle the problem of unemployment to avoid these economic costs and other non-quantified social costs through utilizing Saudi 2030 Vision agenda.

مؤسسة النقد العربي السعودي
Saudi Arabian Monetary Authority