The information contained in this document is confidential, privileged and is for the intended recipient. Takamol Advisory gives no warranties of whatever nature in respect of this document, including but not limited to, the accuracy or completeness of any information, facts and/or opinions contained herein. Takamol Advisory cannot be held liable for the use of and reliance of the opinions, estimates and findings in this document. All information and/or material presented in this document, unless specifically indicated otherwise, is under copyright to Takamol Advisory. None of the information, its content, or any copy of such information or content in this document, may be altered in any way, transmitted, copied or reproduced (in whole or in part) or redistributed in any form to any other party, without the prior written.

WHITE PAPER
Defining the Informal Economy of Saudi Arabia

Examination of the informal economic practices in relation to employment and enterprise to define and calculate the informal economy in the Kingdom of Saudi Arabia

TAKAMOL ADVISORY UNIT
OCTOBER 2017
Defining the Informal Economy of Saudi Arabia

Examination of the informal economic practices in relation to employment and enterprise to define and calculate the informal economy in the Kingdom of Saudi Arabia
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Executive Summary</td>
</tr>
<tr>
<td>02</td>
<td>Defining the Informal Economy in Saudi Arabia</td>
</tr>
<tr>
<td>03</td>
<td>Calculating the Size of Informal Economy</td>
</tr>
<tr>
<td>04</td>
<td>Consequences and Impact of Informality</td>
</tr>
<tr>
<td>05</td>
<td>Policy Recommendations</td>
</tr>
</tbody>
</table>
In Saudi Arabia, there is no official definition for ‘informal economy’. The expression is translated in Arabic as “Informeal economy” (الاقتصاد الغير رسمي).

There are two major components of the informal economy.

Firstly, informal workers who are not registered as employees with a government agency, but who are still working and producing goods and services within the market.

Secondly, informal entities that are not registered or do not maintain official financial and legal records.

The definition of formal employment and legal entities in this paper, are derived from Articles 15, 17, 23, and 33 of the Saudi Labor law. The definitions are:

1. An informal worker is defined as an individual who has not lawfully entered the country; not being authorized to work, not having a contract with the employer or not being registered at the Ministry of Labor and Social Development.

2. An informal enterprise is defined as a business that lacks a commercial register or formal records, statements and files.

In 2016, the size of the informal economy was 21.4% of the Gross Domestic Product. The figure is projected to grow further in the upcoming years and expected to reach 22.9% of GDP by 2021.

The importance of defining the informal economy arises from several factors, such as from the monitoring and the measuring of the economic contributions of its participants, including both informal workers and enterprises, both which ultimately affects the Gross Domestic Product (GDP).

To other factors necessitating an established definition of the informal economy in Saudi Arabia, include enhancing the quality of published labor market indicators such as the unemployment rate and the workforce participation rate.

Therefore making, the objectives of this white paper crucial and absolute to:

1. The suggested clear definition for the informal economy in Saudi Arabia.
2. The established methodology to accurately calculate the distinctive informal economy of Saudi Arabia.
3. The identified composition, the causes and the drivers of the informal economy.
4. The articulated consequences and assessed impacts of the informal economy.
5. The provided recommendations to address the challenges of informal economic activities.
The methodology applied in this paper for the identification and the measurement for the composition of the informal economy, involves both qualitative and quantitative approaches.

The qualitative methodology comprises of conducting several interviews with local and global economists, who have written extensively on the topic, as well as interviewing individuals familiar with the funding and regulatory challenges encountered by both e-commerce and SME owners.

The quantitative approach used for the paper to calculate the size of the informal economy, applies to two macroeconomic models.

While five different macroeconomic models are discussed throughout the literature to measure the informal economy, economics scholars often apply the two models that are used directly in the conclusion for this paper. These are defined as:

1. The Monetary Model: Currency Demand and Transaction Approaches (CDA)

2. The Structural Equation Model: Multiple Indicator Multiple Causes (MIMIC)

The results of our quantitative analysis using the CDA model concludes that the projected size of informal economy is slightly increasing, but remains between 20-25% of the GDP, between 1999-2021.

On average, it was below 14.5% during the period from 1999-2011 and 22.3% from 2012-2021.

On the other hand, the findings of the MIMIC model indicate that the informal economy has experienced similar results in terms of GDP to that of the CDA model.

The magnitude of the informal economy can be explained by the presence of informal activities amongst enterprises and individuals.

Informal employment has a drastic impact on key labor market indicators such as the unemployment rate.

For instance, in 2014 alone, over 427,000 undocumented workers were deported from Saudi Arabia, which represents approximately 4% of the total workforce in 2014.

Furthermore, the number of illegal workers in 2013 was approximately 2 to 3 million individuals, which translates to 20-30% of the total expat workers.

In addition to this, a report published by KPMG in 2013 indicated that 35% of expat workers lack formal contracts with their current employer.

This creates a high number of informal labor inequalities, skills reductions and negative labor impact. Mostly seen across the informal enterprises which commonly exist in the form of Tasattur companies across the Kingdom. These are estimated to number over 200,000.

Evident that, in the long run, there is an absolute negative consequential impact on GDP growth and unemployment rates.

Such indicators remain depressed as long as low-productivity informal enterprises and individuals exist at the current levels.

Based on our qualitative and quantitative analysis, this paper recommends to implement policies that will prove to be most effective in tackling informal enterprises and individuals in Saudi Arabia. The recommendations include:

1. Promoting the ease of business registration including e-commerce and social media businesses.

2. Incentivizing formal employment contracts for flexible working and part-time working.

3. Recognizing jobs and provide employment support to the informal employees of the gig-economy, for example, Careem and Bahr.

To conclude, the paper sets the stage to better understand informal employment by recognizing and defining informal economy in Saudi Arabia.

In addition, policy makers and influencers can further support workers in informal employment by:

- Measuring the actual state of the informal employment for targeted policy design.
- Promoting ‘decent work’ by creating new and transforming existing jobs that are more
- Ensuring workers injured on an informal job have recourse to required insurance.
- Safeguarding pension benefits by reaching out to workers in informal employment.
1.0 Introduction

The establishment of a unique definition for the Saudi Arabian informal economy has been a debatable topic both within public policy makers and the academic arenas.

Globally, there is no agreed definition of the informal economy in economic literature.

As a result, terms such as grey economy, shadow economy, and unreported economy are often used interchangeably.

However, most economists agree on a number of common characteristics of the informal economy, which include but are not limited to economic activities whose participants engage in trading goods and services that are unmonitored by legal authorities, omitted by official macroeconomic statistics, and its workers lack labor benefits and rights often guaranteed through formal employment such as health insurance and sick-leave.\(^1\)

The International Labor Organization (ILO) defines the informal economy as a sector that produces goods and services and where the contributions of its workers are difficult to track accurately.

Furthermore, the ILO definition states that 90% of micro and small firms worldwide are part of the informal sector and it encompasses 50%-75% of all employment in non-agricultural industries within developing countries.\(^2\)

TThe International Monetary Fund defines the informal economy as an economic sector that comprises of economic activities that evade the costs caused by legal procedures to form a business such as commercial licensing and employment agreements, as well as the administrative and financial burden of making and tracking social security contributions.\(^3\)

Economics scholars such as, Edgar Feige, who has written extensively on the topic, have argued that while it is essential to consider local socioeconomic challenges and labor market characteristics for each country when defining and measuring its informal economy, one must acknowledge that part of the challenge is that, "the informal economy has been used so frequently, and inconsistently."\(^4\)

Therefore, the first step in measuring the informal economy and analysing its impact would be to establishing a national definition for the informal sector in Saudi Arabia.

This will enable a more focused and informed approach to more comprehensively calculating the impact on a number of key factors including employment, unemployment and the wider economic impacts, including Gross Domestic Product (GDP). These are critically important factors that will help enable more appropriate and targeted policy and investment decisions, taking full account of all aspects of the economy, by providing detailed and accurate information to key influencers and decision

1 ILO 2017  
2 ILO 2017  
3 IMF 2013  
4 Feige 1994  
5 ILO 2015

1.1 Objectives

This paper focuses on identifying, defining and measuring the components of the informal economy in Saudi Arabia.

The importance of defining and assessing the informal economy in Saudi Arabia arises from several reasons.

Firstly, the absence of a measurement for the informal sector in Saudi Arabia has many implications on published statistics.

For example, it results in the underestimation of official macroeconomics figures such as the unemployment rate.

Secondly, estimating the size of the informal economy and the number of expats working illegally in the country will serve as a tool that assists policy-makers to combat issues such as Tasattur and understand its economic repercussions in Saudi Arabia.

Thirdly, identifying and understanding the demographics of nationals participating in the informal sector will enable decision makers to incentivise workers to transition from the informal economy to the formal economy; fully benefiting from social protection and other employment benefits.\(^5\)

Consequently, the aforementioned factors necessitate the characterization of a unique definition for the informal economy in Saudi Arabia.

Therefore, the objectives of this white paper are to:

- Suggest a clear definition for the informal economy in Saudi Arabia
- Establish a methodology to accurately calculate the distinctive informal economy of Saudi Arabia
- Identify the composition, causes and drivers of the informal economy
- Articulate the consequences and assess the impacts of the informal economy
- Provide recommendations to address the challenges of informal economic activities

Ultimately, the aim is to support key influencers and decision makers to make fully informed decisions based on available data, consistent terminology and accurate calculations, relative to the informal economy in Saudi Arabia.

1 ILO 2017  
2 ILO 2017  
3 IMF 2013  
4 Feige 1994  
5 ILO 2015
1.2 Methodology

The methodology used in the paper comprises of both qualitative and quantitative approaches to define, assess, and measure the informal economy in Saudi Arabia. The qualitative approach includes conducting several interviews with three groups of experts having:

1. In-depth experience in and familiarity with local and regional (GCC-wide) informal practices and sectors.

2. Knowledge of legal and financing challenges that entrepreneurs encounter when forming their own small and medium-sized firms in Saudi Arabia.

3. Expertise in e-commerce industry to understand the number of businesses operating online and types of informal practices.

The quantitative approach used an indirect macroeconomic method to size the informal economy from the official national statistics. There are five main methods to calculate the size of informal economy through the use of computable models.

It is important to note that there is no consensus in the published literature on the best method to estimate the size of the informal economy. Therefore, we applied two of the most widely used approaches to estimate the size as well as the development of the informal economy in Saudi Arabia by using the following models:

1. **The Monetary Model: Currency Demand and Transaction Approaches**

2. **The Structural Equation Model: Multiple Indicator Multiple Causes (MIMIC)**

Further details on the limitations and results of the model are discussed in sections 4.0 and 8.0 of this paper.

The findings of both qualitative and quantitative approaches used in this paper have led to an understanding of the informal economy.

In addition to analysing the circumstances inducing small businesses and individuals to operate in the informal rather than formal economy.

Furthermore, the role of e-commerce in the informal sector is an essential part of understanding the components of the informal economy.

Most online businesses are part of an untracked economy, where neither their economic contributions nor the income earned by online business owners are fully accounted for in official GDP figures.

(1) The concept of informality has evolved substantially since the 1970s, when the term “informal sector” was coined for the first time, to today’s broader notion of the “informal economy” as agreed at the 2002 International Labor Conference (ILC).

Based on the 2002 ILC conceptual framework, the Seventeenth International Conference of Labor Statisticians (ICLS) in 2003 adopted “Guidelines concerning a statistical definition of informal employment”.

According to the new guidelines, informality can be found in both wage employment and self-employment and across various economic sectors. It can be present in the “informal sector” in informal economic units as well as in formal establishments.²

Friedrich Schneider, an economist specializing in the shadow economy, conducted a survey of 157 countries conducted measuring average the size of the shadow economy relative to GDP between 1999 and 2013, Saudi Arabia ranked 23rd with an average informal economy size of 17.32% of GDP.

Therefore, Saudi Arabia has a relatively small shadow economy and it ranks better than advanced economies such as Italy and Spain. It is considered to have the third smallest informal economy amongst Arab countries.³

In another paper by C Elgin and O Oztunali 2012, estimated the size of the informal economy in Saudi Arabia between 1986-2008, the informal sector reached its highest level in Saudi Arabia in 1988 at 18.56%, and its lowest level in 2008 at 16.61%.⁴

Economist Edgar Fiege notes that empirical precision of calculating informal economy relies on accurately defining and selecting a country-specific approach to measure it.⁵

Therefore, a clear and agreed definition will provide the basis upon which to more accurately measure the size, scale and impact of the informal economy in Saudi Arabia.

---

² Gulf Cooperation Council - Its member states are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

³ OECD, ILO, World Bank 2014

⁴ Elgin, Oztunali 2012

⁵ Schneider, Hassan 2016

⁶ OECD, D.O, World Bank 2014

⁷ Oztunali, Elgin 2012

⁸ Schneider, Hassan 2016

⁹ Feige 1990
In Saudi Arabia, there is no official definition for informal economy. The expression is translated in Arabic as “unofficial economy” (اقتصاد غير رسمي).

The definition of informal employment, however, could be derived from the Saudi Labor Law. All workers, as of Article 23, should be registered at the Ministry of Labor and Social Development (MLSD), with date of birth, qualifications, previous employment, preferences and address.

In the case of expats, Article 33 establishes that a non-Saudi may not engage in or be allowed to engage in any work except after obtaining a work permit from MLSD. Therefore, the worker should be considered in informal employment in case of not having lawfully entered the country; not being authorized to work, not having a contract with the employer or not being registered at the Ministry of Labor and Social Development.

An informal enterprise could be defined based on Article 15, which determines that “an employer shall, upon commencement of work in the firm, notify the competent Labor office in writing of the following data:

- Name, type and headquarters of the firm, as well as its mailing address and any information that facilitates contact there with.
- Line of business for which it is licensed, providing the number of the commercial register or the license, its date and issuing authority, together with a copy thereof.
- Number of workers to be employed in the firm.
- Name of the firm’s manager in-charge.
- Articulate the consequences and assess the impacts of the informal economy.
- Any other data required by the Ministry.”

According to Article 17, an employer “shall maintain at the workplace records, statements and files the nature and contents of which shall be specified in the regulations. He or she shall display at a prominent location at the workplace a schedule of working hours, breaks, weekly rest days and time of start and end of each shift, when operating in shifts”.
Tasattur is particularly evident in sectors with small margins, long working hours and low technology use, e.g. repair shops, barbershops, small grocery stores, single-outlet retail stores etc. These are unattractive for national entrepreneurs and are easy to run informally due to the simplicity and short-term nature of operations. Businesses that require longer-term investments, legal certainty, technology etc. are less likely to be Tasattur.

There are laws and inspections regimes against the phenomenon in most GCC countries – Saudi Arabia has both a high-level anti-Tasattur committee and an anti-Tasattur law – but it is too large-scale to be repressed effectively in the absence of a major national campaign. Tasattur is not an entirely negative phenomena: It allows Saudi, and other GCC economies, to overcome managerial bottlenecks and allows widespread small-scale investment by foreigners. It does not necessarily mean that these businesses are small and medium scale enterprises earning a monthly revenue of between SR 50,000 and SR 1 million.

In some cases nationals do in fact invest capital in a company but leave another share of the financing and all of the management to a formal or informal expatriate partner. This is not pure Tasattur but neither does the official arrangement reflect the actual capital structure and managerial practices, in which expat partners in fact play a larger role. The arrangement could therefore be called semi-informal.

The Tasattur phenomenon is more widespread amongst Small, Medium Enterprises (SMEs) than among large companies, although not unknown among the latter. With Tasattur, it is hard to estimate the cash inflow and outflow generated by those businesses and to assess whether their activities comply with the license they were granted, if any.

According to a study conducted by the Riyadh Chamber of Commerce and Industry, there are an estimated 200,000 such businesses in the country. Additionally, in an interview with ArabNews, Professor Abdul Aziz Diyab of King Abdulaziz University, who has completed research on cover-up businesses in the Kingdom, stated that about 30% of expatriate workers are involved in cover-up businesses in the Kingdom.

Abdul Aziz Diyab also notes that the majority of these businesses are small and medium scale enterprises earning a monthly revenue of between SR 50,000 and SR 1 million.

Tasattur is particularly evident in sectors with small margins, long working hours and low technology use, e.g. repair shops, barbershops, small grocery stores, single-outlet retail stores etc. These are unattractive for national entrepreneurs and are easy to run informally due to the simplicity and short-term nature of operations. Businesses that require longer-term investments, legal certainty, technology etc. are less likely to be Tasattur.

Cover-up businesses generate significant “fee” income for the national frontmen. There are laws and inspections regimes against the phenomenon in most GCC countries – Saudi Arabia has both a high-level anti-Tasattur committee and an anti-Tasattur law – but it is too large-scale to be repressed effectively in the absence of a major national campaign.

Tasattur is not an entirely negative phenomena: It allows Saudi, and other GCC economies, to overcome managerial bottlenecks and allows widespread small-scale investment by foreigners. It does however create a significant problem for the development of targeted SME support policies, as these usually aim, with some justification, at national entrepreneurs only.

The Tasattur phenomenon underlines the need to augment the regulatory and information-gathering capacity of national bureaucracies and to design SME support policies in a way that only higher value-added projects actually run by nationals are supported.
E-commerce

One potential growing form of informal enterprise is e-commerce-based business. E-commerce is defined as “the sale or purchase of goods or services, conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders”.

Although the order is online, payment and ultimate delivery of the goods or services do not have to be conducted online.

E-commerce has generated an increasing share of global economy. Business to Consumer (B2C) e-commerce sales corresponded, in 2009, to 0.54% of global GDP. In 2013, B2C e-commerce accounted for 0.92% of the global GDP. Projections suggest the share will grow up to 1.62% until 2018.13

In Saudi Arabia, the online retailing sector is rapidly growing, according to a report published by Statista in 2017, the size of e-commerce industry was $4.872 billion in 2016, which amounts to approximately 1% of GDP during the same year. In addition, the sector is projected to grow by 11% by 2021 and to reach a market size of $8.642 billion.14

E-commerce transactions through websites like Instagram and Facebook do not necessarily require electronic payments. The possibility of cash payment on delivery in many e-retail transactions enables the existence of informality in the sector.15

Informal Employment

One of the objectives of the Saudi National Transformation Program (NTP) is to design programs to stimulate e-commerce among individuals and businesses.17

Therefore, it is likely that e-commerce sector growth will also generate corresponding growth in the informal economy without effective support, guidance and management of new enterprises.

One form of informal employment in Saudi Arabia consists of expats who do not work for their official employer or “sponsor”, but somewhere else. Specific mechanisms include the following:

- Companies (real or “letterbox”) informally rent out some or all of their workforce to other companies who actually need them but are unable to recruit them formally
- Companies import workers and release them as free agents on the local labor market, where they find informal employment on an individual basis (often called “free visa” workers).
- Companies allow part of their workforce to “moonlight” on the side, especially at times of low demand.
- Companies allow part of their workforce to “moonlight” on the side, especially at times of low demand.

These phenomena are prevalent, especially in markets where the supply of expat workers is at least partially restricted administratively.

For instance, 35% of workers in Bahrain are estimated to work for an employer other than their official sponsor. “Free visa” and “letterbox companies” are highly prevalent in Qatar and Kuwait.

For example, employers are retaining ‘free visas’ for the purposes of importing workers who can then shift jobs without the approval of their sponsor and differs from their contracted occupation.
Another form of informal employment for nationals is “phantom employment”, which is known within Kuwait, the UAE and Saudi Arabia. This consists of nationals who are registered as formal employees for the sake of fulfilling nationalization quotas without actually performing any work.

In Saudi Arabia, evidence indicate a market for “phantom employees” where they are paid more than the statutory wage of 3000 SR to count them as a “full employee” for Nitaqat purposes.

Interviews with employers conducted by economists, indicate that many companies explicitly require Saudis not come to the workplace as well as employers are registering them on their payroll without their knowledge.

Another rapidly growing form of informal employment amongst Saudi nationals are those employed by transportation applications such as Careem and Uber.

According to a recent interview by Alarabiya with Careem’s CEO, Mr. Abdullah Elyas, there were 40,000 drivers deployed by Careem in 2016, 75% of which are nationals earning between SAR 8,000-SAR12,000 per month.

Careem officials state that the number of employees working for the company is projected to reach 70,000 drivers by the end of 2017.

Therefore, having a deep understanding of the new forms of informal employment within nationals and their contributions to the economy will enhance the quality and measurement of macroeconomic indicators such as the unemployment rate and the workforce participation rate.

According to an article by Habib Toumi, a 2011 survey of expatriate workers in Qatar showed that 29% operated on a free visa basis. In Saudi Arabia, the size of the “free visa” is not fully estimated; however, a report by the Wall Street Journal in 2013, indicated that there were approximately 2 million to 3 million expat workers in the Kingdom without proper documentation.

The number of illegal expats translates to around 20-30% of total expat workers.

Furthermore, a report published by KPMG in 2013 validates that number, revealing that 20% of workers are not sponsored by their current employer and 35% have no formal contract with their employer.

There are other forms of informality in Saudi Arabia, but they are secondary compared to Tasattur and informal expatriate labor.

In Saudi Arabia, a report by the Wall Street Journal in 2013, indicated that there were approximately 2 million to 3 million expat workers in the Kingdom without proper documentation.
Although, the direct method provides detailed information about the structure and composition of the informal economy in a certain country but their major disadvantage is that they do not reflect all the informal economic activities and that they result in only point-time estimates of the size of the informal economy.

The direct methods are unable to estimate the development and growth of the informal economy over a long time horizon. They provide lower-bound estimates for the true size of the informal economy.

The second approach to measure the size of the informal economy is indirect, which are macroeconomic approaches capturing the statistics as information about the size of the informal economy. The major criticism is that they only consider one aspect that is supposed to capture all the effects and the complexity of the informal economy.

As mentioned previously in the paper, there are no accurate estimates for the size of the informal economy in Saudi Arabia the GCC. There are a variety of standard methods to estimate informal activities, but they are disputed and usually not entirely applicable in the GCC context.

There are various ways to estimate the size of the informal economy for a certain country.

These methods include the direct method, indirect method and the model approach.

The direct method, which is also called the microeconomic approach, gathers first-hand data about the informal economy by conducting surveys and compiling observations from individual businesses.

The direct method depends on well-designed and sampled surveys as well as auditing of tax returns and other compliance methods.

The limitation of this direct method is the cooperation and response of the representatives questioned in the sample.

In the case of carrying out direct questionnaires, there is high chance that the respondents are reluctant to answer questions related to informal work and income.

Although, the direct method provides detailed information about the structure and composition of the informal economy in a certain country but their major disadvantage is that they do not reflect all the informal economic activities and that they result in only point-time estimates of the size of the informal economy.

The direct methods are unable to estimate the development and growth of the informal economy over a long time horizon. They provide lower-bound estimates for the true size of the informal economy.

The second approach to measure the size of the informal economy is indirect, which are macroeconomic approaches capturing the traces of informal economy in the official statistics as information about the size of the informal economy. The major criticism is that they only consider one aspect that is supposed to capture all the effects and the complexity of the informal economy.

The five main methods are:

1. Direct: Micro-surveys of the informal sector
2. Indirect: GDP income/expenditure discrepancies
3. Indirect: The Physical Input Method (Electrical Energy Consumption)
4. Indirect: The Monetary Model: Currency Demand and Transaction Approaches (CDA)
5. Indirect: The Structural Equation Model: Multiple Indicator Multiple Causes (MIMIC)
Methodology

It is important to note that there is no consensus in the literature on the best method to estimate the size of the informal economy, therefore we apply two of the most widely used approaches to estimate the size as well as the development of the informal economy in Saudi Arabia by using both the CDA and MIMIC models to capture the dynamics of the complex nature of the informal economy.

It is also important to define the informal economy that shall be estimated by the models. Although many studies attempted to investigate the informal economy but reaching a unified definition is still an unresolved issue.

For the purpose of this study, the adopted definition is that the informal economy involves all currently unrecorded economic (market-based) activities, which, if registered, would contribute to the officially calculated national income (GDP).

Since the focus of this study is on the productive economic activities that are usually included in the national accounts, this definition excludes illegal activities such as criminal activities, human trafficking, or smuggling.

In addition, undeclared activities such as charitable, household or do-it-yourself activities are excluded.

Given the fact that illegal and undeclared activities are not accounted for in the national accounts statistics and since that focus is on the development of an economy that is distorted by the informal economy, hence, we direct our attention to the macroeconomic variables leading to the proliferation of the informal economy in Saudi Arabia.

The Currency Demand Approach (CDA), which is one of the most widely used indirect methods, measures the discrepancy between the declared/official income and the income covered by the currency demand.

Although the CDA is one of the mostly used methods to estimate the size of the informal economy, it has been subject to major criticisms:

1. The main assumption of the method is that all transactions are conducted in cash to avoid traceability. However, not all informal transactions are made in cash.

2. The method ignores the possibility of a barter informal economy leading to the undervaluation of the total size of the informal economy.

3. The assumption of no informal economy in a base year is highly criticized.

4. The assumption of the equal velocity of money in both the formal and the informal economies is among the highlighted limitations of the CDA.

The Multiple Indicator Multiple Cause (MIMIC) is a particular type of structural equation modeling, which is commonly applied in social science. The model is based on the statistical theory of ‘unobserved’ variables developed by Zellner (1970) and Joreskog and Goldberger (1975).

The MIMIC model is considered superior to the CDA because the MIMIC model allows the researcher to consider several causes and indicators at the same time to model the evolution of the informal economy over time. But like any other econometric model, the MIMIC model face some limitations.

More details on the model and calculation are covered in section 7.0 of this paper. Since each method has its own strengths and weaknesses and the informal economy is by nature untraceable, the estimates of the informal economy should be interpreted as an approximation of the size of the informal economy, rather than being exact measures.

l) The Monetary Approach: CDA

The key assumptions of this approach are:

a) Informal economic activities are the direct consequence of high taxes, fees and regulation costs;

b) Such transactions are mainly carried out by currency (and thus the overall currency in circulation in the economy has two components: currency used for informal economic transactions and formal transactions; and

c) The transaction velocity of money in both the informal and formal economies is the same.
Mainly, the models attribute the size of the Saudi Informal Economy to self-employment rate relative to total labor force. Self-employment rate could be used as an index for home business and for the concealment of foreign employment. Between this variable and the informal economy in Saudi Arabia (Graph 4a and 4b).

The Multiple Indicators and Multiple Causes (MIMIC) model is a particular form of Linear Independent Structural Relationship model (LISREL) whereby the informal economy is taken as a latent variable which on the one hand caused by a set of variables and affects other variables on the other.

The MIMIC model has been estimated by structural equation models (SEM) that give us an advantage of using all the information contained in the covariance matrix as compared to conventional regression analysis where only the information contained in the variance of variables is exploited.

The main focus of SEM is to estimate a covariance matrix that fits the sample covariance matrix.

The closeness of two matrices is considered as an indication of good approximation of relationships between the variables that define it.

In other words in this methodology we minimize the distance between the observed and model employed covariance matrix.

Results

Estimates of the informal economy based on First-Order Autoregressive AR(1) shows that the informal economy has increased its share in the Saudi economy is relatively unstable with increasing trend. There are three major phases. The first phase was a decreasing trend from 2002 to 2007.

During this period, the stock market rallied, and the banking system expanded. The second phase was an increase until 2014. During this period, oil prices increased significantly allowing the government to spend generously on social programs. The third phase is a declining trend from 2014 to 2016. This recent decline may be due to the sluggish economy (formal and informal).

We extended the model based on forecasting the explanatory variables until 2021. The projected horizon seems to be increasing slightly, but it stays between 20-25% of the GDP. On average, it was below 14.5% during the period from 1999-2011 and 22.3% from 2012-2021, (Graph 1).

Not surprisingly, the informal economy was highest in the decade of 2010s, up until 2014 as the period experienced the high oil prices, generous government spending and tighter regulations. After the oil price shock, the informal economic subsides significantly; however it is expected to persist at between 20% and 25% due to two opposing factors: positively by the new taxation policies, and negatively by the slowing economy.

The results of MIMIC model, on the other hand show that the informal economy confirms the results of the CDA, (Graph 2).

Although the extent of informal economy as deduced through the MIMIC model is smoother, the growth path remains steady. The informal economy according to MIMIC model experienced similar turning points, although milder. It is evident that ratio of informal economy in both models reveal the same pattern. (Graph 3).

This result also reflects the fact that the informal economy is impacted by economic shocks similar to the formal economy.
The results of informal GDP contribution to Saudi economy are generally higher than those obtained by other studies (see Schneider 2000 for a comparison). However, there are some differences in growth phases. We expect that this study captures the phenomenon more precisely as it addresses most of the weaknesses of earlier studies, which does not consider idiosyncratic variables of the informal economy of Saudi Arabia.

The study indicates that informal economy is strongly related to informal employment in Saudi Arabia. Employment in the informal economy often expand during periods of economic adjustment or transition. When enterprises are downsized or shut down, the workers who are laid-off and resort to working in the informal economy. This is particularly true of those who cannot afford to be unemployed, more so when we do not have proper unemployment insurance or compensation. If hard economic times are accompanied by rising inflation or cutbacks in public services, households often need to supplement formal sector incomes with informal earnings.

In summary, some informal entrepreneurs choose, or volunteer, to work informally. Yet informal employment tends to expand during economic crises or downturns, suggesting that necessity, in addition to choice, drives informality.

Graph 4b

It is sometimes argued that any potentially unemployed person can “disappear” into self-employment through setting up a new business. In general though, evidence on the role of self-employment in mitigating unemployment is not well established (Graph 5).

Graph 5

The higher the rate of self-employment, the more activities can be performed in the informal economy, all other things being equal.

In the available, published employment literature, the idea exists that the informal sector acts as a kind of low earnings absorbent sponge for workers who find no other place and who are too poor to sustain for unemployment has been of major importance in forming views that there are always jobs to be had for those that are willing to take them.

In Saudi Arabia, this informal market is operated by concealed foreign labor (Tasattur).

A more readily available and uniform approximation for Tasattur labor market estimates can be explained by the share of self-employment and family workers in labor force together with an adjustment to include the wage workers in these generally small-scale enterprises.

On average, most informal sector enterprises are essentially family affairs with probably a small minority hiring in non-family wage workers.

Hence from the perspective of an unemployed or potentially unemployed person without access to work in a family business a critical question is the ease with which new enterprises can be established.

23 Schneider & Hassan 2016
Depending on the nature of the business being created, there may be additional approvals, registrations and licenses required.

These can include contact and approvals from, for example:

- Ministry of Health
- Ministry of Culture and Information
- Ministry of Transportation
- General Directorate of Civil Defense

The current sponsorship system creates mobility issues due to its inherent inflexibility and total sponsor accountability which further complicates the employer and expat employee situation, relative to any transfer of labor between employers. This lack of flexibility may make it more convenient for both sponsors and employees to operate informally.

Therefore, the rigidity of the current systems means that any expat who works for any other employer or who completes work other than that detailed within this sponsorship agreement, is working within the informal economy.

**Bureaucratic & Systematic Drivers**

The process of establishing a formal business in Saudi Arabia requires registrations, approvals and authorizations from multiple Ministries:

- Register the business at the Companies Department of Ministry of Commerce and Investment (MCI) and Chambers of Commerce
- Open business bank account and obtain a Business Location license from Ministry of Municipalities and Rural Affairs (MoMRA)
- Register the business with the Ministry of Labor and Social Development (MLSD)
- Register the business with the General Authority for Zakat and Tax (GAZT)
- Municipality to provide a license to the business, which should be provided to MLSD

Depending on the nature of the business being created, there may be additional approvals, registrations, and licenses required.

These can include contact and approvals from, for example:

- Ministry of Health
- Ministry of Culture and Information
- Ministry of Transportation
- General Directorate of Civil Defense

The process of maneuvering through the bureaucratic/administrative process can be a daunting task for people setting up or running small businesses, particularly those with little or no experience of official processes.

Despite the process requiring registrations, approvals, and licenses from multiple Government Ministries, there appears to be no formal means of communication between each of the relevant Ministries.

Specifically, when one approval is received from a Ministry, there is no automatic (systematic) notification of this approval to other relevant Ministries within the process.

For example, while the Ministry of Commerce and Investment provides the approval for the brand name and logo, further approval is required from the Ministry of Culture and Media for the public display of company signage.
This effectively places the responsibility on the business owner to ensure that each Ministerial requirement is secured and communicated to other relevant Ministries, and that is process is completed in the correct order.

The process can be time consuming for people wishing to formalize their businesses.

According to the World Bank Ease of Business Report in 2016, it approximately takes 19 days in total and a 6700 SAR to fully register a business in Saudi Arabia.

### Preference for Public Sector Employment

According to a 2015 Gallup report, the primary reason for Saudis preferring a job in the public sector is, the perceived job stability.

About seven in ten Saudi nationals (71%) say that the statement “provides stable jobs” applies mostly to the public sector, compared with 25% who say this mostly applies to the private sector.”

Additionally, Public Sector jobs growth between 2013 and 2014 reduced by 84,000 while private sector jobs increased by 265,000. In the same period Public Sector employment growth for Saudis dropped from 7.2% to 3.3%. (GOSI and Jadwa 2015).

### Additional Causes

Some studies suggest that informality is mainly undertaken to avoid tax payments and social security contributions or to circumvent other legal regulations, e.g. minimum wages.

The Swedish International Development Cooperation Agency also points out the following causes of informality:

- Limited absorption of surplus labor - The limited capacity of agriculture and the formal economy to absorb surplus labor, together with increasing numbers of job seekers, has boosted the size of the informal economy.

In countries with high rates of population growth or urbanization, the informal economy tends to absorb most of the growing labor force in the urban areas when the manufacturing industry and off-farm activities in general do not grow at the same pace. Economic migration is one factor that contributes with a growing labor force.

- Demand for low-cost goods and services – The informal economy has been boosted by rural to urban migration in conjunction with the demand for low-cost goods and services provided by those employed in the formal and, importantly, informal economies.

- More women entering labor markets – There are growing numbers of women that enter the labor market. However, although many women own or run micro enterprises, only a small number of women entrepreneurs actually enter the formal economy.
Informality can create economic growth in the short run, but there are limits to such development in the long run as informal businesses and workers are limited in their productivity and the technologies they can acquire or develop.

Consider the productivity of a home-based baker, who depends on how much is sold in a given period of time.

This has little to do with the labor, capital, equipment, or technology. It has to do with market access, aggregate demand, purchasing power, and the intensity of competition.

Measuring the “productivity” is qualitatively different from measuring the productivity for someone working in the formal sector.

Although the informal economy is associated with low productivity and low-income countries, it does contribute to growth and is becoming more significant in high-income countries.

But more work needs to be done to improve the concepts, measures, and methods for measuring the contribution of the informal economy.

The coming figure shows that labor productivity growth has been stagnating in Saudi Arabia since the early 1980s. While there are many reasons for this, the strong presence of informal SMEs and informally employed unskilled labor seem to be key contributors.

A closely related consequence of widespread informality are low wage levels as well as limited skills development.

This is because informal markets mostly attract low-skilled workers. It is also because informality creates limited incentives for investment in skills and technology, as business and workers operate under the threat of detection and hence tend to be short-term oriented.

Informality generally has negative consequences for working conditions, as government does not regulate workplaces by definition.

All these costs and legal procedures work as incentives for enterprises to be informal. The consequences of informality are overall negative for the government, for employers and for employees.
Fragile working conditions

According to ILO, informal workers tend to report poorer working conditions, longer and irregular working hours, less access to training, less autonomy and greater job insecurity. In short, these workers tend to be exposed to higher economic risk.\textsuperscript{25}

In Saudi Arabia, without a formal contract and regular visa status, expat workers have no guarantee that wages will be paid suitably and correctly according to the terms agreed by both parties.

Limited growth

Moreover, informal businesses are less likely to grow. Due to the limitation of access to credit, they rely on internal or the owners’ personal funds to launch and initially run their enterprises. Worldwide, 50% of formal SMEs do not have access to formal credit. However, the financing gap is even larger when micro and informal enterprises are taken into account. Overall, approximately 70% of such companies in emerging markets lack access to credit.\textsuperscript{26}

In Saudi Arabia, SME financing by the banks has been on a rise since 2009, as a result of Shariah-compliant financing (Islamic financing), backed by the KAFALH\textsuperscript{27} program. Since its inception in 2006 up to the end of 2013, it has issued a total of 7,280 guarantees worth USD 956 million, benefiting SMEs running businesses across the Kingdom’s different economic sectors.

In addition Saudi Credit and Savings Bank was established by the government to provide interest-free loans to citizens of Saudi Arabia and financing SMEs became its critical attribute. It initiated a new lending program in 2012, especially targeting the growth of the SME sector. As a part of the proposal, the bank offers loans, ranging from USD 80,000 to USD 2 million.\textsuperscript{28}

Informal enterprises, nevertheless, do not access these forms of credits and thus have limited options to boost their growth.

The potential for growth may also be limited by the lack of bookkeeping in a great portion of businesses in the country. Research has shown that accounting is an important financial planning tool. Studies reveal a correlation between bookkeeping and higher levels of profitability.\textsuperscript{29}

There is evidence, that formal enterprises would have more tools to thrive in their businesses and, as consequence, contribute for the overall economy in the Kingdom.

Loose governmental control over finances

The higher the informality, the less accurate is the capacity of the government to formulate policies and address relevant issues concerning the population. Even though there is no income tax in Saudi Arabia, as previously mentioned in this paper, the information about worker’s finances is important to monitor the current policy and, eventually, evaluate whether it should be changed.

Initiatives such as the Wage Protection System provide government with information on employee’s finances. Nevertheless, a great portion of transactions are not captured.

That is evidenced, for instance, by the discrepancy between wages and remittances in the country.

According to the General Organization for Social Insurance (GOSI), the average wage for non-Saudis by the end of 2014 was SR1,636 per month.

Nevertheless, remittances by expatriates in the Kingdom reached an all-time high of SR156.9 billion in 2015, up 2.3 percent from a total of SR153.3 billion in remittances during 2014.

This corresponds to an average of SR1,300 per month per expat (considering all expats living in the country, both workers and non-workers).\textsuperscript{30}

The comparison suggest that the actual average income of non-Saudis is higher than the official figures can capture and, thus, informal jobs and informal business might contribute significantly to the overall economy.

Impact of Illegal Migrant Workers on Labor Market

According to a World Bank report, in developing countries where the size of the informal economy is high, migrant workers from surrounding countries often compete and limit job opportunities for nationals. In 2014 alone, over 427,000 undocumented workers were deported from Saudi Arabia, which represents approximately 4% of the total workforce in 2014, or around 8% of the Saudi nationals in the labor force.\textsuperscript{31}

Impact on GDP

The impact of informality on GDP in the short run might well be positive, as it allows economic transactions that otherwise might not be possible.

In the long run, however, GDP growth will remain depressed as long as low-margin, low-productivity informal enterprises exist at the current levels.

In the long run, only a larger formal sector can provide sustainable growth based on productivity improvements and innovation, both of which are only usually possible if there is legal certainty and formal access to capital. The presence of informality also makes the estimation of GDP less precise.

\textsuperscript{25} ILO 2013
\textsuperscript{26} Jeddah Chambers of Commerce 2015
\textsuperscript{27} Small and Medium Enterprises (SMEs) Loan Guarantee Program
\textsuperscript{28} World Bank 2015
\textsuperscript{29} Chelimo and Sophia 2012
\textsuperscript{30} Arabnews 2016
\textsuperscript{31} The World Bank 2013
Considering the three main causes of informality in business and in employment mentioned on section 2, it is recommended to implement policies that:

(a) Promote ease of business registration
(b) Incentivize formal employment contracts and payroll registration of employees
(c) non-Saudi workers entering the Kingdom to perform a specific task for a period not exceeding two months.

With the support of the Ministry of Commerce and Investment, it is necessary to design a regulatory framework to define all types of e-commerce businesses, including social media channels and home-based businesses in terms of:

(a) Number of workers
(b) Revenue
(c) Facilities
(d) Type of business they are allowed to operate
7.1.2 Improving the ease of doing business

As the bureaucracy and the costs to start a business influence the decision of an entrepreneur to be formal or not, it is important to reduce the number of procedures, especially if they require the assistance of a third party, such as a lawyer, and the prices for obtaining all necessary approvals and licenses.

This need is more explicit among micro, small and medium businesses, because, as mentioned in the previous sections, they normally have less human and financial resources to fulfill the requirements of formalizing an enterprise.

Thus, besides easing the standard procedures of starting a business, it is recommended to establish even more simple requirements for such businesses.

In the UAE, besides the regular business license, there is a home-based business license, provided only to UAE nationals, the license requires a simple application and approval can be granted in 24 hours, depending on the entrepreneur’s income status, the type of business and the facilities.

Such a model, if implemented in Saudi Arabia, would enhance the formalization of enterprises across the country.

7.1.3 Providing financial and non-financial benefits for formal businesses

Besides simplifying bureaucracy, it is recommended to offer a package of services for informal entrepreneurs to formalize their businesses.

Financial incentives, such as access to credit, already exist. However, non-financial benefits could be offered under the condition of registering a business.

Accelerators provide a range of services for their start-ups, such as collaborative space, mentoring, workshops for professional development, etc. many of which receive government funding.

Creating or expanding a program targeting specifically informal entrepreneurs, on condition that they fully comply with the formal requirements, is an extra incentive for shifting towards the formal economy.

This measure would not only stimulate business registration but also managerial skills which will help to boost enterprises’ growth.

7.1.4 Strengthening law enforcement

In cooperation with the Ministry of Justice, the Ministry of Labor and Social Development should build confidence in the enforcement of Saudi labor legislation among both employers and employees.

In many countries, the formalization of business is perceived as a safety net in case of judicial disputes.

The same perception should be fostered in Saudi Arabia. Communication strategies should emphasize that an informal business facing a lawsuit filed by a customer, an employer or a supplier is in a high risk position and might risk having irreparable losses.

Furthermore, enterprises should be well informed about the stakes of not complying with rules, including the cost of fines and penalties such as suspension of the right to hire employees.

According to press reports, 900 cases of Tasattur were reported to the Bureau of Investigation and Prosecution in 2015, but it is not clear which sanctions were applied and it does not seem they were well publicized.

The enforcement will require a commission to investigate and inspection potential unregistered businesses.

Also, the introduction of sector-specific quality standards would also help with reducing the incidence of Tasattur. In Abu Dhabi, small-scale, informal grocery shops (baqalas) have been driven out of the market through the introduction of more demanding standards for retail facilities regarding floor space, equipment, hygiene etc. which only formal businesses with better access to capital could fulfill.

Similar standards could be introduced in other sectors.
7.2 Policies addressing informal employment

7.2.1 Subsidizing social contributions

In order to stimulate formal employment, especially among Saudi youth, women and long-term unemployed, it is possible to cover the financial burden faced by formal enterprises when hiring employers, the GOSI contributions.

In Turkey, the government decided to subsidize the costs of the employers’ share of social security contributions, for a five year period, for those recruited between May 2008 and May 2010. Using the Unemployment Insurance Fund for this measure, young people and women were targeted. The subsidy was set at 100% for the initial year but gradually decreases to 20% in the fifth year of employment.

Employer social security contributions for disability, old age and death were reduced from 19.5% to 14.5% of gross wages. These cuts were offset by public transfers to social security institutions.

As a result of this measure, 33,395 new jobs were created for women in 2010. Overall, more than 61,000 jobs were created in 2009 and more than 63,000 in 2010.

The result of reducing non-wage labor costs has been that companies were encouraged to recruit workers rather than cut jobs, causing a drop in undeclared employment. Such a policy in Saudi Arabia would eliminate the additional costs for the businesses that formal employment presents as opposed to informal employment.

As in Turkey, this incentive could be provided to specific target groups that are more vulnerable to informality, such as self-employed persons and employers hired by home-based businesses.

7.2.2 Creation of an income declaration system

Despite the non-existence of income tax in the Kingdom, an annual income declaration system would help to control informality. In countries with income tax policies, even tax-exempt persons must declare their annual income, often with attachments of their bank statements.

Firstly, to ensure that their income is indeed below the limit from which on taxes are applied.

Secondly, to assess whether the change in wealth is consistent with the declared income.

And finally, to cross-check the income declaration information with that of employer’s financial records.

With data on people’s income, apart from Wage Protection System (WPS) data, the government will have more tools to control whether workers are performing irregular jobs and obtaining income from other informal initiatives.

In order to enforce the measure, it will be necessary to create mechanisms to link the participation in the income declaration with the renewal of iqama (for expats) or national ID (for Saudi nationals), in a way that the non-compliance after a specified number of years would prevent these persons of renewing their papers until all of their affairs are completely in order.

7.2.3 Expanding the Wage Protection System

As of 2016, the Wage Protection System (WPS) applies only to businesses with more than ten employees.

This keep out of government’s sight and control micro-business, both registered and unregistered.

This recommendation is aligned with the Ministry of Labor and Social Development’s expectations to universalize WPS in Saudi Arabia by 2017.

With this measure, all workers would have by law to be registered and, thus, any informal employment relationship could be subject to fines or punishments, such as the suspension of the right to issue visas or to hire and fire personnel.

Although the expansion of the WPS to all businesses could potentially be a barrier to informal enterprises less willing to comply with the labor legislation, it is expected that the above-mentioned incentives to registration would offset that requirement.

7.2.4 Strengthening programs that formalize part-time work

Program such as the Freelancer License Program, developed by the Ministry of Labor and Social Development, help to gather data and keep track of part-time work done in the Kingdom.

Moreover, it enables MLSD to monitor whether people who claim to be performing part-time jobs are actually informal full-time employers, in case there is a major client who requires the worker’s service on a daily basis.

Such initiatives could be expanded with incentives to encourage part-time workers to prefer bank transactions as opposed to cash payments.

In addition, online services offering management tools, for example, could ease the use of electronic invoices, part-time contracting, electronic payment methods and the storage of financial information for the annual income declaration as discussed in the previous item.

33 European Monitoring Centre on Change 2013

34 MLSD 2016
7.2.5 Reviewing the Sponsor System

Similar to the Tasattur phenomenon, the key policy option for reducing labor informality would be liberalization of the labor sponsorship system.

If workers are formally and legally mobile between employers, there should be no reason for them to remain with an official sponsor who is not their actual employer.

This would not eradicate the problem of “free visa” workers who work entirely on their own account, but would tackle one significant sector of informality that concerns both businesses and workers.

The ‘Ajeeer’ initiative introduced by Ministry of Labor and Social Development, aims at providing new employment solutions among different business entities for utilizing expats in the country, such as leasing and allowing temporary work out of original workplace according to rules and regulations of the labor law.

Until August 2015, the initiative had issued 372,658 notices for 135,000 expats; assisting in the temporary movement of Expat workers from one sponsor to another in Saudi Arabia.

Once informal mobility between companies has been reduced by making formal mobility less complex and inflexible, it will become relatively easier to identify the remaining companies who engage in “free visa” transactions under which foreign individuals operate completely on their own account.

Nevertheless, in order to design, implement and monitor effective policies it is important that the Ministry of Labor and Social Development engages with all the appropriate ministries to create metrics to further assess each informal activity through the use Inspection Units to formulate comprehensive policy measures.
It is evidenced by the literature that there is no consensus on the best method to estimate the size of the informal economy. The calculation exercise applies two of the most widely used approaches to estimate the size as well as the development of the informal economy in Saudi Arabia by using:

1. The monetary approach model – Currency Demand Approach (CDA)
2. The structural equation approach (MIMIC)

Each modelling method has its own strengths and weaknesses and since the informal economy is by nature untraceable, the estimates of the informal economy should be interpreted as an approximation of the size of the informal economy, rather than being exact measures.

**I) The Monetary Approach: CDA**

The key assumptions of this approach are:

- **a)** Informal economic activities are the direct consequence of high taxes, fees and regulation costs;
- **b)** Such transactions are mainly carried out by currency (and thus the overall currency in circulation in the economy has two components: currency used for informal economic transactions and formal transactions; and
- **c)** The transaction velocity of money in both the informal and formal economies is the same.

The reduced model representation for the Saudi economy is represented by the following equation:

\[
\frac{C}{M_2} = \alpha + \beta_1 \left(\frac{Y}{T}\right) + \beta_2 T + \beta_3 F + \beta_4 S + \beta_5 LF + \epsilon
\]  

(1)

Where:
- **C:** Currency Demand (Cash in Circulation)
- **M2:** Broad Money, including timed deposits (Cash in Banking System)
- **T:** Total Private Sector Tax (Tax Burden)
- **F:** Financial Sector Development Index := Value Added of Financial Sector / Value Added of Energy and Utility Sector
- **S:** Self-Employment
- **LF:** Total Labor Force
- **U:** Saudi Unemployment Rate (unemployment in the former economy)
- **W:** Total Wages in Private Sector (recorded formally in GDP)
- **Y:** Total Nominal GDP (Economy Size)
- **R:** Total Workers Transfers (proportion of formal and informal wages)
- **C:** Financial Sector Development Index := Value Added of Financial Sector / Value Added of Energy and Utility Sector
- **S:** Self-Employment
- **LF:** Total Labor Force
- **U:** Saudi Unemployment Rate (unemployment in the former economy)
- **W:** Total Wages in Private Sector (recorded formally in GDP)

The method usually proceeds with first getting an overall predicted value of \(C/M2\) on the basis of the above equation and then estimating a predicted level of currency holding (\(C\)).

Next, the equation is solved in the same way, assuming that the tax variable is zero while the FRHI¿FLHQWVRIWKHRWKHUYDULDEOHVUHPDLQXQFKDQJHG. This gives an estimate of currency holding in a tax free environment (\(C_T\)).

Then the currency holding for informal transactions (\(C_T\)), induced by taxes is calculated as a difference between \(C\) and \(C_T\). In principle, one may also proceed through a slightly different route by directly estimating \(C_T\) with setting all the coefficients equal to zero except , i.e. directly extracting tax induced currency ratio from the equation (1).

In this study, we use a modified version of the monetary approach through autoregressive distributed lag (ARDL) model suggested by Pesaran et al (2001).

Given the equation (1) and assumptions of the model as discussed earlier, the informal economy as a ratio to the total size of the economy (formal plus informal) is worked out as follows:

\[
\frac{\mu_1}{Y} = \frac{Y_i}{Y} = \frac{\beta_1 (\frac{Y}{T}) + \beta_2 T + \beta_3 F + \beta_4 S + \beta_5 LF + \epsilon}{\beta_2 + \beta_3 + \beta_4 + \beta_5 + \epsilon}
\]  

(2)

\(Y_i\) is GDP in informal economy; \(Y\) is the total size of the economy.
II) The Structural Equation Approach: MIMIC

The Multiple Indicators and Multiple Causes (MIMIC) model is a particular form of Linear Independent Structural Relationship models (LISREL) whereby the informal economy is taken as a latent variable which on the one hand caused by a set of variables and affects other variables on the other. The MIMIC model has been estimated by structural equation models (SEM) that give us an advantage of using all the information contained in the covariance matrix as compared to conventional regression analysis where only the information contained in the variance of variables is exploited. The main focus of SEM is to estimate a covariance matrix that fits the sample covariance matrix. The closeness of two matrices is considered as an indication of good approximation of relationships between the variables that define it. In other words in this methodology we minimize the distance between the observed and model employed covariance matrix.

Formally, the MIMIC model has two parts: the structural model and the measurement model. The structural model shows that the latent variable μ is linearly determined by a set of exogenous causal variables which can be illustrated as follows:

\[ \mu = \gamma'X + \nu \]  

where \( X \) is a vector of causal variables, \( \gamma \) is a vector of scalars, \( \mu \) is the latent variable (informal economy) and \( \nu \) is a structural disturbance term.

The measurement model which links the informal economy with the set of selected indicators is specified by:

\[ Y = \lambda'\mu + \varepsilon \]  

where \( Y \) is a vector of indicator variables, \( \lambda \) is a vector of loading factors to represent the magnitude of the expected change for a unit change in the latent variable \( \mu \). The \( \varepsilon \) is the measurement error term.

The MIMIC model confirms the hypothesized relationship between the latent variable (informal economy) and its causal indicators by examining the consistency of the actual data with the hypothesized relationships.

The Maximum Likelihood method (ML) should be applied to estimate the parameters of the MIMIC model. Then, the time series index of the Saudi informal economy is calculated using the Covariance matrix.

This time series MIMIC index based on equation (3) is calculated by multiplying the coefficients of the significant causal variables by the respective time series.

The MIMIC model produces only an index of the trend of the size of the informal economy, thus an additional step is required to calibrate this index in order to calculate the size of the informal economy as percentage of GDP. This step is called the benchmarking step, which requires an exogenous estimate of the size of the informal economy at a certain point, preferably by another estimation method.

Given the fact that there are no survey analyses and estimates on the informal Saudi economy, we calibrate the MIMIC index by applying the CDA model.

It is important to note that in the MIMIC model estimation, we need to fix an indicator variable in the measurement equation (4). This is required in order to have a reference variable to set a measurement scale for the informal economy because it is, by nature, unobserved.

The MIMIC model provides an estimation of a relative evolution of the size of the informal economy over time, meaning that it only yields ordinal estimates of the size of the informal economy. Thus, an additional final step is required to calculate the size of the informal economy in a meaningful way, hence as percentage of GDP.

This last step is called the benchmarking procedure. In the literature, there is a wide discussion of the different benchmarking procedures to be applied, but there is no agreement on which procedure is superior to the other. The benchmarking procedure is applied to calibrate the ordinal estimates into cardinal values and convert this index to percentage units (real values). This requires that a prior estimation of the Saudi informal economy to be computed. Thus, the exogenous estimation of the relative size of the informal economy in Saudi Arabia used to calibrate the ordinal values is based on our currency demand approach (CDA) in the current study.

The exogenous estimation of the relative size of the informal economy in Saudi Arabia used to calibrate the ordinal values is based on our currency demand approach (CDA) in the current study. In equation (5), \( \hat{\mu}_t^e \) denotes the value of the MIMIC index at time \( t \) according to the structural equation (1), \( \hat{\mu}_0^e \) is the value of the MIMIC index in the base year which is in our model is 2010, \( \hat{\mu}_b^e \) is the exogenous (prior) estimation of the size of the informal economy in Saudi Arabia in the base year as a percentage of GDP extracted from our CDA results.

Several combinations of causes and indicators were tested to arrive upon a good model in terms of diagnostics. The final model selected consists of three causes of the informal economy including \( T/Y \) ratio, \( F \) and \( U \); and two indicators including currency in circulation (as ratio to M2) and \( R/W \).
All the variables are in the form of deviations from mean. The structural equation of the MIMIC model (3) has the matrix \( X \) of cause variables including T/Y, F and U in deviation from mean. The set of measurement equations in which latent variable linearly determines observable endogenous variables (the indicators) is given by equation (4); where \( Y \) is the vector of indicators including currency in circulation to M2 ratio and R/W, as defined above. The model is depicted by a Structural Equations diagram linking the latent variable to causes and indicators (Figure 1).

In order to estimate the model, we need to normalize one of two \( \lambda \)'s by setting it equal to 1 such that the effect of other indicator is quantified. We estimate the parameters of model using Maximum Likelihood method. By expressing the model (4) in terms of covariance, we proceed as follows:

\[
\Sigma = \begin{bmatrix}
\text{var}(y_1) & \text{cov}(y_1, y_2) \\
\text{cov}(y_1, y_2) & \text{var}(y_2)
\end{bmatrix} = E \left[ \begin{bmatrix} \tilde{y}_1 \\ \tilde{y}_2 \end{bmatrix} \begin{bmatrix} \tilde{y}_1 \\ \tilde{y}_2 \end{bmatrix}^T \right] = E(\tilde{y}_i \tilde{y}_j^T) = \lambda'(\phi \gamma + \psi) \lambda' + \Theta_x
\]

(8)

As a result, we have

\[
\Sigma = \begin{bmatrix}
\lambda' \phi \gamma + \psi & \lambda' \\
\lambda' & \phi
\end{bmatrix}
\]

(9)

We need to estimate \( \gamma, \lambda, \) and co-variances that produce that estimate of \( \Sigma \) which is as close as possible to sample cov \((Y, X)\). In (9), \( \Theta_x \) is the covariance matrix of the error terms in the measurement model; \( \phi \) is the variance of the error term in the structural equation and \( \phi \) is the covariance matrix of the causes.

RESULTS:

The estimates of informal economy based on First-Order Autoregressive AR(1) process model and other methods are given in Table 1.

(Table 1)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C (Constant)</td>
<td>0.556653</td>
<td>0.037287</td>
<td>9.977508</td>
<td>0.0000</td>
</tr>
<tr>
<td>T/Y (Tax Burden)</td>
<td>1.351213</td>
<td>0.438459</td>
<td>3.081728</td>
<td>0.0016</td>
</tr>
<tr>
<td>R/W (Export Transfer)</td>
<td>0.985607</td>
<td>2.356407</td>
<td>4.385595</td>
<td>0.0014</td>
</tr>
<tr>
<td>F (Financial System)</td>
<td>-0.024446</td>
<td>0.008475</td>
<td>2.884450</td>
<td>0.0016</td>
</tr>
<tr>
<td>S/LF (Self Employment)</td>
<td>5.021777</td>
<td>0.972207</td>
<td>5.206894</td>
<td>0.0004</td>
</tr>
<tr>
<td>U (Unemployment)</td>
<td>2.564033</td>
<td>1.104544</td>
<td>2.385041</td>
<td>0.0323</td>
</tr>
<tr>
<td>Financial Shock (Y2008)</td>
<td>-0.074315</td>
<td>0.014748</td>
<td>-5.039151</td>
<td>0.0005</td>
</tr>
<tr>
<td>Size of IE</td>
<td>Average</td>
<td>0.112999</td>
<td>8.722021</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

R-squared: 0.977256 Mean dependent var: 0.659349
Adjusted R-squared: 0.963610 S.D. dependent var: 0.060225
S.E. of regression: 0.011489 Akaike info criterion: -5.801996
Sum squared resid: 0.003120 Schwarz criterion: -5.458908
Log likelihood: 56.31697 Hannan-Quinn criter.: -5.767892
F-statistic: 71.61720 Durbin-Watson stat: 1.974280
Prob(F-statistic): 0.000000
(Table 1)

<table>
<thead>
<tr>
<th>Year</th>
<th>Size of IE</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>0.129</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>0.127</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>0.182</td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>0.181</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>0.157</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>0.134</td>
<td>0.145</td>
</tr>
<tr>
<td>2005</td>
<td>0.122</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>0.116</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>0.105</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>0.154</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>0.167</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>0.167</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>0.193</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>0.208</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>0.247</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>0.278</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>0.290</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>0.214</td>
<td>0.223</td>
</tr>
<tr>
<td>2017</td>
<td>0.220</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>0.225</td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td>0.231</td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td>0.230</td>
<td></td>
</tr>
<tr>
<td>2021</td>
<td>0.229</td>
<td></td>
</tr>
</tbody>
</table>

(Graph 1)

(Tables 2)

<p>| Results of MIMIC Model (LISERAL output) |</p>
<table>
<thead>
<tr>
<th>Cause Variables</th>
<th>Estimated Coefficients</th>
<th>t-stat</th>
</tr>
</thead>
<tbody>
<tr>
<td>T/Y (%)</td>
<td>1.721938</td>
<td>3.1839</td>
</tr>
<tr>
<td>F (%)</td>
<td>-0.042650</td>
<td>-5.2713</td>
</tr>
<tr>
<td>S/LF (%)</td>
<td>4.696465</td>
<td>3.6558</td>
</tr>
<tr>
<td>U (%)</td>
<td>0.031846</td>
<td>2.3651</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indicator variables</th>
<th>Estimated Coefficients</th>
<th>t-stat</th>
</tr>
</thead>
<tbody>
<tr>
<td>C/M2 (%)</td>
<td>0.549541</td>
<td>10.4955</td>
</tr>
<tr>
<td>R/W</td>
<td>1.49E-06</td>
<td>4.33609</td>
</tr>
</tbody>
</table>

Diagnostic Tests

Chi-square (p-value) = 1.37 (0.51)
RMSEA = 0
90% confidence interval for RMSEA = (0; 0.23)

-Value for test of close fit (RMSEA<0.05) = 0.52
N=72

Goodness of Fit Index (GFI) = 0.97745
Adjusted Goodness of Fit Index (AGFI) = 0.87854
The MIMIC model is considered superior to the CDA because the MIMIC model allows the researcher to consider several causes and indicators at the same time to model the evolution of the informal economy over time. But like any other econometric model, the MIMIC model face some limitations:

1. The application of the MIMIC model to small sample sizes and time series analysis due to non-stationarity and non-normality of the time series.
2. The choice of the observed variables to be a causal or an indicator variable. For instance, unemployment rate can be regarded as a causal variable leading to the development of the informal economy. At the same time, unemployment rate can be regarded as an effect of the existence of the informal economy in a certain country.
3. Since the informal economy is a latent variable, it is challenging when it comes to being measured by the MIMIC model and not a similar variable.

In order to address these limitations, the researcher needs to firstly clearly provide a detailed and well-explained theoretical background of choosing the observed variables as causal and indicator variables as well as to provide a clear cut definition of the informal economy that the researcher is intending to measure by the MIMIC model.

4. Another complexity of the MIMIC model is that it only provides an index of the size of the informal economy, therefore an additional step is needed to be conducted to convert this index to actual values of the informal economy as % of GDP.

### Table 2

<table>
<thead>
<tr>
<th>Year</th>
<th>Size of IE</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>0.150</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>0.158</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>0.190</td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>0.186</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>0.175</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>0.161</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>0.152</td>
<td>0.159</td>
</tr>
<tr>
<td>2006</td>
<td>0.153</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>0.151</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>0.135</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>0.136</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>0.161</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>0.180</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>0.188</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>0.220</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>0.243</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>0.239</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>0.246</td>
<td>0.224</td>
</tr>
<tr>
<td>2017</td>
<td>0.242</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>0.237</td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td>0.244</td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td>0.246</td>
<td></td>
</tr>
<tr>
<td>2021</td>
<td>0.249</td>
<td></td>
</tr>
</tbody>
</table>
9.0 References

40. La Porta and Sheifer 2014. Informality and Development: Journal of Economic Perspectives
41. Linkedin 2014 “Priming the Economic Engine: How Social Media is Driving Growth for Small and Medium Businesses”