Response to the Call for Proposals: The GCC Economies in the Wake of COVID19

The GCC Economies in the Wake of COVID19 Charting the Road to Recovery and Resilience

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The impact of COVID-19 Pandemic on the Economic Performance of Saudi Arabia

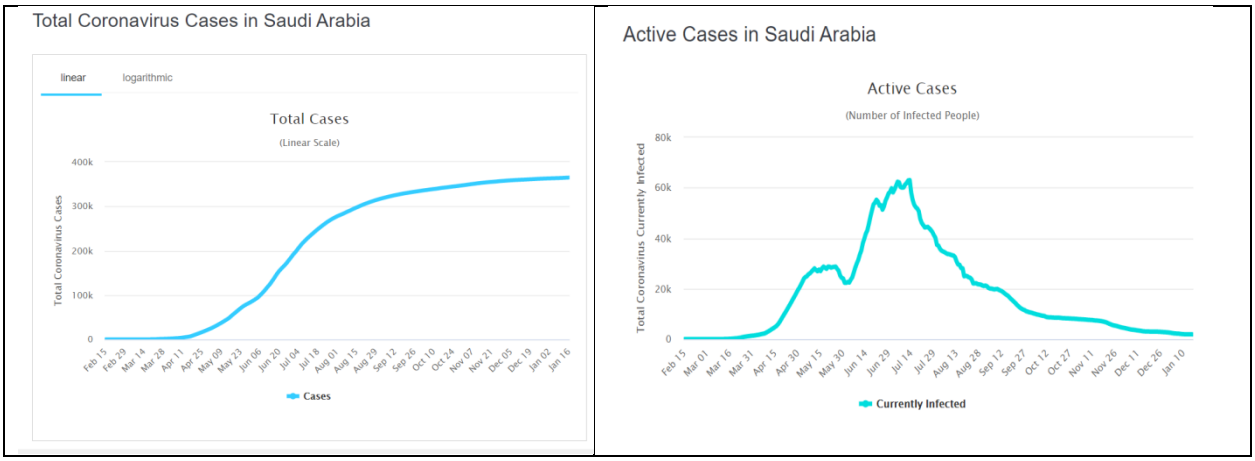
Hind Alofaysan, Fatma Mabrouk[1], Jihan Bousrih

Department of Economics
Collage of Business and Administration
Princess Nourah bint Abdulrahman University

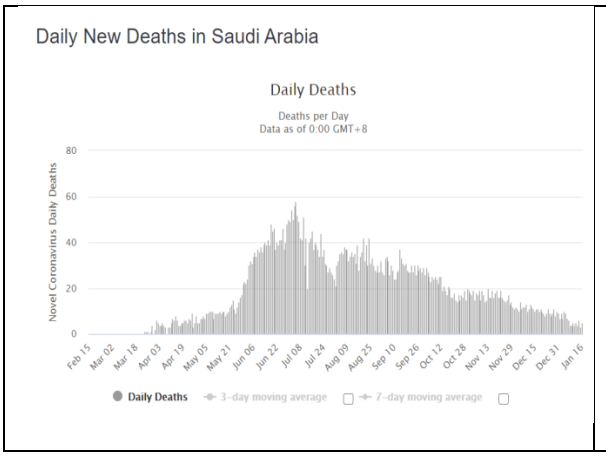
Introduction

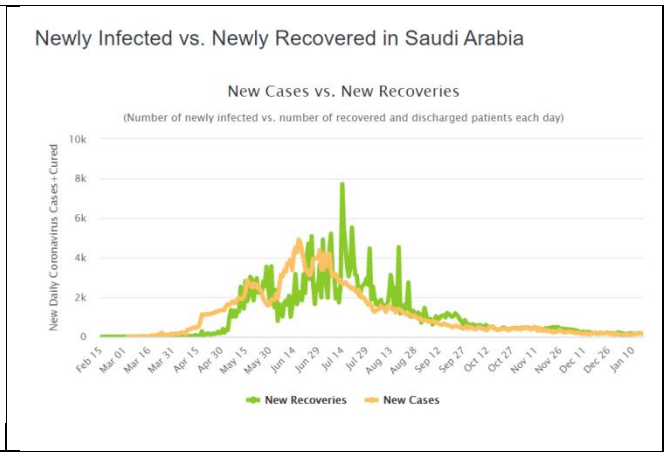
The outbreak of the COVID-19 disease originated from China on December 2019 continues to spread globally as there have been more 96 million confirmed cases around the world, and more than 2 million deaths.

Saudi Arabia, in particular has reported more than 360,000 confirmed cases and more than 6000 deaths as reported to World Health Organization by January 20, 2021. Figure 1 below shows the total number of confirmed cases, the daily new cases and the total deaths as well as the new cases verses the new recoveries in Saudi Arabia.



[1] Corresponding Author: Fatma Mabrouk FMMabrouk@pnu.edu.sa





Source: https://www.worldometers.info/coronavirus/country/saudi-arabia/

The quick evolution of COVID-19 pandemic in the world has had excessive and negative effects on the world's economic and social development. Governments and policymakers are faced with a high level of uncertainty which results in difficulty in addressing appropriate economic policy measures.

In this paper, we address two sets of questions. First, what are the real economic effects of the COVID-19 pandemic on the Saudi Arabian economy? Are the economic effects temporary or persistent? Second, how do the local public health actions such as social distancing affect the economic severity of the pandemic? Does it have economic costs (i.e. lose jobs), or do policies that slow the spread of the pandemic also reduce its economic severity?

To answer these questions, the paper uses two approaches. The first approach is a theoretical investigation using a New Keynesian open economy model to simulate the economic consequences of COVID-19 in Saudi Arabia. We introduce a negative health shock on the supply side of the economy as a reduction in labor utilization under unchanged labor cost in order to measure the output loss related to this disease.

The second approach is the empirical analysis based on Labor Force Surveys 2019-2020 published by the Saudi General Authority for Statistics. The research will focus on evaluating the effect of COVID-19 on certain indicators in Saudi Arabia. Special attention will be given to comparing groups/situations related to employment statements (activities/sectors/ occupations/stability) with each other in order to draw conclusions. In this case, we will profit from 2 waves of data collection periods in Saudi Arabia. The aim is to map a development analysis over a specific period as it is important to measure variables that are defined in the same way.

Our analysis yields some insights that consumption is decreasing in the short term whereas private saving is increasing. The overall effect on economic growth is mixed. Our findings suggest that pandemics can have substantial economic costs; however, the early intervention can have economic merits, beyond the health merit of lowering mortality rates.

The paper then contributes to the debate over the impact of COVID-19 pandemic context in two principal ways. Firstly, new high important and hot topic right now: Covid-19 has produced the biggest global crisis in generations, transferring shock waves into economies and humanities around the world. New original data to be exploited in this study, as most of the empirical studies in the literature are based on macroeconomic panel data and consider common results for all countries under investigation although there are inequalities and indifferences between them.

This paper then fills this gap by considering a case study of Saudi Arabia since it is difficult to consider all the countries as similar group. Indeed, they can be characterized by differences in COVID spread of COVID 19 degree, and workers' rights and employees' salaries and status. Secondly, our empirical analysis is based on Labor Force Surveys 2019-2020 published by the Saudi General Authority for Statistics to our knowledge, we are the first to use these type of data for the Saudi Study. Therefore, we set ourselves apart from the previous works in the literature on this subject in the econometric methodology by comparing the data in terms of cross sections analysis.

Literature Review

The initial economic impact of the COVID-19 was mainly felt in China, resulting from a supply and demand shocks. Similar to the SARS epidemic, which had a negative impact on Chinese GDP of 1.05 percent in 2003, COVID-19 is expected to have a negative impact on the short term expansion of the world economy as a whole.

The impact of epidemics has been under research in economics. The studies have attempted to estimate the economic burden of an epidemic based on private and non-private medical costs associated with the disease, such as expenditure on diagnostic and treatment (Lee and McKibbin, 2004). Losses of time and income on medical care are added to obtain the estimate economic cost of any disease. McKibbin and Fernando (2020) argue that this conventional approach underestimates the true economic costs of any disease which is highly transmissible (such HIV/AIDS, SARS and pandemic influenza). The results of such policy on previous disease outbreaks provide important information on how to think about the COVID-19 implications.

After the SARS and H1N1 episodes respectively in 2003 and 2009, the researchers understand quickly the importance of the short and long term consequences of a pandemic on the economy. The first impact of any epidemic is a negative shock to population and labor force. Surprisingly, the covid-19 situation seems to be different, as the world is facing novel challenges, (1) It is a global pandemic, (2) It is not focused on low-middle income countries, (3) Interest rates are at historical lows, (4) The world is much more integrated, (5) This current crisis is generating spillover effects throughout supply chains, (6) We have simultaneously destruction of demand and supply (Fernandes, 2020). In fact, a disease that kills kids and old persons without any effects on active population aged between 15 to 56 years old can produce an initial improvement in GDP (Acemoglu and Johnson, 2007). However, this is not the case for the COVID-19. This pandemic affects all the population with different ages so its long term economic consequences are not unambiguous.

The findings of Barro and Sala Martin (1995) confirm this fact through the standard neoclassical growth models and demonstrate that a negative shock to population growth can lead to a faster accumulation of capital and a faster output growth. Conversely, a reduction in labor force will increase the capital labor ratio and decrease the rate of capital return, which lead to a slower capital accumulation and thereby lower output growth.

The reduction global growth rates due to the COVID-19 pandemic during the first quarter of 2020, is driven by a sharp deterioration in private consumption (transport, leisure and retail trade), in industrial activity for several sectors and in global trade. A prolonged constrained trade policy around the world will damage the investment and demand for capital goods as well (The World Economy-IMF Report, 2019).

On a related matter, Fernandes (2020) envisages that the COVID-19 affects the businesses environment across the world. Lots of people may lose their occupations or asked to take unpaid leave for some time for the coming months. Manufacturers stopping their production, closing schools and public gatherings in many countries, and tourist destinations are abandoned which affects many countries for more than 15% of their GDP. In other study, an estimation of six weeks of social distancing brings GDP down by 5.6% and drops the active workforce by 52% (Barrot et al., 2020).

Similary, Gali (2020) describes the direct loss of GDP inducing by the decline in consumption of goods and services during the crisis as painful but relatively acceptable. Unfortunately, this loss will increase by the presence of indirect effects if the decrease in output leads to a significant reduction in employment leading to loss of income. In fact, the international labor organization report the important impact of the COVID-19 on the labor market performance with an increase of the unemployment by in average 13 million from a base level of 188 million in 2019. Despite the high number of inactive workers, firms will try to keep their payroll unchanged and pay their fixed expenses such as rent and interest during the non-productive period by contracting new loans from banks. But with the high probability of nonpayment, the banks will not extend the loans contracted by these firms and will increase their interest rate causing an increase in the firm's indebtedness. This action can lead in the future a wave of bankruptcies or in the best case an important deteriorated balance sheet (McKibbin and Fernando, 2020).

The pandemic of COVID-19 continues to cause an enormous shock to both real economies and financial sectors. Recent research (Bolton et al. 2016, Beck et al. 2018, Baldwin and Weder di Mauro, 2020), has revealed that financiers can support companies during times of recession and economic crisis based on their knowledge of companies and long-run associations. A longer slowdown or even a recession will place pressure on banks' loan portfolios and solvency positions and it can be non-performing loans that could be a direct source of bank fragility.

Selmi and Bouoiyour (2020) provide an analysis of the stock price responses to the disease COVID-19 on the G7 countries. Their findings approve the uncertainty in stock market caused by the COVID-19. The difficulties in trade slow down the flow of goods and services which have an important impact on industries. In such situation, the COVID-19 has highlighted the downsides of global integration. In fact, China seems to be the main suppliers for the industries and therefore China is the major volatility transmitter in the stock market. This global spread of COVID-19 may be an occasion for global value chains to rethink their strategies of production (Legrain, 2020).

The effects of pandemics during the last two decades were not restricted to the labor supply and its implication to the whole economy (Lee and Cho, 2016). The social welfare became one of the major impacts in the current COVID-19 epidemic. Fernichel (2013) states that during similar cases such as SARS/H1N1 crisis, the social distance and quarantine policies become overdone and reduce social welfare and lead to some undesirable health outcomes. Ferguson et al (2020) present a model based discussion of the public health implications of social distancing and mitigation measures and conclude to the effect of such measure on the psychology of individuals. In fact, there is a significant economic trade off whether or not we can impose social distancing. The economic cost of such decision over a long period of time lead to an important cumulative loss of work time on one hand or the large loss of lives due to the contagion of the disease.

In this vein, Petric (2020) confirms epidemics are not just a medicinal phenomenon, but affect humanity on various intensities, producing troubles as stigma, xenophobia, panic and stress which are main aspects of the societal impact of epidemics contagious outbreaks. An example from Great Britain, the Office for National Statistics collects weekly evidence on people's experiences and sentiments concerning the pandemic to comprehend the COVID-19 pandemic life impact, and finds that over 8 in 10 adults (85.8%) in Great Britain were either very worried or somewhat worried that they or someone in their family would be infected by the COVID-19. More specifically, the COVID-19 outbreak touches particular members and social groups in the most vulnerable situations as well as people living in poverty situations, older individuals, and persons with disabilities, youth, indigenous peoples, refugees, migrants, or displaced persons (United Nations, 2020).

Research Project Design

We attempt in this paper to evaluate the impact of the COVID-19 on the Saudi Arabian economy by using two approaches. The first approach is a theoretical investigation using a New Keynesian open economy model to simulate the economic consequences of the corona virus in Saudi Arabia. We introduce a negative health shock on the supply side of the economy as a reduction in labor utilization under unchanged labor cost in order to measure the output loss related to this disease.

In addition, in order to measure the impact of the epidemic on the demand side, we will consider a drop in working hours leading to a decrease in the income of consumers. In fact, a lower demand for consumption such as travel and religious and non-religious tourism services can bang customer expenditure. In addition, a decrease in current money and higher uncertainty delay corporate investment reporting trouble in current inventory levels and supply chains.

The second approach is to test our theoretical findings through an empirical analysis based on Cross-sectional data analysis in order to measure the impact of this disease on the economic indicators of Saudi Arabia. The paper relies on the Labor Force Surveys 2019-2020 published by the Saudi General Authority for Statistics.

Theoretical model:

We develop theoretical extensions to a standard set of micro foundations in a general equilibrium model allowing taking account of health and its economic implications.

1- Health and utility function

We apply a modified version of a Dynamic Stochastic General Equilibrium Model (DSGE) to measure the various costs of illness and its impact on economic performance. Following Bardhan and Udry (1999) and Toroj (2013), we formulate the utility function as follow:

$$U[C^{nh}, L, S, H(C^h)]$$

Where U: one period utility

C: Consumption divided into non-health good and health good

S: consumption of non-market, self-produced goods

L: Leisure

H: the stock of household's health

The utility of the household is derived from time spending in leisure, consumption of health and non-health goods, consumption of home production and stock of health. The relation between utility and the consumption of health good (finance the cost of illness in the model) is not direct. In fact, when the stock of health is affected, the consumption of health good increase. Therefore, as long as the stock of health is constant and not affected, the household can attribute the allocated resources to non-health goods.

The novelty of the model is related to the variables S and H which are crucial when estimating the social impact of non-market losses due to an illness (see figure above).

In case of a disease such as the Covid-19 pandemic, the household's health stock can be affected. A negative health shock is represented in the model by $\boldsymbol{\varepsilon^H}$ and will affect households in various ways:

- Direct decrease in health stock H=H(C^H, ε^H)
- Redistribution of resources from the non-health to health sector. We suppose that we are in a closed economy without capital and investment so the resources constraint become

$Y = C^{nh} + C^h$

- Loss of time by spending time sick divided into lost working time and into lost leisure time L^{nh}. So the amount of leisure $L = 1 - N - L^{nh}$ (N is the labor supply and 1 is the amount of time for a given period)

Using a CRRA utility function 2, we study the economic effects of diminishing leisure, with demand shock ε_t^D, risk aversion σ, labor supply shock ε_t^L and Frisch elasticity of labor supply $\emptyset$. The utility function is formulated as follow:

$$U_t(C_t, N_t) = \varepsilon_t^D \frac{(C_t - hC_t)^{1-\sigma}}{1-\sigma} - \varepsilon_t^L \frac{(N_t + L_t^{nh})^{1+\emptyset}}{1+\emptyset} \quad (1)$$

To write the equation (1), we make two important assumptions. The first one is related to the Frisch elasticity and it will be the same for the time spend working and the time spend being sick. Whereby only the first variable is a decision variable. The second assumption is to be able to define how much the leisure time is reduced by the time being sick when visiting doctors, going to the pharmacies ….

[2] The Constant Relative Risk Aversion function lead to the percentage change in hours worked due to the percentage changes in wages as equal to the intertemporal elasticity of labor supply.

2- Health and production function

Several approaches to estimating indirect cost of illness, such as human capital approach or friction cost approach focus on the producer side rather than on the household side. The cost of illness studies often includes the cost of decreasing production, resulting from a disease, as an important economic burden.

Include the human capital approach

The production function is a standard Cobb Douglas version:

$$Y_t = A_t K_t^{1-\alpha}(H_t.N_t)^{\alpha}.\varepsilon_t \quad (2)$$

A: Labor productivity; K: capital stock, ε_t: supply shock and α is the Cobb Douglas exponent for labor.

The marginal product of labor: The labor demand of labor

$$MPN_t = \frac{\partial Y_t}{\partial N_t} = A_t K_t^{1-\alpha}\alpha N_t^{\alpha-1}.\varepsilon_t H_t^{\alpha}$$

Log linearization:

$$mpn_t = a_t + (1-\alpha)K_t + (\alpha-1)n_t + \epsilon_t + \alpha h_t$$

Real marginal cost: $mc_t = w_t - p_t - (a_t + (1-\alpha)k_t + (\alpha-1)n_t + \epsilon_t + \alpha h_t$

Calibration:

The choice of the variables of calibration for Saudi Arabia, is based on standard values used in the literature.

Impulse responses

Variable of interest: Y, C, L, real marginal cost, real wage, inflation

Empirical model:

The second research methodology that will be employed is based on econometric analysis. The idea is to better understand the impact of COVID-19 and job uncertainty caused by COVID -19 on Income and related variables. Potential selected variable will be exploited by applying Ordered Probit Model. Special attention will be given by estimating and comparing regional models. Data to be employed in this study will be obtained from the Labour Market Survey statistics which are based data from the household telephone survey (Labour Force Survey) which GASTAT conducts quarterly.

We consider Income levels as dependent variable using 5 intervals (1) No Income, (2) 0-1999, (3) 2000-4999, (4) 5000-9999 and (5) More than 10000

Selected independent variables from the LFS are presented below

Demographic and personal characteristics

Age

Sex

Marital Status

Nationality

Conventional socio-economic characteristics

Highest Education Level

Employment

Regional characteristics

Riyadh-Capital

North and East region

The southern and western region

Risks and Economic Uncertainty characteristics

Economic Uncertainty

Productivity change

Work and Employment Status

Employment Activity

Employment Sector

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