УДК: 33
DOI 10.21661/r-118262

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ИДЕНТИФИКАЦИЯ ФИНАНСОВЫХ ПОКАЗАТЕЛЕЙ, ВЛИЯЮЩИХ НА ЭКОНОМИЧЕСКОЕ РАЗВИТИЕ ОБЪЕДИНЁННЫХ АРАБСКИХ ЭМИРАТОВ ПОСРЕДСТВОМ ЭКОНОМЕТРИЧЕСКОГО МОДЕЛИРОВАНИЯ

Аннотация: *данная статья посвящена рассмотрению потенциала различных финансовых показателей, а именно от внутреннего кредитования к честному сектору, иностранных инвестиций, общего долга государства, влияющих на экономическое развитие и обозначенные как уровень ВВП. Подсчёты осуществлялись по данным 1991–2014 гг. Результаты исследования сравнивались с общей экономической ситуацией в ОАЭ и перспективой развития.*

Ключевые слова: *ОАЭ, эконометрическое моделирование, экономические показатели, экономическое развитие.*

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IDENTIFICATION OF FINANCIAL INDICATORS INFLUENCING ON UNITED ARABIAN EMIRATES ECONOMIC DEVELOPMENT USING ECONOMETRICS MODELING

Abstract: *the article is devoted to the capability of various financial indicators, namely domestic credit to private sector, foreign investment, government gross debt and others, influence on economic growth that is indicated as GDP level. The calculation was presented according to the scope of data for 1995–2014. The results of the investigation were compared with the overall economic situation in UAE and future growth perspectives.*

Keywords: *UAE, econometric modeling, financial indicators, economic growth.*

Nowadays United Arabian Emirates are supposed to be the most powerful and stable Arabian country maintaining market economy, oil exporter capable to influence on oil prices by making decisions of whether to refuse or support reducing oil extraction, and one of the favorite touristic destination.

All of these were achieved for less than a half of a century. In 1971, six states – Abu Dhabi, 'Ajman, Al Fujayrah, Ash Shariqah, Dubayy, and Umm al Qaywayn – merged to form the United Arab Emirates (UAE). UAE enjoys strategic location between Asia, Europa and Africa that makes UAE preferable partner for Chinese businesses, using Dubai as a hub for Africa, traders from India use emirates as an access to the world and Latin America «touch» through UAE the South Africa [2].

Financially, UAE maintains strong financial reserves and durable bankimg sector, which, together with stable political situation, make it safe and lucrative for investments. According to S&P and Fitch global rating of UAE in 2015 was AA, indicating its credit worthiness and ability of spendings.

Moreover, in the beginning of 2000-th Dubai Financial Market appeared and by 2007 it had become the 5th largest stock exchange globally by company market capitalization. The acquisition of NASDAQ Dubai in 2010 provides seamless trading efficiencies through the consolidation of custody and clearing and offers investors a wider portfolio of listed companies and asset classes.

Economic growth in the UAE is steady despite a short-term plunge as the global economy faltered. Recovery was plain due to high oil prices, increased government spending and a resurgence in tourism, transport and trade. In addition, restructuring of debt owed by high-profile companies, solidarity and stability among the emirates as well as accommodative monetary and fiscal policies have played a great role in returning economic stability to the market.

Although oil has been the driver of the UAE economy and continues to contribute significantly to economic prosperity, a policy of economic diversification has determined that non-oil sectors now account for 69 per cent of GDP, with oil supplying the remaining third [5].

The main strategy now is to increase investment in industrial and other export-oriented sectors, including heavy industry, transport, petrochemicals, tourism, information technology, telecommunications, renewable energy, aviation and space, and oil and gas services.

Tourism has played a large part in the success of economic diversification and during 2014–2016 the UAE has continued to strengthen its position as a top tourist destination. The UAE's two world-class airlines, Etihad and Emirates, as well as constant upgrading of aviation infrastructure, have played a major role in the advance of the tourist industry and are key contributors to the economy. Dubai, in particular, expects that the aviation industry will contribute 32 per cent to its GDP by 2020.

The year 2020 has further importance for Dubai since this year it will host the first ever World Expo to be held in a region from Morocco to India, welcoming 25 million visitors to its attractions. As well as further driving tourism, the Expo will create thousands of new jobs and enormous demand for new facilities, including housing, hotels, shopping malls and entertainment complexes.

In order to reveal which factors are more reliable for identification UAE economic growth the econometric model was created. As is known one of the most reliable indicator of the country economic growth is GDP (Gross domestic product). In order to find out factors pushing economic development the econometric model containing following indicators was created (Table 1):

Table 1

Statistics for econometric model [7]

Years	GDP (ml US$)	Domestic credit to private sector (% of GDP)	Foreign direct investment, net inflows (BoP, ml US$)	Services, etc., value added (ml US$)	Brent, $US	High-technology exports (ml US$)	Government Gross Debt National Currency
1 995	65 744	19 552	400	34 626	17	0	10
1 996	73 571	21 504	301	38 140	20	0	13
1 997	78 839	24 501	232	41 444	18	0	11
1 998	75 674	27 892	258	43 736	12	0	14
1 999	84 445	30 033	–985	46 991	17	6	15
2 000	104 337	32 635	–506	51 355	27	5	12
2 001	103 312	35 556	1 184	49 678	23	17	10
2 002	109 816	39 661	95	55 184	23	7	15
2 003	124 346	44 988	4 256	60 869	28	8	20
2 004	147 824	55 764	10 004	68 969	38	10	31

2 005	180 617	79 048	10 900	77 595	50	43	44
2 006	222 106	105 048	12 806	91 063	58	26	56
2 007	257 916	144 531	14 187	113 955	64	40	74
2 008	315 475	213 309	5 063	129 833	91	205	145
2 009	253 547	214 173	1 134	118 960	53	23	224
2 010	286 049	215 677	8 797	126 582	71	50	234
2 011	348 526	223 052	7 152	136 377	87	67	225
2 012	373 432	226 706	8 828	148 081	86	487	234
2 013	388 599	234 176	9 491	164 193	91	457	226
2 014	401 958	261 142	10 823	177 092	86	1 556	230

1. Domestic credit to private sector. It refers to financial resources provided to the private sector by financial corporations (loans, trade credits and others).

2. Foreign direct investment – the sum of equity capital, reinvestment of earnings, and other capital.

3. Services include value added in wholesale and retail trade (including hotels and restaurants), government, professional and personal services (education, health care, and real estate services) presented in current U.S. dollars.

4. Brent – the price for 1 barrel of oil in USD for analyzed period

5. High-technology exports are products with high R&D intensity, such as in aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery. Data are in current U.S. dollars

6. Government Gross Debt National Currency – overall government debt to national companies and external creditors

The system describing the impact of these financial and economic indicators on GDP level is following (variables description is presented in Table 2):

$$\begin{cases} Y = a0+a1*X1+a2X2+ a3*X3+a4*X4+a5*X5+a6*X6 + e \\ M\ (u \mid Xt) = 0 \\ D\ (u^2 \mid Xt) = \delta t^2 \end{cases}$$

Table 2

Indicators definition

Y	*GDP* (*ml US*$)
X1	Domestic credit to private sector (% of GDP)

X2	Foreign direct investment, net inflows (BoP, ml US$)
X3	Services, etc., value added (ml US$)
X4	Brent, $US
X5	High-technology exports (ml US$)
X6	Government Gross Debt (National Currency)

According to the regression analysis the following results are obtained (Table 2):

Table 3

Regression Analysis 1 summary

Regression Statistics					
Multiple R	0,9988				
R Square	0,9975				
Adjusted R Square	0,9964				
Standard Error	7 138				
Observations	20				
ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	6	268 234 485 953	44 705 747 659	878	0,00
Residual	13	662 284 417	50 944 955		
Total	19	268 896 770 370			
	Coefficients	*Standard Error*	*t Stat*	*P-value*	
Intercept	–25 182,09	11 164,61	–2,26	0,04	
X Variable 1	–0,46	0,19	–2,42	0,03	
X Variable 2	–0,23	0,61	–0,37	0,72	
X Variable 3	1,96	0,35	5,57	0,00	
X Variable 4	1 705,04	275,25	6,19	0,00	
X Variable 5	2,37	8,60	0,28	0,79	
X Variable 6	228,36	91,95	2,48	0,03	

According to the results the estimated model looks like the equation:

Y = –25 182 – 0,46*X1 – 0,23*X2 + 1,96*X3 + 1705*X5 + 2,4*X6 + 228*X7 + e

(Sc0 = 11 165) (Sc1 = 0,19) (Sc2 = 0,61) (Sc3 = 0,35) (Sc4 = 272) (Sc5 = 8,6) (Sc6 = 92) (δt = 7 138)

The strong correlation between endogenous and exogenous variables is described with high coefficient of determination R^2 value (0,998) identifying regressors' ability to indicate the value of endogenous variable accurately. In order to evaluate adequacy of specification F-test was taken. As F = 1 485 is higher than Fcr = 2,996 the specification may be counted as adequate.

Moreover, it is vital to understand whether all of the chosen variables are able to impact on the dependent one or the specification has to be modernized. That is why Student's t-criteria test is taken (tcr = 2,45), where X-s suitable for specification interpretation have to exceed tcr [6]:

$$X1 = 2{,}42 < t\ cr$$

$$X2 = 0{,}37 < t\ cr$$

$$X3 = 5{,}57 > t\ cr$$

$$X4 = 6{,}19 > t\ cr$$

$$X5 = 0{,}28 < t\ cr$$

$$X6 = 2{,}48 > t\ cr$$

Consequently, oil prices, services provided and amount of national debt are significant factors influencing United Arabian Emirates GDP level. It is obvious enough, because oil industry was the driver of uniting the emirates 40 years ago. Although even 20 years ago oil industry formed 83% of national income, nowadays it is only 26% [5] while tourism is the main source of income. Dubai and Abu-Dhabi are among the most preferable places for travelling. The amount of services, especially hotels and restaurants, reveals country's long-term economic growth.

At the same time, foreign direct investments are not a crucial factor for GDP growth. It is connected with economic specialization of Arabian Emirates: oil industry that is prohibited for foreigners and tourism, that is really developed by now and doesn't demand a great deal of foreign investments.

One more insignificant criteria is domestic credit to private sector. However, it varies insignificantly (only 0,2 points less) from Student's criteris. It seemed to be valuable as according to «Doing business 2016» report, presented by World Bank, the ease of doing business in UAE is 75,1%, it is 20% better than regional average and obtaining credit has become 20% easier for the last 2 years [1]. That is why private sector may be a driver of financial development in this country. However, this trend appeared not so long ago and that is why doesn't influence remarkably on the test results. That is why it will be wise to include it into new model.

In order to evaluate the impact of random factors on the GDP level in the new model containing only those factors influencing GDP (oil prices, services provided, amount of national debt and domestic credit to private sector. For regression analysis summary see Table 3) the Gauss-Markov assumptions were tested and Durbin-Watson test for autocorrelation of the disturbance terms was taken.

Table 4

Regression analysis 2 summary

Regression Statistics				
Multiple R	0,9987			
R Square	0,9975			
Adjusted R Square	0,9968			
Standard Error	6725,93			
Observations	20			
ANOVA				
	df	*SS*	*MS*	*F*
Regression	4	268 218 197 624	67 054 549 408	1 482
Residual	15	678 572 746	45 238 183	
Total	19	268 896 770 370		
	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	– 25 299,83	6 211,4	– 4,07	0,00
X Variable 1	1,98	0,20	9,79	0,00
X Variable 2	1 627,14	219,80	7,40	0,00
X Variable 3	– 0,45	0,16	– 2,72	0,02
X Variable 4	230,01	84,80	2,71	0,02

To check whether mathematical expectation is equal zero the values of disturbance terms were summed. The amount equals zero showing up that assumption is correct.

In order to check disturbance terms for homoscedasticity the Goldfeld-Quandt test was performed. GQ value equals to 0,04 and GQ-1 value is 23, that is higher than Fcr

(3,11). Consequently, the disturbance terms are heteroscedastic. It means that disturbance terms dispersion will be variable despite the zero mathematical expectation. It leads to the loss in efficiency of regression coefficients valuation.

In accordance with Durbin-Watson test results it is impossible to make a conclusion about autocorrelation existence (new model has 4 exogenous variables, 20 observations, so dl = 0,9 and du = 1,83) as DW = 2,32 lies between 4-du and 4-dl.

To sum up, the analysis performed reveals that the main factors determining economic growth (GDP growth) in United Arabian Emirates are still oil prices as well as amount of services provided and government gross debt.

It is quite predictable taking into account the importance of oil production since the foundation of the UAE. However, as it was observed at the beginning of this work, touristic services, transportation and high technology sphere have become more and more significant for countries’ economic growth nowadays. Moreover, the drive for diversification oil income for non-oil profits leaded to replacement the significant part of oil income for non-oil one (oil income now forms only one-third of the UAE budget)

Foreign direct investment (net inflow) was insignificant in terms of GDP growth as since 1980 to 2011 the UAE was also the top Arab capital exporter. But nowadays UAE is the most closely integrated of all the Arab economies into the global economic system and efforts are continuing to enhance the country's business friendly environment, both to facilitate trade and attract inflows of foreign direct investment, which will help to achieve balanced, sustainable development. Possibly, in 5 years’ time the analysis will reveal more significant level of this factor into GDP growth.

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