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Effects of the Real Estate Transaction Tax on Saudi Arabia's Economic Cycles

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Abstract

Purpose: The purpose of this paper is to determine the effects of the Real Estate Transactions Tax (RETT) on the economic cycles of Saudi Arabia. A secondary purpose is to determine the effects of RETT on the construction and real estate sectors of Saudi Arabia. **Research design, data and methodology**: The data used is retrieved from the General Authority of Statistics, Saudi Central Bank and the World Bank Open Data. Econometric models of multiple linear regression with dummy variables have been conducted to achieve the objectives and to quantitatively verify the hypotheses. **Results:** With the VAT exemption in real estate transactions and its substitution with RETT, a positive effect on the economy and the real estate sector has been observed. However, this tax reform has not produced any significant effects in the construction sector. **Conclusions:** The main conclusion of the present research is that the real estate market has a major influence on economic cycles. After the tax reform, a reduction in the contribution of taxes on real estate transactions to GDP was detected. For the construction sector, after the tax reform, it is estimated that there will be an insignificant reduction in the contribution of the real estate price index, and of the taxes on real estate transactions, to GDP.

Keywords: Real Estate Transaction Tax, RETT, Economic Cycles, Saudi Arabia, Saudi Vision 2030

JEL Classification Code: R0, R30, R38

1. Introduction

The study of the effects of a real estate transaction tax is a key area of macroeconomic research, both from a qualitative and quantitative point of view, since this tax produces complex inter-sector relationships and, therefore, has a high significance in the productivity, business, commercial, and financial indicators (Foster & Magdoff, 2019).

The main objective of this study is to determine the effects of the Real Estate Transaction Tax (RETT) on the economic cycles of Saudi Arabia, as well as upon activity in the construction industry and the real estate business sector in that country.

This research is developed in three complementary directions: theoretical, methodological and empirical. Theoretical analysis explores, from the existing literature, the main economic cycles of boom and recession worldwide and their real estate causes. It also presents the 2030 Saudi Vision and its recently implemented Real Estate Transaction Tax, considering the experience of some member countries of the Middle East and North Africa (MENA).

The methodological approach which offers the support for the implementation of the econometric model is raised from the quantitative methodology. The empirical approach of this paper uses a wide variety of statistical indicators in order to review, through econometric models, the effects of the RETT on the economic cycles, the commercial activity

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of the construction industry, and the real estate business sector in Saudi Arabia.

The results and conclusions are contrasted with the central hypothesis, reflecting the economic, commercial and business implications expressed in the weightings of the selected indicators. From these, a forecast of the effects of the RETT on economic cycles and commercial and business activity in Saudi Arabia is deduced.

2. Literature Review

The real estate sector has repeatedly caused deep economic cycles of boom and recession at a global level. It is highly exposed and highly sensitive to monetary policies, mortgage loans, securities markets, and investment fund placements.

Reinhart and Rogoff (2011) empirically confirm that domestic over-indebtedness due to the acquisition of houses is a triggering factor of economic crises in many countries. Those crises are transmitted through shocks in interest rates that produce, from the central countries, sovereign debt crises in other countries. Roubini and Mihm (2010) have concluded that in the nineteenth century the appreciation and territorial speculation generated by real estate bubbles and railway expansion were immediate causes of economic crises.

The economic crisis of 1873 originated mainly in the construction and housing sectors. In 1907, the crisis began in the U.S. when the real estate sector and the stock market collapsed (Roubini & Mihm, 2010). For Krugman (2010), the main economic boom-and-bust cycles of the 20th century stem from the relationship between the real estate and financial sectors and their direct link with the economy. In the twentieth century, economic cycles were more or less pendent according to Faris and Soto (2016). Harvey (2012) confirms that the last major housing crisis in the United States began between 1925 and 1933, during which period house prices fell by 30%, raising the risk of investing in housing.

The UAE experienced a massive housing boom, driven by rapid growth in liquidity globally, particularly after 2003. In 2008, an unprecedented financial, stock and real estate bubble developed in China. The crisis in 2008 came from real estate and insurance against non-payment of credits worldwide. In Japan, speculative investments in real estate caused a serious banking crisis in 2010. The economic and monetary policies that favoured home ownership, the housing bubble created by loans for affordable homes, and government intervention in this area provide part of the explanation for the initial boom that later turned into an economic recession, eventually causing the global financial system to collapse in 2008.

Regarding the most recent real estate bubbles and their distortions upon economic cycles, Al Faris and Soto (2016) point out that the Asian crisis and the mortgage crisis in the United States represent the most precise example of real estate overspeculation, allowing evaluation of the relevance of real estate investment in global economic dynamics in recent decades.

Foster and Magdoff (2009) have studied the effect of housing wealth and consider that this effect becomes greater than that of the stock market, showing that housing has twice the correlation with consumption as that of the stock market. Reinhart and Rogoff (2011) suggest that the real price of houses is one of the first reliable indicators in the case of banking crises.

Therefore, monitoring the evolution of the price of houses allows prediction of the effects that it generates in potential scenarios of banking, financial crises and volatile economic cycles.

According to Krugman (2010), a recession in the construction sector leads to a reduction in spending. This leads to a negative effect on employment, due to consumers losing access to loans on the real value of their homes. This generates a multiplier effect that produces less employment and less spending by reducing the purchasing power of consumers. The financial system is more vulnerable to the collateral effects generated by the fall in housing prices than to the effect of the fall in the stock market (Krugman, 2010).

2.1. The 2030 Saudi Vision

Prasasti et al. (2020) suggest that in determining a country's budgetary policy, taxation represents one of the main revenues, with state tax revenues one of the largest contributors to the development of a country's infrastructure.

Both property and land tax revenues are frequently an important source of funding for governments, with property taxes being the most important reliable source of income, primarily for local governments. Thus, on April 25, 2016, King Salman bin Abdulaziz and his son presented a reform plan for the social and economic welfare of Saudi Arabia, which they called Saudi Vision 2030, whose objective is to reduce dependence on oil through the robustness of the private sector.

The 2030 Saudi Vision strategy aims to reactivate the Saudi economy, which had an annual GDP growth of only 0.8% between 2003 and 2013 - lower than most emerging economies (Al-Kibsi et al., 2015). Saudi Arabia's GDP is declining at a higher rate, although the country remains the largest in terms of economic development in the Middle East, accounting for almost twice that of Egypt. Since the share of oil revenues in GDP has greatly decreased, the recent economic growth has not therefore been achieved through the oil revenues.

According to Al Faris and Soto (2016) the National Transformation Program 2020 was set up with the objective of developing the institutional capacity necessary to fulfil the 2030 Vision of Saudi Arabia.

The government of the country has spent a great deal of funds and effort on its 2030 Vision; however, there are many areas where the impacts of these fall short of the main goal, especially in transforming employment creation via growth in the private sector.

The 2030 Saudi Vision emphasizes employment creation for the Saudis to lead a new economy driven by productivity. Alshuwaikhat and Mohammed (2017) noted that the government aspires to a strong economy that provides unlimited growth opportunities for all people; along with empowering the private sector, ensuring long-term prosperity for all, and increasing the contribution of small and medium-sized enterprises to GDP.

2.2 The Real Estate Transaction Tax in Saudi Arabia in comparison to MENA countries

Taxes on real estate transactions have been established in several other MENA countries, such as Egypt, the United Arab Emirates, and Turkey. This section explores these taxes and compares them in order to offer a context for the RETT and its effects, as observed in MENA countries.

Saudi Arabia has a very liberal tax system compared to other Gulf countries as Haque (2019) states, there are very low tax rates for people and for some companies.

Tributes in the form of taxes on income and employment were abolished in 1975. However, there is a mandatory religious tribute that all citizens of Saudi Arabia must pay. Until now, no type of tax has ever been imposed on real estate or property sales.

The tax range in Saudi Arabia varies from 25% to 45%. Customs duties are the main fiscal instrument used by the Saudi government (Alkhodre et al., 2019). The Value Added Tax (VAT) was introduced in the country at a rate of 5% as of January 2018 (ibid.); however, it is not levied in sectors such as education, health, and transportation.

Alowais (2020) asserts that the financial performance of the country can improve through the implementation of VAT; meanwhile, the country is also increasing its dependence on VAT as one of the measures to reduce its dependence on oil (Ernst and Young Global, 2020).

On October 2nd, 2020, the new Real Estate Transaction Tax in Saudi Arabia (RETT) was announced at a rate of 5%, calculated on the value of any given real estate transaction (Ernst and Young Global, 2020). From that moment on, all real estate transactions were to be excluded from VAT and subject to the RETT. The Royal Decree exempts the application of VAT to taxpayers who carry out real estate transactions and imposes the new tax, regardless of whether transactions are carried out for commercial or residential purposes (Ernst and Young Global, 2020).

Egyptian tax law applies a self-declaration tax system in which rental income derived from real estate is listed in the same category as general income tax (Ahmed Aly Abdel-Mowla, 2012). Tax returns depend on the self-assessment process. Egypt has no specific provisions in this regard. VAT was introduced in Egypt in 2016, replacing 10% sales tax. Egyptian tax is paid at 2.5% of the money received from the sale and must be reported as tax due before April 1st.

Al Faris and Soto (2016) note that VAT has been applied in the UAE since January 1, 2018, at 5% (standard rate), which is applied to commercial real estate sales. The same authors note that the rates on sale of new residential properties (within 3 years of completion) are at 0% (zero rate).

In Turkey, buildings are subject to property tax, according to the Turkish tax system. The tax value of the building/land is paid in accordance with the Property Tax Law. These taxes are decided annually by the municipalities on the basis of tax assessments for land and buildings at rates between 0.1% and 0.3%. These concentrations rise by 100% within the limits of the Metropolitan Municipality (Gerçek & Bakar Türegün, 2020).

Alowais (2020) note that Saudi Arabian regulations prohibit the following activities without permission from the Ministry of Housing: sale or rental of off-plan property units, all property development, including investment, commercial residents, office facilities, tourist property or industry, and property marketing, internationally or locally.

In the United Arab Emirates, according to Renaud (2012), initial payments for off-plan sales are typically 10%. These pre-sales are a central component of the developer's business plan.

The new legislation adopted by the Egyptian government allows foreigners to purchase property for as little as $100,000, while some projects are still listed as “off-plan” (Ahmed Aly Abdel-Mowla, 2012).

Turkey prides itself on being one of the fastest-growing economies in the world. Selvi et al. (2020) have shown that property prices are also relatively low compared to the rest of Europe. At the construction stage of the project, many Turkish developers are starting to sell the new buildings to real estate investors at discount rates below the market price of the land. Off-plan properties are sold at lower price rates, but at the same time they allow the developers to finance upfront projects.

Taxes play an important role in the economic growth of the MENA countries analysed in this section, one of which is the increase in income in the determination of budgetary policy. They constitute the main source of income to improve the economy, and help the government function, according to Prasasti et al. (2020).

The business sector in MENA countries, especially the construction business sector, is impacted by changes in tax rates since buyer decisions are directly influenced by the tax rate; therefore, extended studies with regard to the effects of taxes similar to RETT in MENA countries would be of value (Alowais, 2020).

3. Methodology

3.1 Research Approach and Design

The impact of a tax reform on the economy of a country can be predicted by means of econometric models, which are generated from the time series of macroeconomic variables consistent with the objectives of the research.

Using empirical data, this research implements a quantitative methodology where, through the use of a partial equilibrium econometric model, the effects in quantitative terms of the real estate transaction tax are predicted in economic cycles, as well as in the commercial activity of the real estate industry and in the business sector of Saudi Arabian real estate.

3.2 Research Hypotheses

In this research, a system of 3 hypotheses is established, based on the assertions of Prasasti et al. (2020) about the contribution of taxes to the improvement of the economy.

In the first hypothesis, the incidence of tax reform is evaluated on those macroeconomic variables that are relevant in the analysis, where the GDP will be the indicator of the performance of the economy of Saudi Arabia.

Similarly, impacts on the construction and real estate sectors are evaluated, using the participation of these sectors in the GDP as indicators of the performance of said sectors. In this way, the hypotheses are formulated as follows:

H1: The elimination to real estate transactions from VAT and the implementation of RETT (named tax reform) have a positive effect on the economy of Saudi Arabia.

H2: The tax reform has a positive effect on the construction sector in Saudi Arabia.

H3: The tax reform has a positive effect on the real estate sector in Saudi Arabia.

3.3 Data collection

In order to test the above hypotheses, the following macroeconomic variables are considered: Gross Domestic Product (GDP), participation of the construction sector in GDP (GDP CONSTR), participation of the real estate sector in GDP (GDP RESTATE), real estate price index (HOUSE INDEX), value added tax (VAT), employment (LABOR FORCE), average family income (FAM INCOME), average household expenses (HOUSE EXPEND), total investment (public + private, INVEST) and change in the price of the house (HOUSE PRICE).

In this research, secondary data is used from the General Statistical Authority of the Kingdom of Saudi Arabia (GASTAT), the Saudi Central Bank and the World Bank Open Data.

The time series of each macroeconomic variable is collected during a 10-year period with quarterly frequency, from the first quarter of 2010 (2010:Q1) to the fourth quarter of 2020 (2020:Q4). With these time series, a database is built.

The variables HOUSE EXPEND, and FAM INCOME have a large number of missing values, since their measurements are carried out by GASTAT every 5 years. For this reason, it is decided to impute them by the linear interpolation method.

A dummy variable is added to the database to estimate the effects of the VAT exemption on real estate transactions and its replacement by the RETT.

3.4 Analysis Techniques

The econometric models used in the present research are based on the estimation of the variables, which are in turn based on the data fit to a multiple linear regression model. In a multiple linear regression model, there is a variable that measures different states of occurrence (or not) of an event; this is called a dummy variable.

When the incidence of the dummy variable is estimated and the macroeconomic variables are known in the periods of time before and after said reform, the most appropriate econometric model is one with dummy variables.

The research is conducted under a partial equilibrium approach, since the effects on the economy and the sectors related to real estate are analysed independently.

Therefore, the resulting models are obtained by using the technique of "Multiple Linear Regression" with dummy variables, using the method of successive steps.

An exploratory study of the data has suggested that the best fit to the data is the one that passes through the origin.

The regression models are generated in time periods before and after the tax reform. Before the tax reform, VAT was applied to real estate transactions from 2018:Q1 to 2020:Q3. Therefore, DUMMY=0 is assigned in the periods 2010:Q1-2017:Q4 and 2020:Q4, in which VAT is not applied. DUMMY=1 was allocated in the period 2018:Q1-2020:Q3.

To study the situation after the tax reform, DUMMY=0 is assigned to the period 2010:Q1 - 2020:Q3 and DUMMY=1 to the period 2020:Q4.

According to the selected analysis technique, the explanatory macroeconomic variables are incorporated one

at a time in each step until none of the variables that remain to be incorporated produce any improvement in the model.

The fit of each model to the data is evaluated by examining the correlation coefficients and the determination coefficient, which measure the relationship between the explained and explanatory variables.

The statistical significance of the effect achieved is obtained from the analysis of variance (ANOVA).

The effects of the tax reform are therefore obtained from the coefficients generated from the multiple regression models of the states, with a comparison before and after the tax reform.

4. Results

4.1 Effects of the tax reform on the GDP of Saudi Arabia

During the period 2018:Q1-2020:Q3, real estate transactions were subject to VAT. In this state, the gross domestic product of Saudi Arabia (GDPKSA) was found to be strongly associated with employment, average household spending, real estate price index, total investment, and VAT application (dummy variable), according to the following equation(1):

(1)GDP_KSA=0.019*(LABOR FORCE)-2.99*(HOUSE EXPEND)+

5827.0 *(HOUSE INDEX)-14.91*(INVEST)+36979.66*(DUMMY)+ε

In this model, a multiple correlation coefficient R=0.997 is reached, which indicates a high extent of association between the variables. For its part, the coefficient of determination R^2=0.994 means that this model explains 99.4% of the variability of the GDPKSA.

With the ANOVA analysis of the multiple regression model, a Fischer-Snedecor coefficient F=13865.623 is obtained with a significance level equal to 0.000, which denotes that the model is adequate to explain the GDPKSA as a linear function of the 5 variables considered.

The level of empirical significance of the estimated coefficients for the model variables is less than 0.05, meaning that the 5 explanatory variables are statistically significant in the explanation of the GDPKSA as a linear function, at a significance level of 5%.

Finally, the standardized Beta coefficient of each variable indicates its contribution to the explained variable, which reveals that the real estate price index, with a Beta value= 0.750, is the variable that most influences the GDPKSA, while the VAT application, with Beta=0.034, has little influence on the explained variable.

In the calculation of the model, the subjection of real estate transactions to VAT is stipulated when the variable DUMMY = 1.

Therefore, the size of the effect of VAT on the GDPKSA is constituted by the coefficient of said variable. Consequently, in the period considered, VAT contributed 36979.66 million Saudi Riyals to the GDPKSA.

As of the 2020:Q4 period, real estate transactions were subject to the RETT. In this new state, it was found that the GDPKSA was strongly associated with employment, average household spending, the real estate price index and the application of the RETT (dummy variable), according to the model (2):

(2) GDP_KSA=0.025*(LABOR FORCE)-3.36*(HOUSE EXPEND)+4987.79*

(HOUSE INDEX)+7444.58*(DUMMY)+ε

The multiple correlation coefficient obtained is R=0.999, which indicates a high degree of association between the variables. Moreover, the coefficient of determination R^2=0.999 shows that this model explains almost all of the variability of the GDPKSA.

This model is adequate to explain the GDPKSA as a linear function of its 4 explanatory variables, since a Fischer-Snedecor coefficient F=7505.70 is obtained with a level of significance equal to 0.000, $p < 0.05$.

The 4 explanatory variables are statistically significant to explain the GDPKSA as a linear function, at a level of significance $p < 0.05$.

For its part, the standardized coefficients of the real estate price index (Beta=0.622) and employment (Beta=0.472), indicate that these variables have the highest contribution to GDPKSA, while the RETT (Beta=0.052) contributes little.

The effect size of the RETT on the GDPKSA is observed when the variable DUMMY=1. Therefore, in the present situation, RETT is expected to contribute 7444.81 million Saudi Riyals to GDPKSA.

Table 1 summarizes the findings made in this section.

Table 1: Summary of the Effect of the Tax Reform on GDP

Model Fit						
	Before the Tax Reform			After the Tax Reform		
R	0.997			0.999		
R^2	0.994			0.999		
F	13865.623			7505.700		
Sig.	0.000			0.000		
Model Coefficients						
	B	Beta	Sig.	B	Beta	Sig.
LABOR_FORCE	0.019	0.363	0.000	0.03	0.472	0.000
HOUSE_EXPEND	-2.99	-0.153	0.000	-3.36	-0.152	0.000
HOUSE_INDEX	5827.07	0.750	0.000	4987.79	0.622	0.000
DUMMY	36979.66	0.034	0.000	7444.58	0.052	0.000
INVEST	-14.91	-0.031	0.017			

R=Pearson's correlation coefficient; R2=Determination coefficient; F=Fischer-Snedecor coefficient; Sig.= Level of significance reached (alpha < 0.05); B=Non-Standardized Coefficients; Beta=Standardized Coefficients.
Source: Author (2020).

4.2 Effects of the tax reform on the share of the construction sector in Saudi Arabia's GDP

In the period 2018:Q1 - 2020:Q3, it is found that the participation of the construction sector in the GDPKSA has a strong relationship with employment, the price index of real estate and the application VAT (dummy variable), which is expressed in equation (3):

(3) GDP CONSTR=0.001*(LABOR FORCE)+

322.29*(HOUSE INDEX)+2753.43*(DUMMY)+ε

The model represented here has a multiple correlation coefficient of R = 0.999, showing a very high level of association between the variables. Likewise, the model explains 99.8% of the variability of the participation of the construction sector in the GDPKSA (R^2 = 0.998).

On the other hand, a Fischer-Snedecor coefficient F = 4507.50 is obtained, reaching a statistical significance equal to 0.000, which suggests that the model is adequate to explain the participation of the construction sector in the GDPKSA as a linear function of its explanatory variables.

The participation of the construction sector in the GDPKSA is expressed as a linear function of employment using the price index of real estate and the application of VAT (dummy variable).

On the other hand, the real estate price index is the variable that makes the greatest contribution to the explained variable, since it has a standardized coefficient (Beta = 0.704), much higher than the others.

For a value of the variable DUMMY = 1, the size of the effect of VAT on the participation of the construction sector in the GDPKSA is estimated at 2753.41 million Saudi Riyals.

In the new state (2020:Q4 period), it is found that the participation of the construction sector in the GDPKSA has a strong association with employment, average household income, the real estate price index and the application of the RETT (dummy variable), as expressed with equation (4):

(4) GDP CONSTR=0.001*(LABOR FORCE)+305.23*

(HOUSE INDEX)-0.044*(FAM INCOME)+2622*(DUMMY)+ε

These variables share a high degree of association, since a multiple correlation coefficient R = 0.999 was obtained. In the same sense, the determination coefficient R2 = 0.998 indicates that this model explains 99.8% of the variability of the participation of the construction sector in the GDPKSA.

The ANOVA analysis of the regression indicates that the model obtained is adequate to explain the participation of the construction sector in the GDPKSA as a linear function of employment, the price index of real estate, the average family income and the application of the RETT, given the Fischer-Snedecor coefficient F=2603.98, with a significance level equal to 0.000, p <0.05.

According to the significance of the coefficients of these variables, all are adequate to explain the participation of the construction sector in the GDPKSA as a linear function of them, since the significance reached for each coefficient is p <0.05.

Likewise, the standardized coefficient of the real estate price index (Beta=0.649) denotes that this is the variable that makes the greatest contribution to the explained variable.

The size of the effect of the RETT on the participation of the construction sector in the GDPKSA is estimated at 2622 million Saudi Riyals.

All these statistical results are summarized in Table 2.

Table 2: Summary of the Effect of the Tax Reform on Participation of the Construction Sector in GDP

Model Fit						
	Before the Tax Reform			After the Tax Reform		
R	0.999			0.999		
R^2	0.998			0.998		
F	4.507.503			2.603.980		
Sig.	0.000			0.000		
Model Coefficients						
	B	Beta	Sig.	B	Beta	Sig.
HOUSE_INDEX	322.29	0.704	0.000	305.23	0.649	0.000
DUMMY	2.753.43	0.048	0.004	2.622.00	0.031	0.018
LABOR_FORCE	0.001	0.264	0.008	0.001	0.369	0.000
FAM_INCOME				-0.04	-0.041	0.049

R=Pearson's correlation coefficient; R^2=Determination coefficient; F=Fischer-Snedecor coefficient; Sig.= Level of significance reached (alpha < 0.05); B=Non-Standardized Coefficients; Beta=Standardized Coefficients.
Source: Author (2020).

4.2 Effects of the tax reform on the real estate sector in Saudi Arabia

For the period 2018:Q1 - 2020:Q3, it is found that the share of the real estate sector in the GDPKSA is strongly related to employment, the real estate price index, total investment and the application of VAT (dummy variable), according to equation (5):

(5) GDP RESTATE=0.002*(LABOR FORCE)+295.85*

(HOUSE INDEX)-2.32*(INVEST)+6444.58*(DUMMY)+ε

In this case, a very high level of association is also discovered between these variables, with a multiple correlation coefficient of R=0.999. Similarly, the model obtained explains 99.9% of the variability of the share of the real estate sector in the GDPKSA (R^2 = 0.999).

In the ANOVA analysis of the regression model, a Fischer-Snedecor coefficient F=3824.44 is obtained, with a statistical significance equal to 0.000. This model is therefore adequate to explain the participation of the real estate sector in the GDPKSA as a linear function of its explanatory variables.

This model makes it possible to express the share of the real estate sector in the GDPKSA as a linear function of employment, the price index of real estate, total investment and the application of VAT (dummy variable), since their coefficients have a level of significance p <0.05. In the same sense, the real estate price index (Beta=0.513) and employment (Beta=0.485) are the variables with the greatest contribution to the explained variable.

The size of the effect of VAT on the participation of the real estate sector in the GDPKSA is estimated at 6444.58 million Saudi Riyals.

In the period 2020:Q4, it is found that the share of the real estate sector in the GDPKSA has a strong association with employment, average household income, the real estate price index and the application of the RETT (dummy variable), as outlined in equation (6):

(6) GDP RESTATE=0.003*(LABOR FORCE)-0.10*

HOUSE EXPEND+170.31*(HOUSE INDEX)+4036.48*DUMMY+ε

A high degree of association is found between the variables, with a multiple correlation coefficient R=0.999. Likewise, the coefficient of determination R^2=0.998 indicates that the model explains 99.8% of the variability of the participation of the real estate sector in the GDPKSA.

According to the ANOVA analysis of the regression model, the participation of the real estate sector in the GDPKSA is a linear function of its explanatory variables, since a Fischer-Snedecor coefficient F=4202.88 and a statistical significance equal to 0.000, p <0.05 was reached.

Likewise, the statistical significance of the coefficients of the explanatory variables indicates that all are adequate to explain the participation of the real estate sector in the GDPKSA as a linear function of them, since the significance reached for each coefficient is p <0.05. Likewise, the standardized coefficient of employment (Beta=0.751) denotes that this is the variable with the greatest contribution to the model obtained.

The statistical summary is displayed in Table 3.

Table 3: Summary of the Effect of the Tax Reform on Participation of the Real Estate Sector in GDP

Model Fit						
	Before the Tax Reform			After the Tax Reform		
R	0.999			0.999		
R^2	0.999			0.998		
F	3.824.440			4.202.880		
Sig.	0.000			0.000		
Model Coefficients						
	B	**Beta**	**Sig.**	**B**	**Beta**	**Sig.**
LABOR_FORCE	0.002	0.485	0.000	0.003	0.751	0.000
DUMMY	6.444.58	0.089	0.000	4.036.48	0.070	0.000
HOUSE_INDEX	295.85	0.513	0.000	170.31	0.288	0.002
INVEST	-2.32	-0.065	0.003			
HOUSE_EXPEND				-0.10	-0.062	0.000

R=Pearson's correlation coefficient; R^2=Determination coefficient; F=Fischer-Snedecor coefficient; Sig.= Level of significance reached (alpha < 0.05); B=Non-Standardized Coefficients; Beta=Standardized Coefficients.
Source: Author (2020).

5. Discussion

Empirical data suggests that real estate taxes have a significant impact on business cycles in Saudi Arabia. Taxes play an important role in the country's economic growth. They constitute the main source of income to improve the economy and help the government function. The effect of these taxes contributes to increasing general and sectoral GDP.

The Beta parameter of the real estate price index has high values that oscillate between 0.288 and 0. These findings are consistent with the vast body of literature that supports the existence of a strong relationship between economic systems and the real estate sector (Al Faris & Soto, 2016; Foster & Magdoff, 2009; Harvey, 2012; Krugman, 2010; Reinhart & Rogoff, 2011; Renaud, 2012; Roubini & Mihm, 2010). These authors also assert that the major financial crises that have occurred worldwide have had the real estate sector as one of their main causes.

Regarding the specific hypotheses of this study, the following is found:

H1: The tax reform has a positive effect on the economy of Saudi Arabia.

The effects of the tax reform on the economy of Saudi Arabia are analysed with equations (1) and (2) and their statistics are summarized in Table 1. The impact on the GDPKSA, although statistically significant, will not be of major relevance because, according to its standardized coefficients (Beta=0.034 for VAT, Beta=0.052 for RETT),

the effects of these taxes do not make a great contribution to GDPKSA. This reduction is to be expected, since the tax reform decreed in October 2020 implies that real estate transactions are exempted from paying VAT (15%) to collect the RETT, which has a lower rate (5%).

In summary, it is predicted that the impact of tax reform may lead mainly to a reduction of 16.8% in the prices of real estate, and to an increase of 31.6% in the workforce.

These findings are consistent with what is postulated by Haque (2019), who argues that, when a tax of the same nature as the RETT is lower than the VAT, it will have beneficial effects on the economy, which could be reflected in an increase in sales of housing. Therefore, from the above, it can be expected that, because the RETT in Saudi Arabia is below VAT, a decrease in the price of houses should have a positive effect on the economy of the country. For all these reasons, Hypothesis H1 is accepted.

H2: The tax reform has a positive effect on the construction sector in Saudi Arabia.

The effects of the tax reform on the construction sector in Saudi Arabia are analysed with equations (3) and (4) and their results are synthesized in Table 2. According to equation (3), the contribution to GDP from VAT collection in the period 2018:Q1 - 2020:Q3 is estimated at 2753.41 million Saudi Riyals, while the expected contribution to GDP from RETT collection (Equation (4)) is forecast at 2622.00 million Saudi Riyals, which is equivalent to a 4.8% reduction in the contribution of such taxes on the participation of the construction sector in the GDPKSA.

Therefore, the tax reform does not have a major impact on the construction sector, although it is statistically significant.

No change in employment is expected in the construction sector after the tax reform. Due to the lack of variation between (a) the contributions of taxes and the real estate price index, and (b) the participation of the construction sector in the GDPKSA, no increase in the contribution made by the labour force is forecast.

From these results, it can be inferred that the tax reform produces practically no effect in the construction sector; therefore, hypothesis H2 is rejected. These empirical results contradict Haque's (2019) assertion that if a real estate transaction tax is lower than VAT, a positive effect would be expected in the construction sector. In this case, the evidence suggests that this tax reform will not have a significant effect on said business sector.

H3: The tax reform has a positive effect on the real estate sector in Saudi Arabia.

Equations (5) and (6) are the models that explain the effects of the tax reform on the real estate sector in Saudi Arabia. Their main statistics are presented in Table 3.

Given that the tax reform does not have a significant effect on the construction sector, it follows that said reform has a strong impact on the real estate sector, explaining the effect that was found on the GDPKSA. According to equation (5), the contribution to GDP from VAT collection in the period 2018:Q1 - 2020:Q3 is estimated at 6444.66 million Saudi Riyals, while the contribution to GDP that is expected from the collection of the RETT (equation (6)), is estimated at 4036.48 million Saudi Riyals, which corresponds to a reduction of 37.4% of the contribution of taxes on real estate transactions to the proportion of GDPKSA corresponding to this sector.

The models forecast an increase of 50.0% in the contribution of the labour force to the portion of GDPKSA attributed to the real estate sector, since the estimated coefficient of the labour force variable (before and after the tax reform) increased positively from 0.002 to 0.003.

In summary, the effect of the tax reform is predicted to lead to a 42.4% reduction in the price of real estate and to a 50.0% increase in the sector's labour force. Consistent with what was stated during the verification of hypothesis H1, it is predicted that the combined effect of both factors could stimulate the demand for real estate and thus boost the growth of the real estate sector in Saudi Arabia.

Therefore, these findings provide support to Haque (2019), who argues that lowering taxes on real estate transactions below the level of VAT will have positive impacts on the economy, which could be reflected in the growth of the real estate sector.

Therefore, it is reasonable to expect it to have a positive effect on the real estate sector, for which reason the H3 hypothesis is accepted.

6. Conclusion

The purpose of this investigation is to forecast, through reasoned judgments, the possible effects of the VAT exemption on real estate transactions and its replacement by a lower tax on real estate transactions.

The research was approached using multiple regression econometric models with dummy variables under the partial equilibrium approach and its results were compared with the existing literature.

First, the empirical evidence supports the thesis that the real estate market has a major influence on economic cycles and that it is often responsible for serious global financial crises. This study revealed that the real estate price index and real estate transaction taxes (VAT and RETT) are significant variables in all econometric models that were developed during the present research.

Second, it is found that the price index of real estate, employment and, to a lesser extent, taxes on real estate

transactions are the macroeconomic variables that have the most relevant effect on the economy of Saudi Arabia and its real estate market.

Third, in the verification of hypotheses H1 and H3, it is found that, after the tax reform, there is a reduction in the contribution of taxes on real estate transactions to GDP. This negative variation is due to the fact that the RETT rate is lower than that initially charged for VAT.

According to Haque (2019), a reduction in the contribution of the real estate price index to GDP could stimulate a demand for housing, boosting the growth of the real estate sector and, consequently, increasing employment in the sector. For these reasons, a positive increase is forecast in both the economy and the real estate sector, so hypotheses H1 and H3 are accepted.

Fourth, conversely, for the construction sector it is predicted that, after the tax reform, there will be a very insignificant reduction in the contribution of the real estate price index and of the taxes on real estate transactions to GDP, which has no effect on the increase in employment.

For this reason, it is considered that the tax reform does not have any positive incremental effect on the construction sector, so hypothesis H2 is rejected.

7. Research Limitations and Implications

The limitations of this study include the need to revise these forecasts with a significant number of quarters in which the RETT is in full force, and the lack of actual amounts for VAT and RETT collection.

As for the implications for researchers, as far as is known, this is the first empirical research to address the effects of this new tax on the Saudi economy.

Therefore, it is necessary that future investigations on this topic be carried out over longer periods, containing more real data on the RETT, to refine these first forecasts.

Likewise, it is necessary that the variables influencing the real estate sector be permanently monitored, since it is sufficiently demonstrated that their effects may trigger a national or global financial crisis.

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