Performance of sovereign wealth funds under the current oil price shock for the period (2014-2017) Case study of the Algerian sovereign wealth fund (RRF)

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Received: 15/07/2018 **Accepted:** 08/12/2018 **Published:** 23/01/2019

Abstract

The purpose of this study is to determine the role of sovereign wealth funds (SWF) in the economies of oil exporting countries, and the financial situation and the performance of the Algerian sovereign wealth fund RRF in the light of oil price decline.

The mains results of this study indicate that the revenue regulation fund RRF depends on a single source of financing and the sluggishness of the world oil market since mid-2014 led to the total depletion of fund's financial resource.

Keywords: sovereign wealth fund, oil prices decline, budget deficit financing, Algerian sovereign wealth fund RRF, oil exporting countries, financial resources of the fund.

JEL classification codes: C20, H62.

ملخص:

تهدف هذه الدراسة إلى تحديد الدور الذي تلعبه صناديق الثروة السيادية لاقتصاديات الدول المصدرة للنفط ،بالإضافة إلى تحديد الوضعية المالية وأداء صندوق ضبط الإيرادات الجزائري في ظل انخفاض أسعار البترول.

أهم النتائج الأساسية لهذه الدراسة تشير إلى أن صندوق ضبط الإيرادات الجزائري يعتمد على

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مصدر تمويل وحيد والمتمثل في فوائض إيرادات الجباية البترولية، كما أن انخفاض أسعار البترول المسجل على مستوى الأسواق المالية الدولية منذ منتصف جوان 2014 أدى إلى النضوب الكلي للموارد المالية للصندوق.

كلمات مفتاحية: صناديق الثروة السيادية، انخفاض أسعار البترول، تمويل عجز الخزينة العمومية، صندوق ضبط الإيرادات الجزائري، اقتصاديات الدول المصدرة للنفط، الموارد المالية للصندوق.

1. INTRODUCTION

The sharp drop in oil prices since the second half of 2014 has posed several challenges for each of the importing countries, that seeks to benefit from the advantage of oil prices fallen that have been positively reflected in the form of low public finance deficits, and low energy support bill and improve the business climate in Some countries, that allow spending in Infrastructure and increased consumption in this countries, and for oil-exporting countries, lower prices of oil led to the decline in export earnings and the deterioration of public finances (Regional economy outlook, April2016, p. 2)and the significant fiscal surpluses it has earned over the past decade have turned into a deficit and The slowdown in growth rates in addition to the ability of Governments to spend in these countries have been reduced, such as Algeria and some Gulf Cooperation Council countries.

Under these circumstances of the new oil reality, oil-exporting countries adopt corrective policies to absorb the shock of oil prices by reducing general expenditures and find new sources of revenue such as taxing and reducing exemptions, in addition to withdrawing from the large preventive financial precautions, while some countries resorting to borrowing, given the importance of sovereign wealth funds at the global financial arena in terms of the volume of financial assets under management (AUM)the amount of financial assets managed (AUM) by sovereign wealth funds was estimated at about 6.51trillion USD(Prequin sovereing wealth fund, 2015)

and as a source of preventive precautions for their own countries, which depend heavily on oil revenues, oil-exporting countries are continuing to adapt with the decline in current oil prices by reducing public spending, increasing revenues and financing the deficit of public budgets using several tools and trade-offs through the use of State resources (such as sovereign wealth funds), or external borrowing (sovereign bonds), Domestic borrowing (Treasury bonds or commercial loans).

The Governments of oil-exporting countries adopt consolidation measure to counter the shock of low prices and finance the deficit in their budgets, by withdrawing from sovereign wealth funds that was created for stabilizing the public budget and protecting the economy from fluctuations of oil price(Dutch disease), or even That draw from sovereign wealth for future generation .

Problematic:

"The advantages of using sovereign wealth funds as a tool to cover fiscal deficits in the country budget may result in reduced pressures on domestic liquidity and availability of funds at any time, as for risks that may accompany the use of sovereign wealth fund to cover fiscal deficits can lead to depletion of The financial assets of this latter and may result in higher borrowing costs or losses due to asset liberalization in inappropriate circumstances"(Bogamber & al, 2016, p. 15)**.**

Many countries have announced the withdrawal of financial assets from their sovereign wealth funds for the first time, such as the Norwegian sovereign wealth fund GPFG, while some countries have deducted or withdrawn significant financial assets that led to total depletion of financial resources, if energy prices continue to fall, such as the case of the Algerian sovereign wealth fund RRF, so in this study we ask the following key question:

How oil price fallen impact the performance of the Algerian sovereign wealth fund RRF?

The main question of the study is divided into the following questions:

- How oil prices fallen affect the performance of sovereign wealth funds?

- What is the financial situation of the Algerian sovereign wealth fund RRF in the light of the decline in oil prices in international financial markets?

Hypotheses:

- The decline in oil prices has affected the evolution of sovereign wealth funds asset's and investment strategies.
- There is a statistically and economically significant relationship between oil price and of the Algerian sovereign wealth fund resource.

We use the descriptive approach and analytical approach to analyze the financial situation of the Fund RRF during the period (2000-2016), and econometric study to assess the impact of oil price on fund's resource by using simple regression model.

The plan of this study is as follows:

First section: The performance of sovereign wealth funds in the light of the decline of oil price.

Second section: The performance of the Algerian sovereign wealth Fund RRF in the light of oil price fallen.

2. Performance of sovereign wealth funds in the light of oil price fallen:

The Collapse of the oil prices recorded during this period is the largest decline in international financial markets since its temporary decline in 2008 due to the global financial crisis, after the price boom since 2000, which has lasted for more than a decade, oil prices have fallen by about 55 %percent since September 2014 (developments in regional economic outlook, 2015, p. 5), and continued to collapse until the beginning of 2017.

Under this situation oil-exporting countries, which depend heavily on revenues of oil exporting, adopted a generally corrective policies to reduce general spending (Saudi Arabia has reduced budget expenditure in the 2016 at about 14% compared with actual expenditures in previous years, Oman and Qatar announced a reduction in the level of expenditure) (Alkhabircapital, 2016)and increased revenues through taxation, resorting

to internal or external borrowing or using state resources through sovereign wealth funds).

The decline in oil prices since mid-2014 has affected the performance of sovereign wealth funds (nakhle, 2016, p. 02)in two ways:

First: With the collapse of oil prices, revenues from oil exports have declined, especially in countries whose economy depends on the export of oil as a source of national income, such as the GCC countries and Algeria, led to reducing of foreign exchange reserves accumulation, which are the source of funding for these funds, The following table represents the evolution of the volume of financial assets managed for some sovereign wealth funds.

Table 1. Evolution of the volume of assets under management (AUM) for some sovereign wealth funds (2010-2015).

(AUM)BILLION USD	2010	2011	2012	2013	2014	2015
RRF Algeria	-	-	58	65	66.7	34.7
SAMA (Saudi Arabia)	459	557	656	717	724	661
KIA Kuwait	266	296	322	386	548	592
KNF Kazakhstan	27.44	38.26	52.52	64.39	72.99	65.44
RF Russian*	40.88	25.60	61.40	86.93	88.94	59.53
NWF Russian*	88.22	88.26	87.47	88.06	79.97	72.22

Source: Funds profile, sovereign wealth center, website www.sovereignwealthcenter.com/fund-profiles.html on 12/08/2017–*ministry of finance Russian federation statistics prepared by researchers (volume of national wealth fund and reserve fund, data of the last month of the year) website old.minfin.ru/en/statistics on 28/07/2017.

The assets under management AUM of sovereign wealth funds recorded a decrease of 1.3 trillion USD in 2015 compared to the previous year, according to the annual report of sovereign wealth funds (Sovereign Investments Lab) (Borttolloti & al, 2016, p. 44)

Second: The decline in oil prices in international financial markets has shaped the investment and operational strategy of the sovereign wealth

funds, where significant assets have been drawn from these funds to cover the budget deficits of this country (nakhle, 2016, p. 02)

The most important decisions or actions taken to mitigate the effects of low oil prices by using sovereign wealth funds (stabilization funds or reserve funds) are:

- Saudi Arabian Monetary Authority (SAMA) has withdrawn more than 70 billion USD from its sovereign wealth fund in 2015(Stone, 2015)**,** which has an estimated financial assets of 560 billion USD (Borttolloti & al, 2016, p. 44)
- The Russian reserve fund has liquidate assets worth more than 20 billion USD to cover the federal budget deficit, the assets of this (SWF) decreased from 142.6 billion USD in 2008 to 32.2 billion USD in the year 2016, while the Russian Finance minister warned that the fund's resources will be depleted by the end of the year if the Russian government continues to deduct the assets of the Fund in order to cover expenses(nakhle, 2016, p. 02)
- QIA divested some stacks as part of portfolio reshuffle driven by oil concerns, the most notable divestments was investments in both the German construction company Hochtief, the French company Vinci SA and property sales in London for an aggregate value exceeding 1.5 billion USD(Borttolloti & al, 2016, p. 16).
- The first Norwegian minister announced in October 2015 that it would be withdrawing from the sovereign wealth fund to cover the budget deficit and stimulate growth, a 780 million USD withdrawn in January 2016(Solvik & chopra, 2016)The asset of Government fund of the State of Kazakhstan according to the Financial Times, it will dry up (assets under management 64.2 billion USD) by the year 2026, if government continues the current pattern of expenditure and if oil prices will not rise, about 19 billion USD was withdrawn in the third quarter of 2015(Attracta, 2016)

3. Algerian sovereign wealth fund RRF performance in light of oil price fallen:

In this section we study the impact of oil price on Algerian economy, and the policies taken by authorities to regulate the overall financial situation, and then we will assess the financial situation and performance of the Fund RRF during the period 2000-2016.

3.1.The Impact of the decline in oil prices on Algeria's economy.

The decline in oil prices in global financial markets since late 2014 has affected the overall financial situation, external accounts and the economy outlook, reflecting the structural weakness of the Algerian economy, where the following were recorded:

- Concerning public finances, there was a budget deficit, with a high deficit of 15.4%/PIB in 2015 compared to 2014 that was 7.3%/PIB, due to collapse in hydrocarbon revenue and significant budget expenditure (Bank of algeria, 2016, p. 56)
- Sold of the current account of the balance of payments recorded its Second consecutive deficit after fifteen years of surpluses. In addition, this deficit deteriorated significantly between 2014 and 2015, rising from 9.28 billion USD to 27.48 billion USD respectively (Bank of algeria, 2016, p. 46).
- The balance of the trade has been quasi-equilibrium in 2014 (+ 459 million) at a deficit of 18.08Billion USD in 2015, recorded its first deficit, after eighteen (18) consecutive years of surpluses (Bank of algeria, 2016, p. 45)**.**
- Budgetary revenues are 5 103.1 billion dinars(50.77Billion USD) against 5 738.4 billion dinars (71.19B USD)in 2014, a decrease of 635.3 billion dinars (-11.1%), This significant decrease in budget revenue results from that of the oil revenues (-1014.9Billion DA, or-30%) despite the significant increase in Non-hydrocarbons revenue of 379.7 billion DA (3.77 Billion USD)(Bank of algeria, 2016, p. 05)
- A sharp decline in exchange reserves, moving from 178.93 billion USD in 2014 to 144.33 billion USD in 2015.

3-2- Fiscal consolidation in the light of oil prices decline.

In the light of structural weakness of Algerian export revenues, which depend heavily on oil exports, and the sharp decline of oil price in international financial markets, Algeria has taken the following response policies:

- Rationalization of imports through measures that contribute to the containment of the increase in imports by the Bank of Algeria, by lowering the precautionary standard for the level of foreign trade bank obligations, relative to its own assets (Bank of algeria, 2016, p. 07)**.**
- Export subsidies outside the hydrocarbon sector through the cancellation of the Bank of Algeria's licensing of the import of materials, which is in the process of manufacturing export-oriented products abroad (Bank of algeria, 2016, p. 08)**.**
- The Bank of Algeria is developing the exchange market between banks in order to protect the economic operators from the risk of exchange and to encourage investment and export.
- Bank of Algeria allowing a 25%depreciation of Algerian dinars (DA) against the US dollar, (the real effective exchange rate depreciated by 4.3%) (souissi, 2016), these policies played a large role as a shock buffer of low oil prices, although this policy alone cannot Sustained consequences of low price collapse(Bank of algeria, 2016, p. 08)
- Resorting to internal borrowing through the issuance of national debt for economic growth (ENCE)(MFDGI, 2017)**(**, starting from 17 April 2016, for a six-month subscription process, 557billion DA that equal to5.29 billion USD was realized from this operation.
- Determine upper limits of public expenditures in the range of 6800 billion DA (at about 60 Billion USD) over the next three years starting in 2017, and adoption reference price of 50$ per barrel, a price closer to the current barrel price in the financial markets.
- Through the finance law of 2017, the value added tax (TVA) has been raised from 17% to 19% for the normal rate, and from 7% to 9% for the

reduced rate, for raising the state's financial revenue (Algerian republic official journal, 2016).

- With drawals was made from the Fund (Regulation Revenue Fund), led to a depreciation of asset under management (AUM), which moved from 4408.5 billion DA(54.96 Billion USD) at the end 2014 to 2072 billion DA(20.61Billion USD) at the end of 2015, reduced by 53% in one year, the volume of the fund knew a further depreciation until beginning 2018, and it reached its level of the statutory minimum of 740 billion DA(about 10.19 billion USD) in the end of the February of 2018(Bank of algeria, 2016, pp. 09-10)

3.3. Evaluation of financial situation of FRR:

We assess The contribution of the Algerian sovereign wealth fund RRF to finance public treasury deficit, and its goals through two phases, the first phase consists of favorable circumstance characterized by the continuous increase of oil prices from 2000 to mid-2014, the second Phase consists the collapse of oil prices in international financial markets since mid- 2014 until 2016.

3.3.1. Phase I:

During this phase from 2000 to mid-2014, we distinguished the following periods that represent the most significant changes related to the Fund's objectives and funding.

First period 2000-2005:

During this period, the Fund's activity was limited to repayment of public debt (Bouflih, 2010-2011, p. 226), without being used to finance budgetary deficits due to higher hydrocarbon prices (prices exceeded reference oil price 19$ per barrel)The objectives of the Fund under article 10 of Finance law 2000 are set as follows: control budget balance of annual Finance Act, as well as reduction of public debt, and hydrocarbon revenue exceeds what was estimated by the finance law, The following table present evolution of the financial situation of RRF during the period 2000-2005.

Table 2. Evolution of the financial situation of RRF 2000-2005 (BILLION DA).

Years	2000	2001	2002	2003	2004	2005
Previous year sold	0	232.1	171.1	27.9	320.8	712.6
Oil revenue surplus	453.2	123.8	26.5	448.9	623.4	1368.8
Bank Algeria Advances	0	0	0	0	0	0
sold before withdrawal	453.2	356.0	198.0	476.8	944.3	2090.5
public debt repayment	221.1	184.4	170.0	156.0	222.7	247.8
finance treasury deficit	0	0	0	0	0	0
repayment bank of Algeria	0	0	0	0	0	0
Total withdrawal	221.1	184.4	170.0	156.0	222.7	247.8
Sold after withdrawal	232.1	171.5	27.9	320.8	721.6	1842.6
*Average price of oil barrel ($)	28.6	24.9	25.3	29.0	38.6	54.3

Source: financial Situation of revenue regulation fund, *average price of oil barrel, website http://www.dgpp-mf.gov.dz,consulteon 27/05/2017.

Oil prices during this period ranged from 28.6$ in 2000 to 54.3$ in 2005 (see table 2), where significant oil revenue surpluses were transferred to the Fund that estimated at about 3044 billion DA(33.43 Billion USD) during this period (2000-2005),According to the finance law2004, a new resource has been added to the fund RRF for repayment of external debt before maturity date that was central bank (bank of Algeria) advances.

Second period 2006-2013:

During this period, the RRF is geared towards financing the deficit of the public treasury, an adjustment was made in Fund's expenditure through the finance Law 2006(Bouflih, 2010-2011, pp. 228-230)to financing the deficit of the public treasury without exceeding the minimum required level (740 billion DA at about 10.20B USD), this period was characterized by a high price of oil, a significant oil revenue surpluses was transferred to the Fund (see table 3), the volume of withdrawals from this fund RRF to finance the deficit of the public treasury increases as a result of rise government expenditure, public debt repayments were discontinued in 2008.

The following table represents the evolution of the financial situation of the fund RRF.

Table 3. Evolution of the financial situation of RRF2006-2013 (BILLION DA)

Years	2006	2007	2008	2009	2010	2011	2012	2013
Previous year sold	1842.6	2931.0	3215.5	4280.0	4316.4	4842.8	5381.7	5563.5
Oil revenue surplus	1798.0	1738.8	22881.1	400.6	1318.10	2300.3	2062.2	1810.3
Bank Algeria Advances	0	0	0	0	0	0	0	0
sold before withdrawal	3640.6	4669.8	5503.6	4680.7	5634.7	7143.1	7917.0	7659.8
public debt repayment	618.1	314.4	465.4	0	0	0	0	0
finance treasury deficit	91.530	531.9	758.1	364.2	791.4	1761.4	2283.2	2132.4
repayment bank of Algeria	0	607.9	0	0	0	0	0	0
Total withdrawal	709.6	1454.3	1223.6	364.2	791.9	1761.4	2283.2	2132.4
Sold after withdrawal	2931.0	3215.5	4280.7	4316.4	4842.8	5381.7	5633.7	5563.5
*Average price of oil barrel ($)	65.0	74.4	99.1	61.6	80.0	112.9	110.7	109.1

Source: financial Situation of revenue regulation fund, *average price of oil barrel, website http://www.dgpp-mf.gov.dz,consulteon 27/05/2017.

Rise in oil prices in international financial markets has led to an increase in the volume of oil revenue surpluses transferred to the fund, at the same time, the average amount of money withdrawn to finance the deficit of the public treasury was increased at about 507 billion DA(7.169 Billion USD) during the period 2006-2010(see table 3).

Starting from2011, a significant amounts have been drawn from the fund RRF compared to previous years, with withdrawals estimated at more than 6177 billion DA(80.60 Billion USD) during the period (2011-2013) (see table 3), to finance the public treasury deficit as a result of rising public expenditures under the implementation of the five-year development programme2010-2014 (programme de soutien à la reliance économique) to support the economic recovery(Yahya, 2016, p. 36), at the same time a significant financial surpluses of oil revenues were transferred to the fund, the average amount estimated is about more than 6897 billion DA(90 Billion USD) during the period (2011-2013)in light of higher oil prices in financial markets Where the average price of barrels of oil during this period was estimated at more than 109 US dollars.

3.3.2. Phase II:

In this part we assess financial situation of the Algerian sovereign wealth fund RRF in light of oil prices collapse in international financial markets since mid- 2014 until 2016.

During this period (2014-2017) financial resources of the fund completely depleted, as a result of oil price shock, where this period was characterized by the withdrawal of large financial amount from the Fund RRF to finance the deficit of the public treasury due to increase of government expenditure and Sharpe decline and sustained of oil price since mid-Jun 2014, where the oil revenue surplus has been reduced to over half 552 billion DA(5.194) in 2015 compared to the previous year 1810 billion DA(22.45 Billion) in 2014 (see table 4).

The financial amount that was withdrawn in 2015 was around 2886 billion DA to cover the deficit of the public treasury, which resulted in decline of fund's asset for more than half in one year from 4408 billion DA (54.68 Billion USD) in 2014 to 2073 billion DA (20.62 billion USD) in 2015,the draw from Fund's financial assets was continued in 2016 (Bank of algeria, 2016, pp. 09-10)until it reached the minimum level required (740 billion DA) starting from February 2017, through the finance law of 2017 the legal minimum required was abolished to finance budgetary deficit (Algerian republique officiel journal, 2017),the following table represents the evolution of the financial situation of fund RRF during the period 2015-2016.

Table 4. Evolution of the financial situation of RRF2014-2016 (Billion DA)

Years	2014	2015	2016
Previous year sold	5563.5	4408.1	2073.8
Oil revenue surplus	1810.3	552.1	985.5
Bank Algeria Advances	0	0	0
sold before withdrawal	7374.1	4960.3	2172.3
public debt repayment	0	0	0
finance treasury deficit	2965.6	2886.5	1387.9
Repayment bank of Algeria	0	0	0
Total withdrawal	2965.6	2886.5	1387.9

Sold after withdrawal	4408.4	2073.8	784.4
*Average price of oil barrel ($)	99.14	52.8	44.7

Source: financial Situation of revenue regulation fund, *average price of oil barrel, website http://www.dgpp-mf.gov.dz,consulteon 27/05/2017.

This period starting in 2014 has shown the weakness and structural imbalance that characterizes the Fund RRF, the fund highly influenced by fluctuations of oil prices, as it is funding by oil revenue surplus and is used to finance the deficit of the public treasury, Since 2014, the fund has been reduced from 4408.5 billion DA (54.69 Billion USD) to 784.5 billion DA (7.16 Billion USD) in 2016, a decrease of 82.20%.

3.4. Result of empirical study:

In this part of the study, we assess the impact of oil price on oil revenue surplus transferred to the fund, so that we test the second hypothesis that there is a statistically and economically significant relationship between the oil price and Fund recourse.

The Fund RRF is financed through a single source that was oil revenue surpluses, so we will study the relationship between the independent variable oil price that is determined through international financial market, and a dependent variable that is oil revenue surplus transferred to the fund RRF.

To estimate the simple regression model and the relationship between the two variables, therefore a general form of the proposed model as follows:

$$PLUSVALU = \beta_0 + \beta_1 PRIXPETR + \varepsilon_i \ldots . (eq1)$$

i: Number of observation that reflects the years of the period studied (2000-2016).

PLUSVALU: The dependent variable is the oil revenue surplus transferred to Fund RRF (billion$).

PRIXPETR: The independent variable is the average price of barrels of crude oil (US $).

ε_i: Error or noise term.

The following table represents the values of the dependent variable and the independent variable during the study period, as follows:

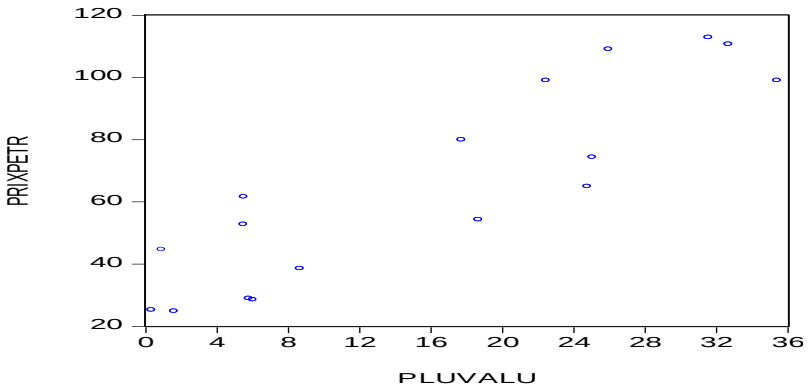
Table 5. Represents oil revenue surplus transferred to the fund RRF and the average price of barrels of crude oil (2000-2016).

years	Oil revenue surplus (billion$).	Average price of barrels of crude oil (US $).
2000	6,019	28.6
2001	1,602	24.9
2002	0.333	25.3
2003	5,800	29
2004	8,648	38.6
2005	18,649	54.3
2006	24,766	65
2007	25,055	74.4
2008	35,420	99.1
2009	5,519	61.6
2010	17,719	80
2011	31,554	112.9
2012	32,672	110.7
2013	25,973	109.1
2014	22,461	99.1
2015	5,494	52.8
2016	0.900	44.7

Source: elaboration by researchers, Financial Situation of revenue regulation fund and average oil price barrel, website[http://www.dgpp-mf.gov.dz, consulte](http://www.dgpp-mf.gov.dz) le 27/05/2016.

3.4.1. Type of correlation between the variables of estimated equation.

Figure 1. Simples scatter.



Source: output Eviews 7

The Simple scatter indicate that there is a high correlation between the dependent variable (oil revenue surpluses transferred to fund RRF) Oil revenue surplus result from oil revenue actually realized for particular year n - oil revenue estimated by law finance for same year n. and the independent variable (average oil barrel price) (see figure1).

Table 6. Correlations matrix between dependent and independent variable**.**

Correlation		
	PLUVALU	PRIXPETR
PLUVALU	1	0.8909742048493366
PRIXPETR	0.8909742048493366	1

Source: output Eviews 7.

The coefficient of correlation is estimated at 0.891, a positive and very strong (see table6)

R = 0.891 there is a significant positive correlation between the dependent variable (PLUSVALU) and the Independent variable (PRIXPETR).

3.4.2. Estimation of regression equation:

We use result of Eviews7 to estimate the equation of the regression model of the dependent and independent variable as follows:

Table 7. Result of regression equation

Dependent Variable: PLUVALU
Method: Least Squares
Date: 05/12/18 Time: 19:42
Sample: 2000 2016
Included observations: 17

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-6.462549	3.239213	-1.995099	0.0645
PRIXPETR	0.340913	0.044858	7.599820	0.0000

R-squared	0.793835	Mean dependent var	15.79906
Adjusted R-squared	0.780091	S.D. dependent var	12.15795
S.E. of regression	5.701409	Akaike info criterion	6.429435
Sum squared resid	487.5910	Schwarz criterion	6.527460

Log likelihood	-52.65020	Hannan-Quinn criter.	6.439179
F-statistic	57.75727	Durbin-Watson stat	0.924724
Prob(F-statistic)	0.000002		

Estimation Command:

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LS PLUVALU C PRIXPETR

Estimation Equation:

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PLUVALU = C(1) + C(2)*PRIXPETR

Substituted Coefficients:

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PLUVALU = -6.4625489679 + 0.340912829884*PRIXPETR

Source: output Eviews 7.

We define the equation of the regression model of the dependent (plus valu) and independent variable (prix petr) as follows:

$$PLUSVALU = -6.463 + 0.341PRIXPETR$$

3.5. Statistical analysis of the estimated model

In this part we use We use F-statistics to test the ratio of the variance explained by the regression and the variance not explained by the regression, and We use t-test student to test the slop of regression model.

3.5.1. Student-t- test

From result of regression equation (table 08) we have result of t-test student as follow:

Table 08.Result of t-test student

estimated model variable's	coefficient	t-statistic	t-table student	probability
PRIXPETR	0.341	7.60	2.131	0.000

Source: elaboration by researcher's, depending on result of table7

We use t-test student to test the slop of regression model as follow:

$H_0: \beta = 0$ the dependent variable Y has not linear relationship with the independent variable X

$H_1: \beta \neq 0$ The dependent variable Y has linear relationship with the independent variable X

We compared between $T_{n-k}^{\alpha/2}$andT_{calcul}

$T_{n-k}^{\alpha/2} = T_{15}^{0.25} = 2.131$

$T_{calcul} = 7.60$

$T_{calcul} = 7.60 > T_{n-k}^{\alpha/2} = T_{15}^{0.25} = 2.131$

So we reject the null hypothesis H_0 and accept the alternative hypothesis H1, that means that dependent variable oil revenue surplus has linear relationship with the independent variable of the average oil price for barrel (see table 7).

3.5.2. F-statistics test

We use F-statistics to test the ratio of the variance explained by the regression and the variance not explained by the regression as follow.

$H_0: \beta = 0$

$H_1 : \beta \neq 0$

Where:

$F_{n-k}^{\alpha} = F_{15}^{0.05} = 4.54$

$F_{calcul} = 57.758$(see table 07).

$$F_{calcul} = 57.758 > F_{15}^{0.05} = 4.54$$

So we reject the null hypothesis H_0 and we accept the alternative hypothesis H_1 ,this means that the variation in dependent variable is explained by linear regression, there is a relationship between the dependent variable and the independent variable, and the model is statistically significant according to Fisher's Test(see table 7).

3.6. Regression analysis:

We useR2-value and Adjusted R square to analyses estimated equation economically as follow:

R2-value = 0.794 This means that79.40% of the variance in oil revenue surpluses can be explained by oil prices, and 20.6% of the variation in oil revenue surplus is presumed to be due to random variability (see table 7) .

Adjusted R -square=0.780 means that the independent variable (the price of the oil barrel) contributes to the interpretation of the dependent variable by 78% (see table 7).

The slop of independent variable (average oil price) is positive (β1 = 0.341), that mean an increase in oil price leads to increase in oil revenue surpluses transferred to the fund RRF, which is economically correct.

Increase of oil price with 1 USD led to an increase in oil revenue surplus transferred to the fund by 341 million USD, and the opposite is right, oil revenue surplus is calculated on the basis of the difference between oil revenue that actually realized for a particular year and oil revenue that is estimated by Finance law for the same year, so the financial resources of the Fund RRF are strongly influenced by an external variable, which is the oil price that is determined in the international financial markets.

The Fund RRF depend on a single source of funding, which is oil revenue surplus, in addition to the current financial situation for the latter, in 2016the fund reached the minimum level required (740 billion DA) that was abolished by the finance law of 2017to finance budgetary deficit.

The Financial situation of the fund calls for a rethinking of how the fund should be operating, so we suggest that financial assets should be investing to achieve abnormal financial returns through international financial markets (emerging markets and advanced markets) by creating a reference portfolio that invests in stocks and bonds, investment funds and hedge funds, as well as to make an adjustment on fund's objectives, RRF in term of his current objectives finance public debts, both external and internal, and the deficit of the public treasury, where the operating expenditure account for more than 60% of the deficit budget.

4. Conclusion:

The decline in oil prices has affected the performance of the sovereign wealth funds of the oil-exporting countries, in two ways through a decline in the volume of financial remittances transferred to these funds as a result of declining oil export revenues resulting from lower prices, and also

affected the investment and operational strategy of these funds, as some funds have resorted to liquidating their investments or making deductions from their financial resources.

With regard to the financial situation of the Algerian sovereign wealth fund RRF during the current period characterized by lower oil prices, a substantial financial cuts were made to finance the deficit of the public treasury, where the fund reached the minimum level required (740 billion DA) that was abolished to finance budgetary deficit through the finance law of 2017, which indicates to a completely depletion of the Fund's financial resources.

The sovereign wealth fund RRF depend on a single source of funding, which is oil revenue surpluses, and therefore the financial resources of Fund are impacted by fluctuation of oil price, which is determined through international financial markets, where the oil revenue surplus was shifted in 2014 from 1810 billion DA (22.45 billion USD) (average oil price of the barrel is estimated at 99.1 $) to 98 billon DA in 2016(0.894 Billion USD) (average oil price of the barrel44.7$).

Financial resources of the Algerian sovereign wealth fund RRF will depend heavily on future oil prices, volume of oil revenue surplus transferred to the Fund if oil price rise will be calculated by the adoption of a new oil reference price 50$ per barrel approved through the finance law of 2017.

The current financial situation of the RRF reflects the structural imbalance of the Fund in term of funding, therefore we suggest adjustment of fund’s objectives for which it was created by combining the objective of stabilizing the economy and objective of investing their assets in order to achieve positive higher abnormal return and ensure renewable financial resources, by investing its financial assets through international financial markets using a reference portfolio, and benefit from the experiences of leading sovereign wealth funds such as the Norwegian sovereign wealth fund GPFG, in addition to adjusting fund’s uses to support and develop Algerian economy Instead of directing towards financing public treasury deficit.

Bibliography list:

Algeria. (2016). *2015 annual report economic and monetary evolution.* Algeria: Bank of Algeria.

Algerian republic official journal. (2016, december). Art26 & Art27 law finance2017. *Algerian republic official journa*, 13.

Algerian republique officiel journal. (2017, december 29). Art 121 Amended & completed Art 10 law finance 2017. *officiel journel*, p. 48.

Alkhabircapital. (2016, mars). GCC budgets:adapting to the new oil reality. *Alkhabir capital*, p. 02.

Art27, A. 2. (2016). *Law finance 2017.* Algeria.

Attracta. (2016, january 08). *kazakh sovereing wealth fund is latest victim of oil price fall*. Retrieved 08 25, 2017, from Financial Times: https://www.ft.com/content/1ff29990-b5fe-11e5-b147-e5e5bba42e51

Bank of algeria. (2016). *economic and finance tendances on 2015 and first nine month.* Algeria: Bank of Algeria.

Bank of algeria. (2016). *economic and monetary evolutionannual report2015.* Algeria: Bank of Algeria.

Bogamber, & al. (2016). *Fiscal policy adjustement in oil country.* IMF.

Borttolloti, & al. (2016). *The skey did not fall,sovereing wealth fund annual report2015.* Millan: SIL lab bocconi university and universita degli Studi di Torino.

Bouflih, n. (2010-2011). *sovereign wealth financement on oil-exporting country.* Algeria: university of Algeria.

finance2017, L. (2016, december). Art 26 & Art 27. *officiel journae n29*, p. 13.

fiscal policy adjustement in oil-exporting countries. (2016, 05 30). *imf study*, p. 15.

https://www.preqin.com/docs/newsletters/pe/Preqin-Private-Equity-Spotlight-May-2015.pdf. (2015, may). private equity spotlight.

IMF. (2016). *Regional economy outlook,middele east and north africa.* IMF.

International monetary fund. (2015). *developments in regional economic outlook.* wachington,D.C: IMF.

International monetary fund. (April2016). *Regional economy outlook.* IMF report.

Law2017, f. (2017, december 29). Art121 Amended &completed Art10. *officiel jornale N77*, p. 48.

MFDGI. (2017, 06 03). https://www.mfdgi.gov.dz/images/pdf/articles_presse_emprunt.pdf. algerie, DGI, alger. Retrieved from DGI.

nakhle, c. (2016, september 26). sovereign wealth funds and preserving oil wealth. *Crystole Energy*, p. 02.

Prequin. (2015, may). *Prequin sovereing wealth fund*. Retrieved 05 31, 2017, from Prequin sovereing wealth fund: https://www.preqin.com/docs/newsletters/pe/Preqin-Private-Equity-Spotlight-May-2015.pdf

Regional economy outlook update. (April216). IMF.

Solvik, & chopra. (2016, 03 03). *Thomson reuters*. Retrieved 10 01, 2017, from Thomson reuters: https://www.reuters.com/article/us-norway-swf/norway-says-made-first-withdrawal-from-oil-fund-in-january-idUSKCN0W52JR

souissi, j. (2016). *Algeria selected issues report n16/128.* Washington;D.C: IMF.

Stone, M. (2015, 12 07). *asset managers see sovereing wealth fund withdraw 19 B USDQ*. Retrieved 09 07, 2017, from Thomson reuters: https://www.reuters.com/article/persiangulf-funds-idUSL1N13V0KF20151207

Yahya, H. (2016, Julay). politique of rationalitation the role of sovereing wealth fund. *RSD N11*, p. 36.