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

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CONTENT

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Introduction and Paper Contribution

Stylised Facts

World

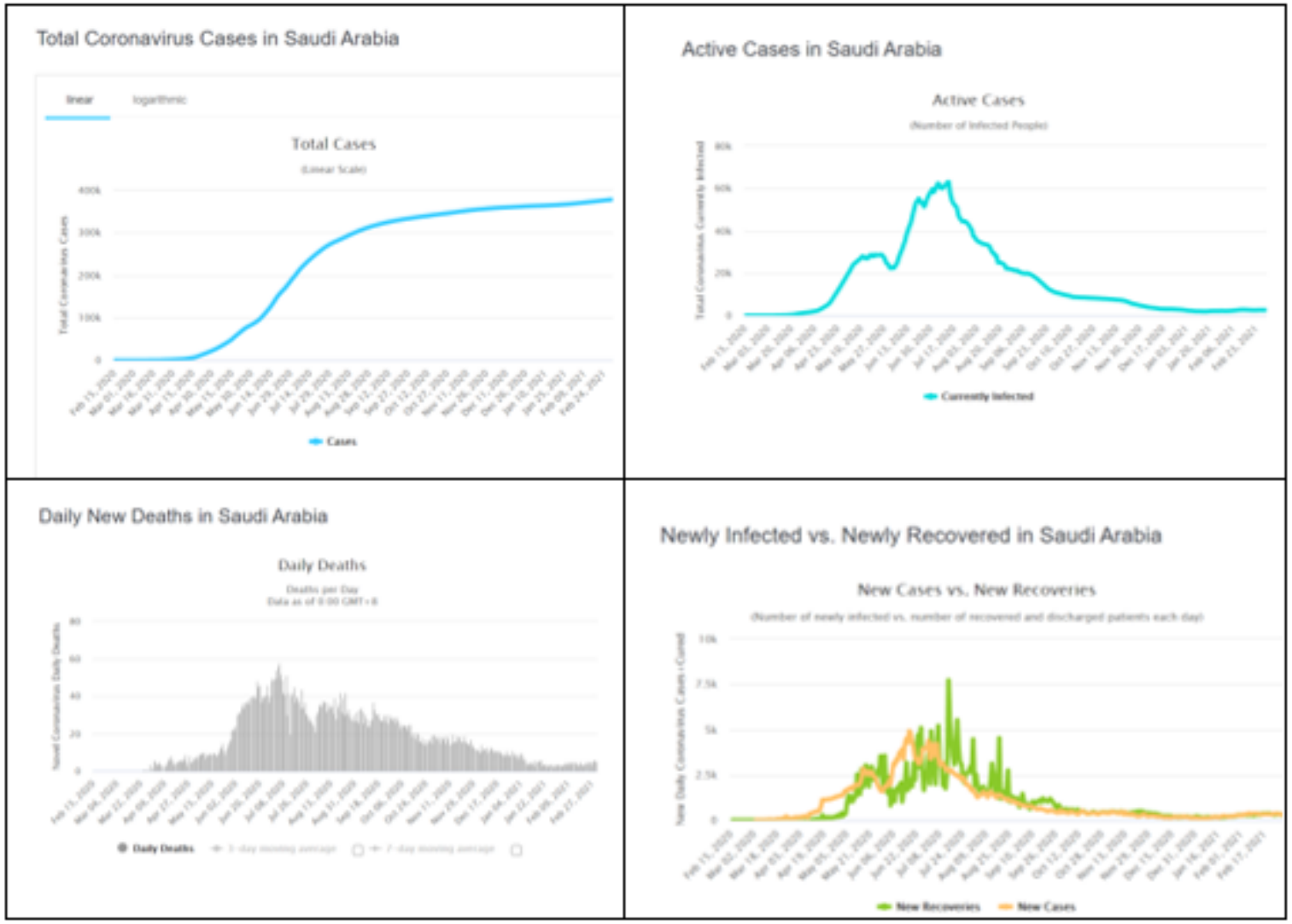
115 million confirmed cases

2.5 million deaths.

Saudi Arabia

378.000 confirmed cases

6500 deaths



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

Contribution of the paper

- New hot topic: Covid-19 has produced the biggest global crisis since generations, transferring shock waves into economies and humanities around the world.

- Original data 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.

- Empirical analysis based on the recent Labor Force Surveys 2019-2020 published by the Saudi General Authority for Statistics.

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Literature Review

Recent papers

- 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, " Petric (2020) "

- The pandemic of COVID-19 continues to cause an enormous shock to both real economies and financial sectors,

  "Bolton et al. 2016, Beck et al. 2018, Baldwin and Weder di Mauro. 2020"

- 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, " Fernandes.2020, Barrot et al. 2020, Gali. 2020 "

Recent papers (continued)

- **The impact of Covid-19 pandemic by sector, they investigate the volatility of oil prices in Saudi Arabia during the period January 22th, 2020 to June 14th, 2020. The authors show that the market condition transformed with a sharp decline in prices, and prices gradually recovered until June 14. they highlight the significant and positive effect of death ratio of Covid-19 on oil price dynamics. Therefore, the authors underline the risk of death on financial markets by increasing the economic instability.**

“ Algamdi et al (2021) ”

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Research Design

Different Approaches

1 Theoretical Approach

- Modified 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 the pandemic

2 Empirical Approach

- 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.

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Theoretical Approach: DSGE Model

Costs of the Covid-19 Pandemic

The epidemic diseases are expected to constitute an important burden to the economic and social welfare. These epidemics pulled the global economy into an unexpected situation by exposing the companies and investors to high risk with a loss of revenues and benefits for some firms and the total blockage of the economic activity for others.

Direct Costs

-Medical care spending of public sector to support medical practices,
-Medications, and hospitalization.
-Aligned with the common insight of the disease's costs. .

Indirects Costs

-Productivity losses for a sick individual resulting to a reduction in labor supply.

Assumptions

1 Households

- Direct decrease in health stock H=H (C^H)
- Reallocation of income from the non-health to health sector
- Loss of time by spending time sick divided into lost working time and into lost leisure time L^{nh}.

2 Producers

- The impact of illness often includes the cost of decreasing production as an important economic burden
- Human capital approach

Theoretical model

- Utility Function (Labor Supply)

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

- Production Function (Labor Demand)

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

Theoretical model (continued)

- The marginal product of labor is represented by :

$$MPN_t = \frac{\partial Y_t}{\partial N_t} = A_t K_t^{1-\alpha} \alpha N_t^{\alpha-1} \varepsilon_t \, H_t^{\alpha} \qquad \ldots\ldots\ldots(3)$$

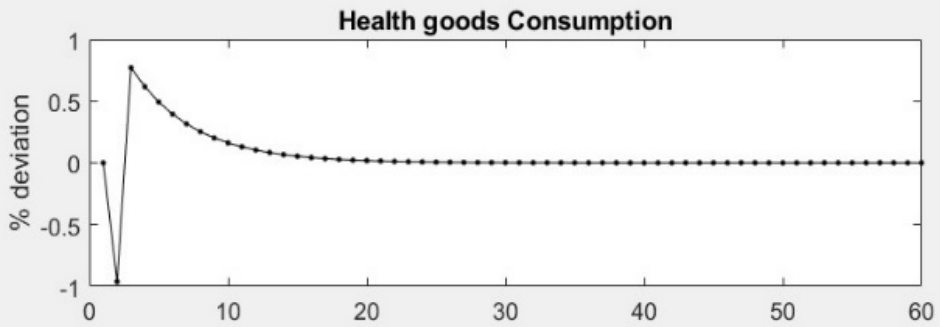
- The log linearization of the expression (3) define the expression of the real marginal cost

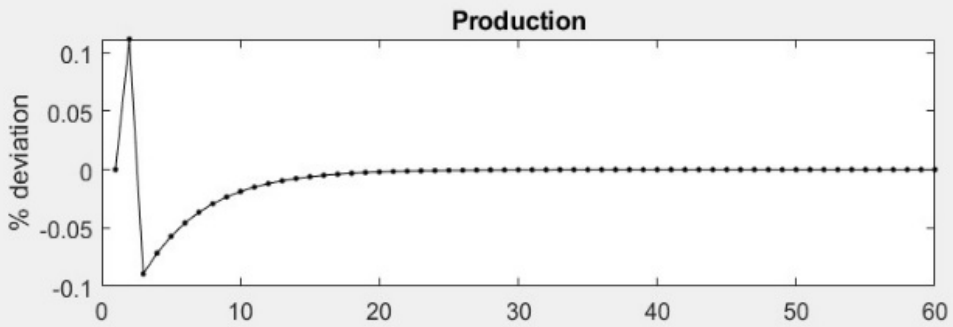
$$mc_t = w_t - p_t - a_t + (1-\alpha)k_t + (\alpha-1)n_t + \epsilon_t + \alpha h_t \qquad \ldots\ldots(4)$$

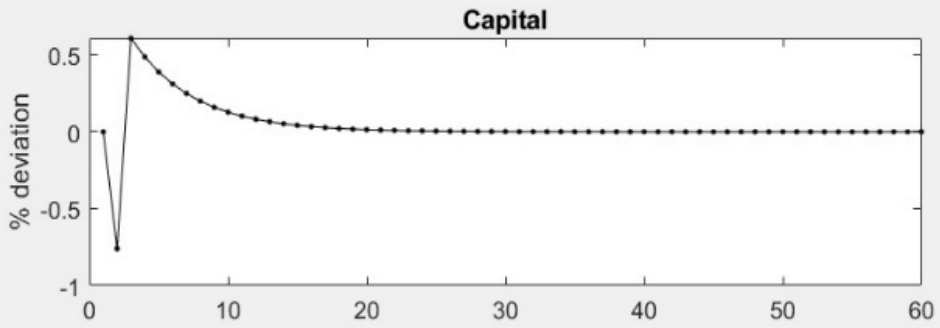
Calibration and Simulation

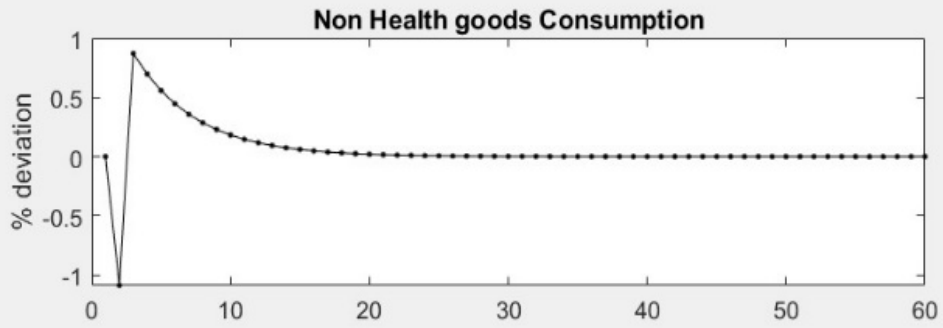
- We run the simulations by disturbing the steady state equilibrium in period zero and we trace the impulse model's responses over sixty periods.
- We calibrate the model using parameters for Saudi Arabia obtained from the literature.
- To simulate the impact of the covid-19 pandemic we apply a negative shock on the exogenous variable health stock "H"
- we simulate the reaction of several macro-variables in the model such as the consumption of health and non-health goods, the production, the capital, the leisure and the labor.

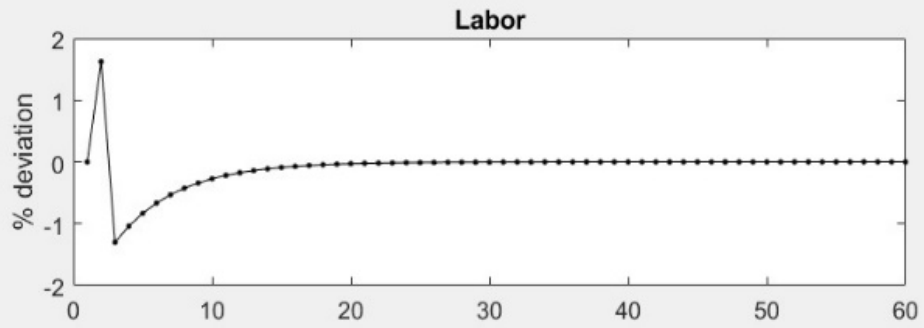
Impulses Responses of a negative health shock of 1%

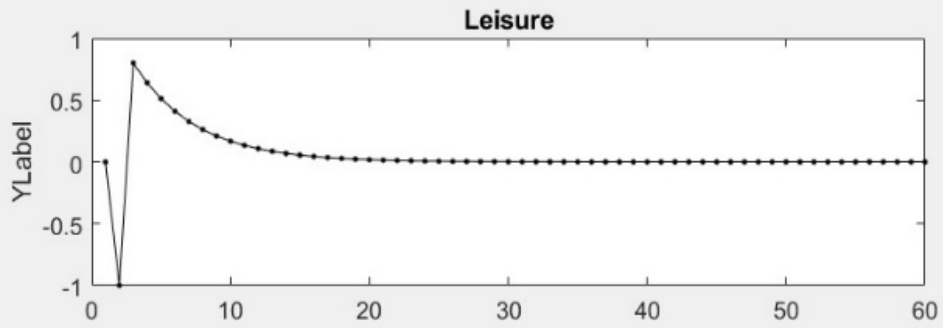












Main Findings

Stock of health is affected;

- Consumption of health goods increases by 1%.
- Household will increase his spending especially for the medicines and the visits to doctors and hospitals

An affected household by the coronavirus will see its resources decreasing due to the indirect costs of the pandemic.

-Loss in productivity

-Loss in labor supply

Drop in the working-age individuals in the job market due to the risk of contamination and death in the COVID-19 lockdown.

The time allocated for leisure will increase and the time allocated to work will decrease.

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Empirical Approach: Ordered Probit Model

Empirical Approach: Ordered Probit Model

1. Labor Force Survey Q2-2019 and Q2-2020 and published by General Authority for Statistics-Saudi Arabia (2019 & 2020).

2. *"What is the net monthly wage (cash and other) that (the individual …) received in the last month of his main work?"*.

$$Z_i = \alpha + \beta B_i + \varepsilon_i$$

$$Z_i^* = \alpha + \beta B_i + \varepsilon_i$$

i=1; Low income

i=2; Medium income

i=3; High income

Definition of selected variables

Independent variables

Variable definition	Variable description
Gender	Gender of respondent (Male /Female) 1 if Male, 0 if female.
Age	Age, age squared.
Nationality	1 if Saudi, 0 if Non Saudi.
Marital status	1 if Married, 0 if not
Qualification	1- Illiterate & Primary or elementary school/ 2- Intermediate and secondary school/ 3- High School.
Institutional sector	What institutional sector does the individual work for? 1 if private sector, 0 if non private sector.
Productivity- Working hours' change	Have business hours changed during the Coronavirus (COVID-19) pandemic? 1 if Yes, 0 if No.
Regional Dummy	Regions: 3 regions 1- Capital : Riyadh 2- North and East region: Aljouf, Northern border, Alqaseem, Eastern region, Tabouk, Hail. 3- Southern and western region: Albaha, Almadinah, Jazan, Asseer, Makkah, Najran.

Distribution of variables according Time

	Q2-2019	Q2-2020
No income	8511	4289
Low income [0 - 4999]	1821	1677
Medium income [5000 - 9999]	982	953
High income > 10000	949	1038
Total	12263	7957

Source: Authors' calculations based on Labor Force Survey Q2-2019 and Q2-2020 published by General Authority for Statistics-Saudi Arabia (2020).

Distribution of variables according regions

	Capital	North and East Region	Southern and Western Region
No income	47%	52%	57%
Low income [0 - 4999]	19%	23%	20%
Medium income [5000 - 9999]	16%	12%	11%
High income > 10000	18%	13%	11%
Total	13%	39%	48%

Source: Authors' calculations based on Labor Force Survey Q2-2020 published by General Authority for Statistics-Saudi Arabia (2020

Results

Table 4. Income distribution before and during COVID-19

	Model 1	**Model 2**
	Q2-2019	Q2-2020
Gender	**0.3392*** **	**0.5194*** **
	(0.0551)	(0.0567)
Age	**0.1428*** **	**0.1040*** **
	(0.01277)	(0.0140)
Age²	**-0.0018*** **	**-0.0012*** **
	(0.0001)	(0.0001)
Nationality	-0.0296	0.2565***
	(0.0695)	(0.0638)
Marital status	0.0559	0.0675
	(0.0513)	(0.0544)
Intermediate and secondary school	-0.0676	0.4867***
	(0.0445)	(0.0472)
High School	**1.4499*** **	**1.5277*** **
	(0.0751)	(0.0685)
Institutional Sector-Private sector	**-2.1217*** **	**-1.6903*** **
	(0.0751)	(0.0637)
Working hours' change	-	**-0.2828*** **
	-	(0.0376)
The cut off points		
Cut 1	-0.4947*	-0.2988
	(0.2776)	(0.2900)
Cut 2	1.7908***	1.9644***
	(0.1836)	(0.3018)
Cut 3	3.1844***	3.2388***
	(0.2849)	(0.3067)
Nb. Obs.	4049	3885
Log pseudolikelihood	-3176.0926	-3181.0147
Wald χ^2	2198.36	2585.89
(p. value)	0.0000	0.0000
Percentage-cases correctly predicted	71.7%	69%
Pseudo R^2	0.3647	0.3295

Notes: Robust standard-errors are reported into brackets. Levels of statistical significance: ***p < 0.001, **p < 0.05, *p < 0.1.
Source: Authors' calculations based on Labor Force Survey Q2-2019 and Q2-2020 published by General Authority for Statistics-Saudi Arabia (2019 & 2020).

Results (continued)

Table 5. Income distribution by regions during COVID-19

	Model 3	Model 4	Model 5
	Capital Riyadh	North and East region	Southern and western region
Gender	0.7711***	0.4203***	0.5607***
	(0.1414)	(0.0880)	(0.0905)
Age	0.1759***	0.0898***	0.1038***
	(0.0416)	(0.0230)	(0.0191)
Age²	-0.0021***	-0.0002***	-0.0012***
	(0.0005)	(0.0002)	(0.0002)
Nationality	0.3498**	0.4282***	0.1239
	(0.1606)	(0.1006)	(0.0968)
Marital status	0.0742	0.0749	0.0618
	(0.1444)	(0.0851)	(0.0830)
Intermediate and secondary school	0.5609***	0.3699***	0.6006***
	(0.1106)	(0.0714)	(0.0749)
High School	1.7929***	1.2706***	1.6365***
	(0.1606)	(0.1108)	(0.1044)
Institutional Sector-Private sector	-1.4465***	-1.5161***	-2.0684***
	(0.1430)	(0.0989)	(0.1044)
Working hours' change	-0.2738***	-0.3933***	-0.1969***
	(0.0978)	(0.0575)	(0.0579)
The cut off points			
Cut 1	1.4933*	-0.7402	-0.3771
	(0.8417)	(0.4715)	(0.4097)
Cut 2	3.5749***	1.5471***	2.0081***
	0.8892	(0.4886)	(0.4276)
Cut 3	4.9824***	2.7303***	3.4149***
	(0.9087)	(0.4965)	(0.4327)
Nb. Obs.	585	1546	1754
Log pseudolikelihood	-479.8136	-1290.3813	-1354.2831
Wald χ^2	410.40	1078.59	1236.03
(p. value)	0.0000	0.0000	0.0000
Percentage-cases correctly predicted	67.4%	66.5%	71.3%
Pseudo R^2	0.3269	0.3076	0.3701

Notes: Robust standard-errors are reported into brackets. Levels of statistical significance: ***p < 0.001, **p < 0.05, *p < 0.1. Source: Authors' calculations based on Labor Force Survey Q2-2020 published by General Authority for Statistics-Saudi Arabia (2020).

Main Findings

Outcomes reveal that people who achieved a higher degree of schooling seems to be not affected during the COVID-19. Our results are confirming IZA Expert- Panel Survey analysis, that the short-term employment changes for high-skilled and permanent employees is marginal than for other groups of workers, the negative impact is more pronounced for low-skilled workers.

The effect is more intensive in Riyadh-Capital and The Southern and Western region. The COVID-19 is more marked for Non-Saudi and Private sector.

A one-point increase in the private sector occurs in 6.2% (2019) and 5.3% (2020) augmentation in the probability of being in the low -income level.

The COVID-19 pandemic is having a negative effect on working hours and earnings. The present crisis and the economic shutdown due to healthy procedures led to an unprecedented increase in the number of workers absent from work or working reduced hours (1) workers lose their job or their contract is not renewed; (2) workers remain employed but they enter temporary layoffs; (3) workers remain employed but they work only a fraction of their usual hours.

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Conclusion

Recommendations

❖ Covid-19 can have a disproportionate impact on certain segments of the population (as witnessed during the global financial crisis) such as:

- Old people and people with underlying health conditions.
- Young people who are already facing higher rates of unemployment and underemployment.

❖ Therefore, pro-active, large-scale and integrated measures are necessary to make strong and sustained impacts. Careful monitoring of the direct and indirect effects of all interventions are crucial to ensure that government policy responses are appropriate.

❖ The Saudi Government has announced a set of packages targeting the private sector such as:

- Exemptions and postponement of some government dues.
- Providing financial support to the banking and SME sectors.
- Paying the government dues to the private sector in a timely manner.
- Providing a wage subsidy of 60% (up to SAR 9,000 per employee per month) of Saudi employees' salaries in the private sector.
- Saudi central Banks (SAMA) injected $13.3 billion into the banking sector to enhance banking liquidity to continue providing credit facilities for the private sector.

THANK YOU

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