Essay: "Happiness and resource curse: evidence from Russia"

Natural resource economics

Dvoichenkova Maria

Introduction

As discussed in existing literature, resource-rich economies experience slow growth, which is called resource curse - market creation by natural resources production or institutional failures may cause this. More recent papers tried to step further and look beyond economic performance, widening the research to broader welfare variables.

The motivation of this paper is to investigate the relationship between resource wealth and well-being for Russia, a country abundant in fossil fuels and minerals. Happiness is chosen as an indicator of interest.

Rents may be associated with higher gains both for government and citizens. However, there is an evidence of the opposite. The potential mechanisms for negative relationship between resource abundance and well-being are volatility of oil prices; bad governance of resource-rich countries and inefficient allocation of resources in the budget. This also implies weak government efficiency and quality, high corruption rate and reallocation of resources to the interest groups. In addition, oil basins are often clustered geographically and may create few spillovers to the rest of the country economy.

The role of oil and gas revenues in federal budget of Russia is substantial. The revenues include taxes (i.e. on mining) and customs duties. The first part of the rent corresponding to the exported ton of oil is received by the state and the second is a part of a profit of the oil company. The rent of a ton sold on the domestic market is received by the company and by oil consumers.

Oil production in Russia is shown in Figure 1. The chart illustrates that, overall, production had been increasing till 2019 and in 2020 it fell dramatically. This was partly due to the supply shock, because Russian oil production has been under a downward pressure of Western sanctions.

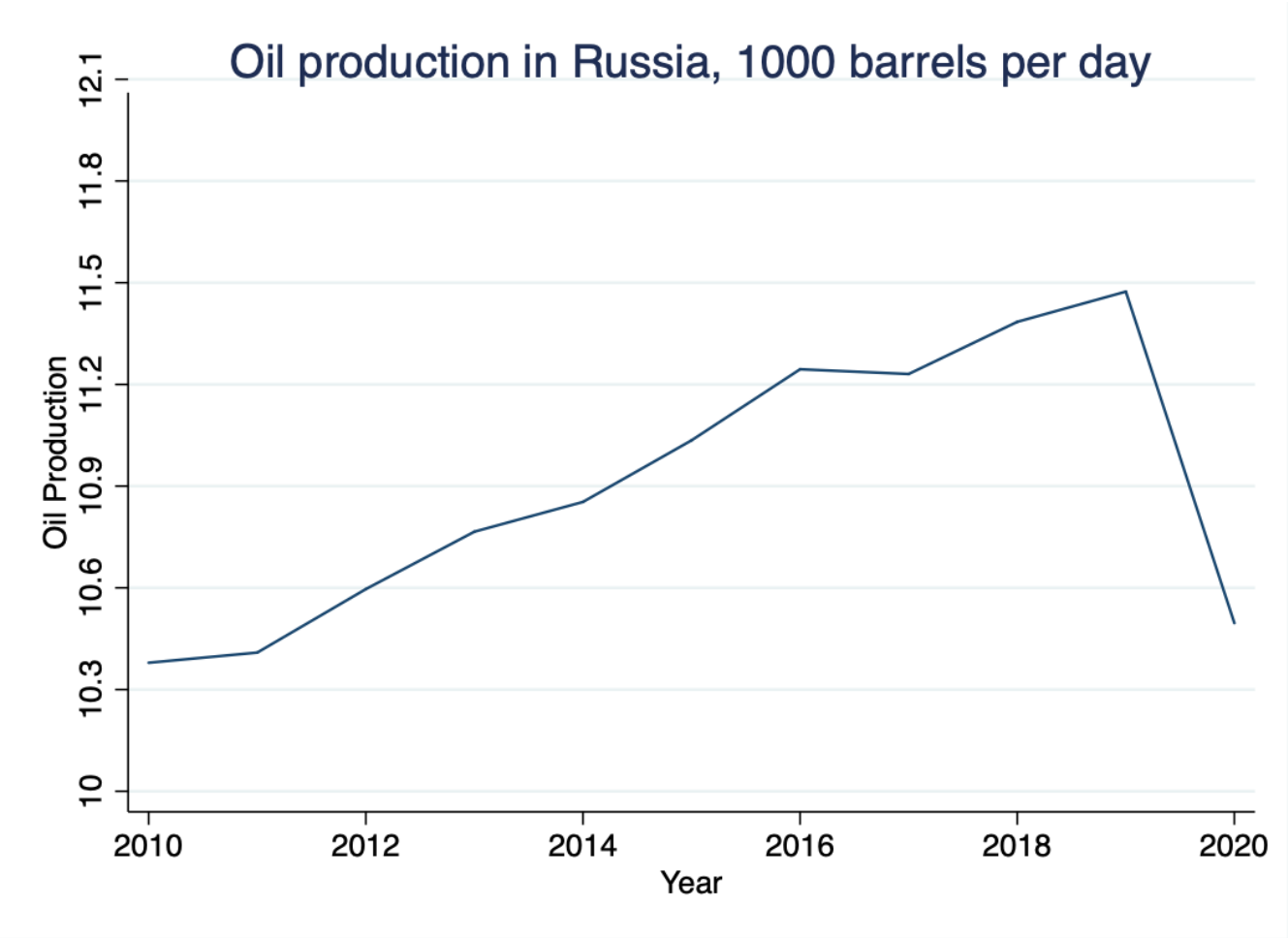

Figure 1: Russian oil production

Thus, the idea of the current paper is to analyze the effect of resource wealth, proxied by oil-dependence, on people well-being both, at the country-level and by regions.

Empirics

Data and Identification

To answer the research question, data on oil production was combined with information on reported happiness (life satisfaction) level.

For the first part, oil dependence is measured as a share of oil rent in GDP (data provided by the World Bank) for 2010-2020 for Russia and is presented in Figure 2.

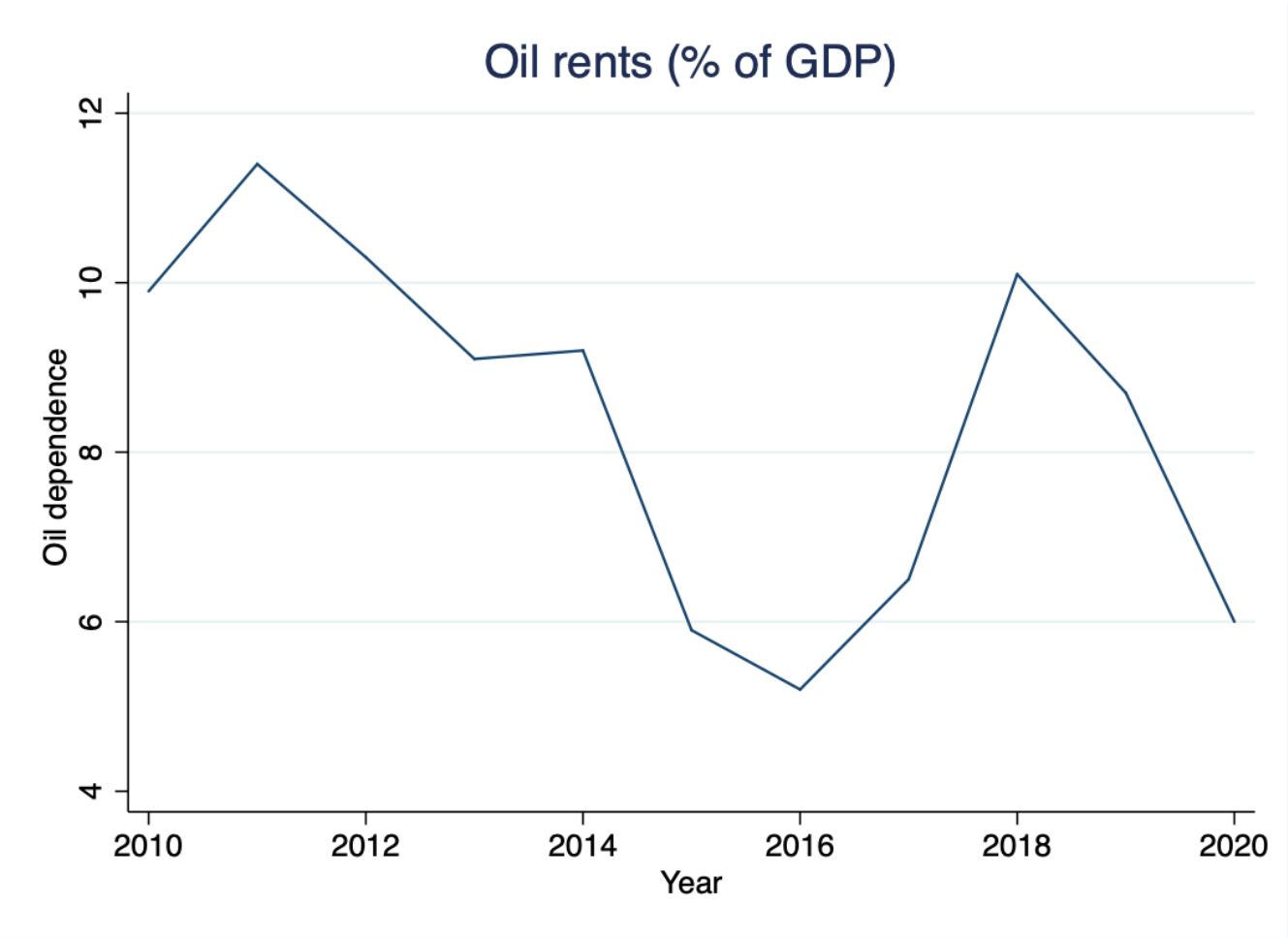

Figure 2: Russian oil production

An important point is that after a gradual decrease in oil rents, there was an increase in 2017. However, in 2019 oil rents started to decline again. During that period the value of export duty was also unstable.

Happiness scores are provided by the Gallup World Poll for the same period. This measure captures average subjective well-being. The main happiness evaluation question asked in the poll is: "Please imagine a ladder, with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?". Additional regressors are income per capita (comes from World Bank), unemployment rate (data from International Labor Organization) and World Governance Indicator (WGI). The latter captures the views on country governance which consists of the traditions and

institutions by which authority in a country is exercised. The WGI measures 6 dimensions: Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law and Control of Corruption. The index is from -2.5 to 2.5, where higher values correspond to better performance.

The identification strategy for the time-series analysis is the following:

$$Happiness_t = Oil\_Dependence_t\beta_1 + X_t'\ \beta_2 + e_t \qquad (a)$$

To answer the second part of the research question and investigate the issue in a more detailed way, data on oil was taken from Fedstat of Russia. At the core of the analysis is household information contained in the World Values Survey in wave 7 (WVS) which covers 2017-2020, but the actual year of survey is 2017. The number of households that completed interview is 1810. The questionnaire includes topics regarding people attitude and perception towards different issues as culture, economics, family, well-being, etc. Samples are representative of all people in the age 18 and older residing within private households in Russia.

The identification strategy for cross-sectional analysis is the following:

$$Life\_satisfaction_{id} = \beta OilDistrict + \mathbf{b}'X_i + \varepsilon_{isdt} \qquad (b)$$

Where *life_satisfaction* is an index from 1 to 10 that tries to capture the level of satisfaction with one's life. The answer of an interviewed person to the question: "All things considered, how satisfied are you with your life as a whole these days?"; with 1 being dissatisfied, 10 – satisfied. Unlike Happiness score discussed above, this index is rather more disaggregated and presented at the level of households. In addition, chosen controls were added based on the data from the survey. Controls are standard: dummies on age groups, gender, employment, marital status, having children, education level and income level.

OilDistrict is the main independent variable of interest. Russia is one of the leading oil and gas producing countries in the world. These fossil fuels are concentrated in some part of the country.

The majority of Russia's oil production is located in West Siberia, as shown in Figure 3.

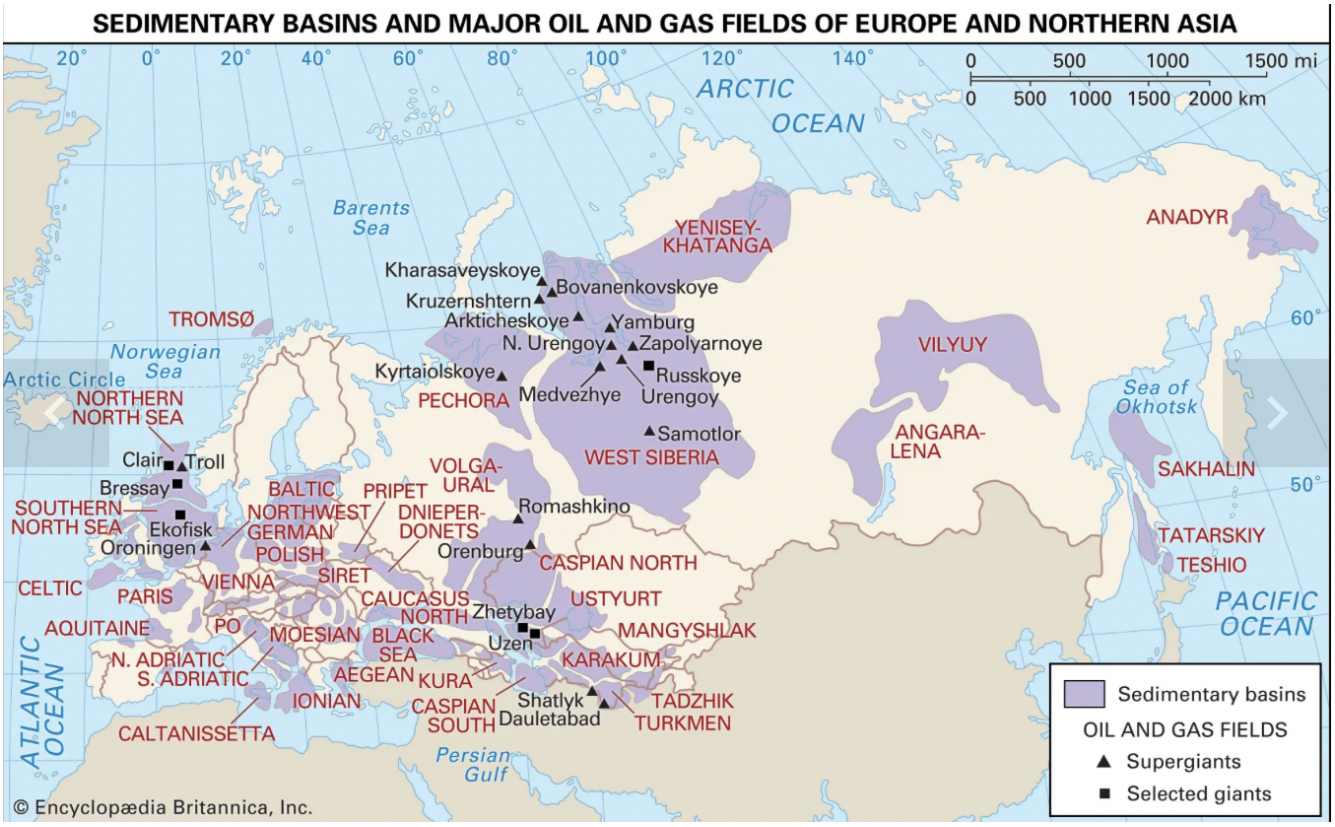

Figure 3: Russian oil and gas basins

Based on official data from The Ministry of Energy of the Russian Federation, in 2017 312.5 million metric tons were produced in that district. Other prominent districts are the Volga-Urals, Timano-Pechora and Eastern Siberia. In total, they represent about 70% of the whole production.

WVS questionnaire provides information on the region of residence of respondents and, thus, it can be matched with data on regions that produce oil. Hence, *OilDistrict* is a dummy variable with 1 being oil-rich district and 0 otherwise. According to Fedstat, in total, 42 out of 76 Russian regions are involved in oil production. However, as was discussed previously, the major production is located in few of them and the rest of the country can easily be considered oil-poor.

Results

For all specifications of regression (a) the effect of oil dependence on happiness score is in line with theoretical predictions and previous empirical research. For the results, please see Table 3. Column (1) presents the results without controls. Then, controls as income, unemployment level, political stability and rule of law are gradually added. The coefficient of *OilDependence* variable is

negative, though it is significant only when controlling for income, rule of law and political stability and for income and political stability only. The results should be taken cautiously, however, it still means that oil rents are negatively linked to improvements in happiness over time. That is, wealth in resources in Russia is associated with lower well-being of its residents.

Interestingly, when trying other 4 indexes out of 6 that constitute WGI (namely, voice accountability, government effectiveness, regulatory quality and control for corruption) the coefficient of *OilDependence* became insignificant. Probably, the impact diminishes, but the issue definitely requires further investigation. Government institutions are of great importance, and, as discussed in literature, may be of greater importance in the resource curse issue.

In addition to the regression (a) with ordinary index, ΔHappiness was regressed on lagged variable of *OilDependence*. The results are not shown to save space since the outcomes are insignificant but follows the same pattern – being resource dependent in previous year is associated with negative changes in happiness for Russia.

When estimating regression (b), it can be noticed that the effect of oil dependence on life satisfaction score is consistent with part (a) analysis. Please see Table 4. Controlling for age, sex, marital status, education, income and unemployment, though cautiously, it is evident that living in a resource rich district is associated with lower life satisfaction. The result survives the inclusion of different controls and varying them. In column 1, there is a control for sex, age and income(with low income level being the reference point). In column 2 unemployment is included. Then, level of education is added. Specification (4) is preferred one since it is more explanatory, compared to other 3. Many limitations remain, but results do not appear to be sensitive to control choices.

Current paper is a simple attempt to explore the role of resource dependence in Russia in its citizens life perception and level of happiness. However, this preliminary and probably not full analysis already indicates the importance of further investigation of such a negative link between resource wealth and country residents' subjective well-being. The "happiness resource curse" exists for Russia and requires further analyses since it has significant policy implications. In addition, one can attempt to unravel whether this negative relationship is oil-specific or expands to other natural resource that are abundant in Russia.

Appendix

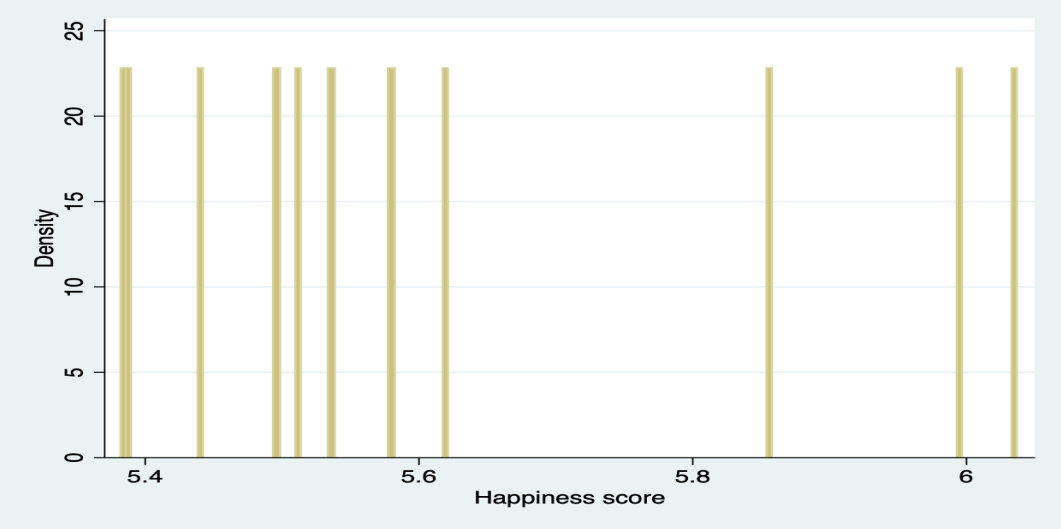

Figure 4: Happiness score distribution over the years

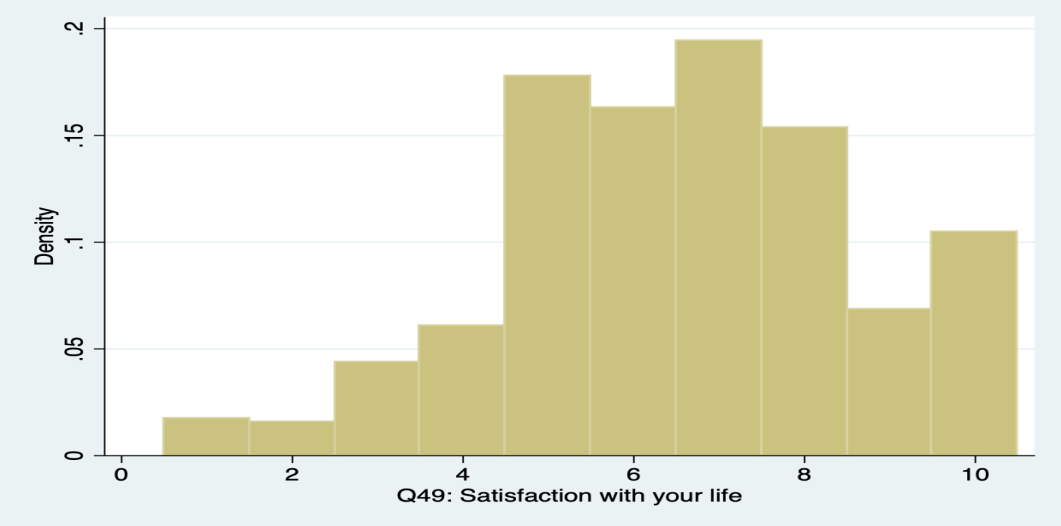

Figure 5: Life satisfaction distribution

Summary statistics								
	mean	sd	count	sum_w	Var	min	max	sum
Year	2015	3.32	11	11	11	2010	2020	22165
Happinessscore	5.6	0.23	11	11	0.1	5.4	6	61.8
OilProduction	10.9	0.38	10	10	0.1	10.4	11.5	109.5
Oildependence	8.4	2.12	11	11	4.5	5.2	11.4	92.3
Incomepercapitaconst_2015	7.6	0.34	11	11	0.1	7.1	8.1	83.8
Unemployment	5.6	0.79	11	11	0.6	4.5	7.4	61.3
delta	-0.0	0.22	10	10	0.0	-0.5	0.3	-0.1
Ln_inc	2.0	0.05	11	11	0.0	2	2.1	22.3
laagged	5.6	0.24	10	10.0	0.1	5.4	6.0	56.4
Voice_account	-1	0.09	11	11	0.0	-1.1	-0.9	-11.4
Gov_Effectiveness	-0.2	0.21	11.0	11.0	0.0	-0.5	0.2	-2.1
Regulatory_quality	-0.4	0.06	11	11	0.0	-0.5	-0.3	-4.6
Rule_of_law	-0.8	0.03	11.0	11.0	0.0	-0.8	-0.7	-8.5
Political_stab	-0.8	0.18	11.0	11.0	0.0	-1.0	-0.5	-8.9
Control_corrup	-0.9	0.1	11	11	0.0	-1.1	-0.8	-10.4
N	11							

Table 1: Summary statistics (a)

Summary statistics								
	mean	sd	count	sum_w	Var	min	max	sum
Year	2017	0.0	1810	1810	0.0	2017	2017	3650770
InterviewID	6.4e+08	522.65	1810	1810	273159.2	6.4e+08	6.4e+08	1.2e+12
Region	643047.7	22.3	1810	1810	497.5	643003	643078	1.2e+09
life_satisfaction	6.5	2.18	1810	1810	4.7	-1	10	11736
Sex	1.6	0.49	1810	1810	0.2	1	2	2874
Age	45.4	17.12	1810	1810	293.2	18	91	82186
Maritalstatus	3	2.12	1810	1810	4.5	-2	6	5356
Children	1.3	1.32	1810	1810	1.7	0.0	9	2391
Education	2.5	0.75	1810	1810	0.6	-1	3	4539
Employment	2.5	1.9	1810	1810	3.6	-2.	7.	4523.
IncomeLvl	1.7	0.82	1810	1810	0.7	-2	3	3070
N	1810							

Table 2: Summary statistics (b)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Happinessscore	Happinessscore	Happinessscore	Happinessscore	Happinessscore
Oildependence	-0.0517	-0.0667	-0.0624	-0.0755*	-0.0733*
	(0.0325)	(0.0407)	(0.0551)	(0.0345)	(0.0377)
Ln_inc		1.240	1.001	2.230	2.219
		(1.895)	(2.763)	(1.666)	(1.785)
Unemployment			-0.0171		
			(0.134)		
Political_stab				-0.735*	-0.751*
				(0.355)	(0.384)
Rule_of_law					-0.690
					(2.236)
Constant	6.056***	3.666	4.210	1.138	0.598
	(0.281)	(3.664)	(5.801)	(3.319)	(3.963)
Observations	11	11	11	11	11
R-squared	0.219	0.259	0.261	0.540	0.547

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3: Happiness and Oil dependence (a)

	(1)	(2)	(3)	(4)
VARIABLES	life_satisfaction	life_satisfaction	life_satisfaction	life_satisfaction
oil_rich	-0.283**	-0.284**	-0.281**	-0.296**
	(0.133)	(0.133)	(0.133)	(0.132)
sex	-0.0424	-0.0327	-0.0325	-0.0447
	(0.105)	(0.106)	(0.106)	(0.111)
Age	-0.0522***	-0.0564***	-0.0563***	-0.0906***
	(0.0174)	(0.0189)	(0.0191)	(0.0210)
age2	0.000435**	0.000490**	0.000491**	0.000800***
	(0.000181)	(0.000204)	(0.000207)	(0.000217)
inc_medium	0.990***	0.979***	0.982***	0.954***
	(0.126)	(0.127)	(0.132)	(0.131)
inc_high	2.070***	2.058***	2.061***	1.986***
	(0.213)	(0.213)	(0.215)	(0.215)
employed		0.0963	0.104	0.0977
		(0.135)	(0.137)	(0.136)
educ_middle			0.0555	0.0851
			(0.197)	(0.196)
educ_high			0.00852	0.0157
			(0.180)	(0.178)
married				0.382***
				(0.113)
children				0.306*
				(0.159)
Constant	7.129***	7.126***	7.091***	7.503***
	(0.425)	(0.424)	(0.446)	(0.455)
Observations	1,712	1,712	1,712	1,712
R-squared	0.091	0.091	0.091	0.103

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4: Life satisfaction and Oil dependence (b)

References

[1] Ali, S., Murshed, S.M., and Papyrakis, E. (2019). Happiness and the Resource Curse. Journal of Happiness Studies, 21, 437-464.

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Note

Data distribution from WVS samples was unbalanced in the sense that number of observations varied by regions. However, oil-rich regions accounted for about 1/5 of total sample. In total, there were some oil-rich regions with high number of observations and oil-poor regions with low number of observations and vice versa, hence, it may be not a point of concern.

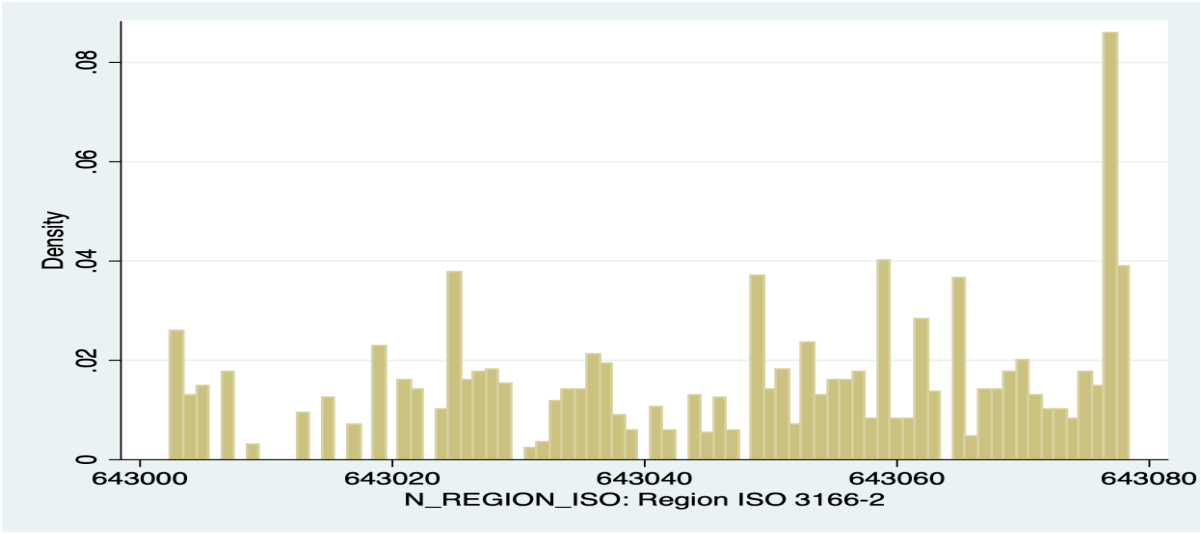

Figure 6: Regions total

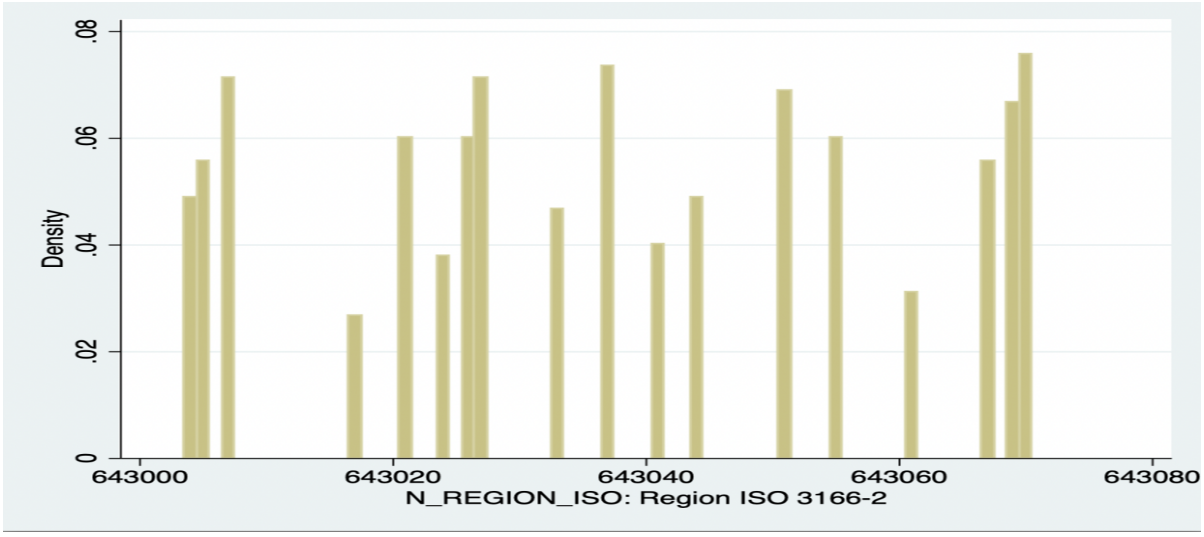

Figure 7: Regions after resampling

Just as some data processing check, I tried regression after dividing sample into oil-rich and oil-poor regions as 1 to 3 with approximately equal number of observations. Roughly speaking, the results (or the pattern) is similar.

	additional
VARIABLES	life_satisfaction
oil_rich	-0.493**
	(0.213)
sex	-0.414*
	(0.234)
Age	-0.0743*
	(0.0395)
age2	0.000545
	(0.000410)
inc_medium	0.740***
	(0.256)
inc_high	1.826***
	(0.465)
employed	-0.128
	(0.251)
educ_middle	0.00263
	(0.346)
educ_high	-0.164
	(0.316)
married	0.649***
	(0.233)
children	0.252
	(0.309)
Constant	7.852***
	(0.865)
Observations	423
R-squared	0.111

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5: Additional after resampling