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DO NATURAL RESOURCE RENTS MATTER FOR POLITICAL STABILITY? AN EMPIRICAL EVIDENCE

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ABSTRACT

This paper empirically tries to examine whether total natural resource rents have effects on political stability across seven different regional groups by utilizing an unbalanced sample containing 158 countries for the period of 1990-2017 in the largest sense. These seven groups are the entire sample, developing countries, OECD countries, East Asian and Pacific countries, Latin American and Caribbean countries, Sub-Saharan countries, and African countries. We also included four more determinants of political stability in our models, which are GDP per capita, democracy, total population, and trade openness levels, in light of the studies in political stability literature. Our results show that an increase in the share of total natural resource rents leads to a decrease in political stability. In addition, this paper also determines that there are significantly positive effects of GDP per capita and democracy levels on political stability in all regions while total population level generally has a negative and statistically significant effect on political stability. Besides, as to the estimation results, trade openness positively and significantly affects political stability almost in all models.

Keywords: Political Stability, Rents, Total Natural Resource Rents.

Jel Codes: D72, P48.

DOĞAL KAYNAK RANTLARI POLİTİK İSTİKRAR İÇİN ÖNEMLİ MİDİR? AMPİRİK BİR KANIT

ÖZET

Bu çalışma; toplam doğal kaynak rantlarının politik istikrar üzerinde etkilere sahip olup olmadığını ampirik olarak açıklamaya odaklanmaktadır. Bu kapsamda; çalışmanın en geniş örnekleminde 1990-2017 dönemi için tüm örneklem olarak ifade edilen 158 ülkenin dengesiz yıllık verilerinin de dâhil olduğu toplamda 7 farklı bölgesel ülke grubu karşılaştırılmıştır. Bu 7 örneklem grubu sırasıyla; tüm örneklem, gelişmekte olan ülkeler, OECD ülkeleri, Doğu Asya ve Pasifik ülkeleri, Latin Amerika ve Karayip ülkeleri, Sub-Saharan ülkeler ve Afrika ülkeleridir. Ayrıca çalışmanın modellerinde politik istikrarın belirleyicileri olarak önceden literatürde kullanılan kişi başına gelir, demokrasi düzeyi, toplam nüfus ve ticari açıklık değişkenleri dâhil edilmiştir. Sonuçlarımıza göre; toplam doğal kaynak rantlarındaki bir artış politik istikrar üzerinde bir azalışa neden olacaktır. Ek olarak; kişi başına gelir ve demokrasi değişkenleri tüm ülke grupları için politik istikrar değişkenleri üzerinde istatistiksel olarak anlamlı ve pozitif etkiye sahip olurken, toplam nüfus düzeyi genel olarak politik istikrar değişkenleri üzerinde negatif ve istatistiksel olarak anlamlı etkiye sahip olmuştur. Son olarak; ticari açıklık düzeyi tüm ülke gruplarında politik istikrar değişkenlerini istatistiksel olarak anlamlı ve pozitif şekilde etkilemiştir.

Anahtar Kelimeler: Politik İstikrar, Rantlar, Toplam Doğal Kaynak Rantları**.**

Jel Kodları: D72, P48.

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1. INTRODUCTION

Although there are various social costs of government policies in a country, such as monopolies, transfers, and regulations, one of the most important costs is competition in the rent-seeking behaviour among potential beneficiaries having real resources (Aidt, 2016: 143). In this competition process, the power in the allocation of public contracts has a key role in rent-seeking behaviour (Auriol et al., 2016: 395). In this regard, to obtain economical earnings from their governments, firms also tend towards rent-seeking behaviours as a strategy for rising gains (Liu et al., 2018: 94). From the public sector perspective, it can be emphasized that the form of a country's political institutions has an important role in determining the density of this interaction between public and private sectors. In this sense, rent-seeking behaviours differ from democratic to autocratic systems. In countries with democratic systems, rent-seeking behaviour is in general seen in the form of the lobbying of legislators, but in autocratic systems, there will be political elites who have privileged positions in terms of military force for rent-seeking behaviours (Kimenyi and Mkabu, 1995: 699).

Generally, it can be said that one of most important risks of excessive power struggles for capturing the natural resources in a country is the risk of causing a collapse in market mechanisms due to a non-competitive economic environment. This may also prevent effective allocation of existing natural resources, implying lower economic activity than the potential of the economy. There has also been a paradox described by the concept of the natural resource curse, although it is possible that natural resource abundance increases economic growth, as examined by Brunnschweiler (2008). For example, according to many papers, resource abundance may negatively affect economic growth in countries (Hodler, 2006; Damette and Seghir, 2018). Indeed, Torvik (2002) provided empirical evidence that the increase in the level of income from natural resource rents is lower than the decrease in the total income because a greater amount of rent-seeking from more natural resources leads to a decrease in efficient entrepreneurs. More natural resources therefore cause a lower level of income. In this regard, we might expect that an economy in this negative process will be caught in a vicious cycle because non-effective allocation of rich natural resources through a non-competitive economic environment creates a decrease in income level due to low economic performance. In turn, the weaker economic performance will cause more struggle for resources and thus more political unrest.

Literature on natural resource abundance has been generally focused on the nexus of corruption and political stability. A negative relationship has been found between these variables. Papers addressing this relationship include those of Canache and Allison (2005), Chao (2015), and Farzanegan and Witthuhn (2017).

In addition, the important role of rents for corruption has been established in the literature with studies finding positive impacts of rents on corruption, such as the works of Ades and Di Tella (1999), and Koyuncu and Unver (2019). On the other hand, power struggles for capturing the natural resources may cause to political unrest. In this regard, our paper investigates the relationship between natural resource rents and political stability levels, and thus we hypothesize that economies with higher natural resource rents are more likely to face with political instability. As explained before, we assume that rent abundance is a significant factor for arising of corrupt activities in a society, and hence higher levels of corrupt activities due to rent abundance may lead to lower levels of political stability. In this sense, our models use two different political stability indicators and employ unbalanced panel data analyses covering the years of 1990-2017 for seven different samples.

To the best of our knowledge, the only paper in the literature analysing the impact of natural resource rents on political stability is of Bjorvatn and Farzanegan (2015). The specific contributions of our work are threefold. First, this paper aims to demonstrate a negative relationship between natural resource rents and political stability. Second, it checks the validity of findings across seven different samples, which are the entire sample, developing countries, OECD countries, East Asian and Pacific countries, Latin American and Caribbean countries, Sub-Saharan countries, and African countries. In this sense, in order to determine the effects of natural resource rents on political stability, we employed two categories of country groups: OECD countries with a lower rent seeking behaviour and a higher political stability level and developing countries, Sub-Saharan countries, African countries, East Asia and Pacific countries and Latin America and Caribbean countries with a higher rent seeking behaviour and decreasing political stability level. Thus, we will find whether this relationship differs significantly among developed and developing countries and between each developing country groups. Third, this paper includes two distinct political stability indicators to check the consistency of the results.

The remainder of the paper is organized as follows. Section 2 discusses the theoretical and empirical literature about natural resource rents and political stability, and the relationship between them. Section 3 focuses on the empirical framework. Section 4 deals with the empirical findings and provides a discussion of the results. Finally, Section 5 concludes and presents some policy implications.

2. LITERATURE REVIEW

2.1. Rent-Seeking Behaviour in Natural Resources

In the economic sense, the proposed definition of rent accepted by the rent-seeking literature is a payment exceeding the value of the resources to a resource owner. It can also be stated that economic rent represents a higher value than the opportunity cost of the resources. Thus, rent-seeking is not rational behaviour to make effective usage of resources. On the contrary, economic rent-seeking behaviours will lead to less efficient allocation of resources and thus provide a lower level of economic development (Tollison, 1982: 577). Comparisons of useful definitions of rent-seeking in the literature can be seen in the papers of Brooks and Heudra (1989: 32-33) and Chen, Feng, Zhu, Han, and Long (2016: 316). The body of existing rent-seeking literature suggests that the most important negative effect of rent-seeking behaviour is to cause both low effectiveness of resource usage and lower economic activity levels than the potential in a country. In this regard, many papers discuss rent-seeking in terms of economic variables and try to explore the impacts of rents on the economic growth and development level in a country (see Caporale and Leirer, 2010; Jovic et al., 2016; Ben-Salha et al., 2018; Abdulahi et al., 2019). In general, many researchers have found that natural resource rents make a significant contribution to economic growth and development and thus more natural resource wealth may promote higher levels of sustained growth and development. On the other hand, according to some papers, natural resource wealth has cursed many economies in which resource usage is not effective (Van der Ploeg, 2011: 366).

To understand the overall literature on natural resource rents, we will focus on a systematic literature review in which total natural resource rents are defined as the sum of oil, natural gas, coal, minerals, and forest rents. In this regard, this section also examines the two main dimensions of the literature, looking at both theoretical discussions and empirical results in terms of all varieties of natural resource rents.

First of all, oil rents create a rentier state in which profits are provided from oil activities rather than from a combination of the country's different resources, including labor, capital, land, and entrepreneurship. Rent-seeking behaviours as a wealth creation strategy, especially in oil-exporting countries, lead to extreme conflicts of interest between the public and private sectors because of concentrating economic interests and political power. This process decelerates economic growth and prevents diversifications of products other than oil in order to improve economic development because it destroys the principle of transparency in a country, implying inefficient economic activities, and thus the so-called natural resource curse arises (Karl, 2007: 663). In this regard, some papers have explored why some resource-rich countries are more successful than other resource-rich countries in terms of high income levels. For instance, Bjorvatn et al., (2012) examined the income effects of oil rents in comparing strong and weak governments. They showed that oil revenues in countries having weak governments are completely wasted resources and have negative effects on income level in 30 oil-rich countries, while there is a positive income effect of oil revenues in countries with stronger government.

Natural gas rents as a second type of rent-seeking behaviour in terms of natural resource rents have received a certain amount of attention. In general, the common view of natural gas development indicates that benefits received from natural gas should be used for the whole of the nation, including the current and the next generations; in other words, the benefits from natural gas should not be used only for a country's elite classes (Kamat et al., 2019: 7). Works on natural gas generally include an individual country as the sample to find the benefits of natural gas rents. For example, Alexeev and Chernyavskiy (2015) demonstrated that regional taxation on natural gas-rich regions in Russia has a more positive effect on economic growth compared to natural gas-poor regions. In this regard, according to Klomp and De Haan (2016), more natural resource rents may lead to two effects for the public and private sectors. First, more natural resource rents will allow policymakers to claim less taxation from taxpayers. Second, in these situations, policymakers may be encouraged to increase public expenditures in the absence of an increased tax burden on taxpayers. In addition, Weber (2012) studied how natural gas production in the US affects local employment levels. Natural gas production was found to be potentially important for employment levels because it provides more employment,

more income, and greater tax revenues, especially in periods of high unemployment and larger public sector deficits.

Coal producers, like other main economic actors in these sectors, are associated with rent-seeking behaviours because of economic, legal, and institutional targets and they generally have significant monopoly power. This monopoly on coal production may originate from high entry barriers and high levels of production or reserve in the coal sector (Atkinson and Kerkvliet, 1986: 417). On the other hand, with coal rents in the free market, coal producers and exporters do not have higher shares of the coal market as compared to monopoly markets; on the contrary, the share of the coal market for coal producers is smaller and thus there are smaller revenues and lower levels of coal rents (Bakaki, 2016: 175-176). Furthermore, areas having higher value added from agricultural and mined products illustrate the concept of economic rent because there are more productive mines and mineral resources when compared to other inefficient lands. In this sense, an increase in rent-seeking behaviour may lead to an increasing marginal cost of production based on the level of competition in the agriculture and mining sector. Thus, the competitive practices of firms are accompanied by irrational economic behaviour because intense competition will cause firms to move into areas with less productive resources (Liefert, 1991: 159). Looking at the literature on coal rents, some works address the relationship between coal rents and economic growth. In addition, many papers focus on the nexus of coal and economic growth. For example, Aktaş (2017) contributed to the literature by focusing on the effect of coal on economic growth in the Turkish economy. Based on causality results, it was concluded that there is bidirectional causality between coal consumption and economic growth in the short and long term in Turkey (see also Kumar and Shahbaz, 2012; Chang et al., 2017). Xu et al., (2018) found that a significant positive relationship exists between coal consumption and economic growth. Furthermore, they estimated that economic growth in China with ceteris paribus laws will be slower in 2020. According to their estimations, this will be valid if the targeted policies and programs about restrictions of coal consumption are applied in China.

The fourth type of rent addressed in the literature is mineral rent. In general, private property in the mining of resources was needed for sustaining the development processes of countries, while natural resources are not private property around the world. Thus, governments have been required to adopt liberal policies, and they tend to attract foreign investors to mine resources. On the other hand, governments may prefer to capture most of the mineral resource rents to improve their economic development levels because mineral resource rents are often in scarce supply. As a result, it can be said that the relationship between the public and private sectors is complicated (Laporte and De Quatrebarbes, 2015: 239). It is therefore important to examine how resource-rich countries are negatively affected by rent-seeking behaviours, institutional weakness, and failing leadership. Rises in the density of rent-seeking behaviours may lead to rentier state activities and thus people move away from the rule of law principles prepared for maintaining order in public and private areas. This process generates slower economic growth rates and more conflict between the public and private sectors because parties will try to capture profitable opportunities, especially in developing countries (Brunnschweiler and Bulte, 2008: 616). It is thought that economic growth does not only depend on natural resource abundance. For example, mineral rents in most economies have been captured by multinational firms. In this situation, we would expect that economic development, especially for developing and less developed economies, would be enhanced. This was not the case, however, and especially not in less developed mineral-exporting countries. It is also important to note that countries having state-owned mines, such as Peru, Bolivia, Mauritania, Zambia, and the Democratic Republic of Congo, have faced economic difficulties (Bomsel, 2018: 7). In this context, Butkiewicz and Yanıkkaya (2010: 313) explained that an economy would face slower economic growth if there are ineffectively used resources due to unproductive activities in the production process as a result of rent-seeking. According to this view, corruption in the public sector with weak institutions is stimulated by economic development through mineral resources, while countries with strong institutions have fewer corrupt activities and higher economic growth because of the efficient usage of mineral resources. Mehlum et al., (2011) showed that there is a strongly negative relationship between abundance in oil and mineral resources and economic growth in the presence of weak institutions in Norway while there is a positive effect of oil and mineral resources on economic growth in the presence of strong institutions.

The fifth pattern of rent-seeking behaviour is that seen in investments in the forest sector. The initial condition for making investments in the forest sector is to create forest rents. In this regard, the benefits of forest rents may increase the contributions to industrial development by providing incentives in industry for the owners of forest resources (Kato, 2005: 151). The capturing of forest rents can be a difficult activity for forest enterprises. In general, forest regions have higher shares of forest rents, but some disadvantages may stop entrepreneurs from entering the forest industry. For instance, high levels of costs including investment, infrastructure, and

skilled labor required in the forest industry may cause lower participation in forest enterprises (Sunderlin et al., 2008: 13-14). Forest rent is defined as the average annual net income from forest regions (Hyytiainen and Tahvonen, 2003: 457), while economic rent is the surplus value between the amount of income and all costs of production (Luckert, 2007: 583). Evidence from the literature on deforestation indicates that higher rent levels from forestry and agriculture are among the important determinants for an increase in the level of deforestation in an economy (see also Brun et al., 2015). In addition, according to Gurgel et al., (2007), land conversion from natural forest areas to agricultural use leads to deforestation.

In the present paper, we focus on total natural resource rents that comprise the sum of oil, natural gas, coal, mineral, and forest rents after investigating all types of rents. Natural resource rent means the total income that is earned from extracting natural resources (Bekun et al., 2019: 1024). We further observed that papers examining the determinants of natural resource rents are quite limited in the resource rent literature. One of the papers on this topic is that of Long et al., (2017). Using longitudinal data from 2005-2013 from 125 less developed countries, they aimed to examine the effects of foreign direct investment (FDI) on natural resource depletion and rents. Their results showed that an increase in FDI inflows causes an increase in natural resource depletion and rents. The other finding of their work was that a rise in natural resource depletion through FDI leads to more dependence on natural resources for economic growth. Regarding the benefits of natural resource rents, however, there are many papers. For example, as estimated by Sun et al., (2019), if governments can optimally transfer incomes (i.e. rents) earned from natural resources to public education spending, they will support economic growth through high-quality education (see also Gerelmaa and Kotani, 2016; Cavalcanti et al., 2011). In this regard, as supported by Hassan et al., (2019), many papers have concluded that natural resources can contribute to economic growth, while some papers have focused on the curse of natural resources, which implies negative effects of natural resources on economic development (Havranek et al., 2016; Zalle, 2018).

2.2. The Characteristics of Political Stability

In the literature about political instability, two different definitions are typically applied. According to Alesina and Perotti (1996: 1205-1206), the first definition pertains to the propensity to observe government change associated with policy uncertainty created by constitutional (i.e. within the law) or unconstitutional (i.e. with coups d'état) interventions, while the second definition of political instability focuses on the socio-political dimension that includes social unrest due to unfavorable economic conditions in a country.

The literature on the nexus between political instability and economic growth can be classified into two categories. The papers in the first category focus directly on economic growth. Gurgul and Lach (2013) investigated the role of political instability on economic growth and found that political instability in the ten Central and Eastern European economies in transition had statistically significant and negative effects on economic growth in the period of 1990-2009. In addition, Devereux and Wen (1998) considered that long-run economic growth is lower in economies with political instability while the ratio of government debt to GDP is higher. The empirical results implied that political instability leads to lower initial capital tax from investors and thus more public debt to finance public expenditures in the future. The second category of papers on political instability comprises papers addressing institutional quality, including topics related to the importance of democratic and autocratic governance on economic growth. Ravetti et al., (2018) tried to examine whether political instability in resource-rich developing countries is an important factor for economic growth with autocratic governance. Their results showed evidence that political instability might cause these resource-rich countries to suffer from lower growth performance in autocratic systems. However, Uddin et al, (2017) indicated that political stability in developing countries with higher institutional quality is very important for economic growth. From this perspective, Feng (1997) discussed the indirect impact of democracy level on economic growth and found that an increase in democracy level leads to a decrease in political instability. This evidence implies that if the level of democracy is sufficiently high, political stability can cause strong economic growth.

2.3. The Effects of Natural Resource Rents on Political Stability

Under normal circumstances, it is expected that resource-poor economies will have lower levels of economic growth than resource-rich economies. On the other hand, the empirical literature about the resource

abundance/economic growth nexus reveals support for the resource curse hypothesis that implies a negative relationship between resource abundance and economic growth for resource-rich economies. In other words, this hypothesis provides information about low economic growth in countries having abundant resources. In this sense, the empirical evidence of Atkinson and Hamilton (2003) contributed to the resource curse hypothesis, while Mehrara and Bangbanpour (2015) found that the resource curse can be turned into a blessing, implying a positive effect of natural resources on economic growth for resource-rich economies in MENA countries. These findings have led researchers to focus more on the causes of the resource curse, looking particularly at the political dimension.

To investigate the reasons behind the negative political effects of natural resource abundance, previous papers in the literature have included the effects of natural resources on corruption. Okada and Samreth (2017) argued that oil rent abundance increases corruption level based on data from 157 countries. Bhattacharyya and Hodler (2010) presented evidence that natural resources feed corruption levels based on a country's quality of democratic institutions. Their primary result showed that when the quality of democratic institutions was not strong, natural resource rents increased corruption levels during the period of 1980-2004 in 124 countries.

In addition to their impact on corruption, natural resource rents are associated with political factors. For instance, they can lead to internal conflicts in the extraction process of natural resources, as found by Welsch (2008). De Soysa and Malmin Binningsbo (2005) further found an empirical relationship between natural resource abundance and political repression, proposing that natural resource rents increase political repression. More specifically, Carreri and Dube (2017) explored whether natural resources influence the behaviour of political institutions in power. They found that larger oil price shocks decrease electoral competition and lead to greater armed group interventions in elections to control resource-rich regions in resource-rich countries. Thus, in this discussion, we highlight the importance of natural resources in explaining the possible relationship between natural resource abundance and political stability.

The literature on natural resources contains many papers in which natural resource abundance is described as a significant indicator for the stability of a political system (Collier and Hoeffler, 2005; Arezki and Brückner, 2011). In this sense, Jensen and Wantchekon (2004) argued that it is more difficult to realize democratic transition from an authoritarian regime in African rentier countries if there are practices such as higher levels of government spending and bad governance. Their results implied that natural resource abundance has a negative effect on democracy level. More specifically, the empirical papers in the literature have shown the importance of rents while analysing the impacts of rents on political stability. For instance, Farzanegan and Witthuhn (2014: 52) suggested that oil rents are a very important determinant for the political stability of a country because they imply a reason for buying peace or war. Farzanegan et al., (2018) demonstrated the direct positive relationship between natural resource rents and internal conflict, explaining that natural resource abundance allows the financing of the expenditures of the group in political power while other groups struggle to capture higher amounts of natural resource rents. In turn, the fighting among groups continues to worsen political stability.

3. EMPIRICAL FRAMEWORK

3.1. The Model

To investigate the nexus between total natural resource rents and political stability, we constructed multivariate fixed time effect models (FE) and multivariate random time effect models (RE) in the light of previous studies.

In this sense, we estimated following multivariate fixed time effect and random time effect models respectively:

$$POLSTABit=(\alpha+\tau t)+\beta 1NATRENTSit+\beta 2GDPERCAPit+\beta 3POLITY2it+\beta 4logPOPit+\beta 5TRADEit+uit$$

$$POLSTABit=\alpha+\beta 1NATRENTSit+\beta 2GDPERCAPit+\beta 3POLITY2it+\beta 4logPOPit+\beta 5TRADEit+(\tau t+uit)$$

where $POLSTAB_{it}$ is political stability score of country i in year t, $NATRENTS_{it}$ is total natural resource rents, $GDPERCAP_{it}$ is the GDP per capita level in each country, $POLITY2_{it}$ shows democracy index of country, POP_{it}

is total population, and $TRADE_{it}$ *is* country's trade openness level. In addition, α represents model's the intercept term, τ_t symbol is the time specific effect, and u_{it} represents the error term.

3.2. The Data

To investigate the relationship between total natural resource rents and political stability, this paper's empirical analysis uses annual data with two different political stability indicators for seven regions in the national level over the period 1990-2017. Seven regions in our samples are entire sample, developing countries, OECD countries, East Asia and Pacific countries, Latin America and Caribbean countries, Sub-Saharan countries, and African countries. In this regard, our largest sample size (i.e., entire sample) consists of 158 countries with 3230 total observations. Appendix A depicts the countries in each region.

In this paper, the dependent variable is political stability ($POLSTAB_{it}$). It also includes two different political stability indicators in order to see the validity of our empirical findings. In addition to the dependent variables, our main determinant variable is total natural resource rents ($NATRENTS_{it}$) while there is a set of control variables which are GDP per capita in current US dollars ($GDPERCAP_{it}$), a proxy for democracy index ($POLITY2_{it}$), the logarithmic form of total population ($\log POP_{it}$), and the ratio of the sum of export and import to GDP as a proxy of trade openness ($TRADE_{it}$). Table 1 reports their measurement and data sources for dependent and independent variables used in the models.

Table 1. The List of Name, Definition, and Source of the Variables

Variable	Measurement	Source
Dependent Variables		
$POLSTAB_1$	Political Stability and Absence of Violence/Terrorism	WDI (WGI)
$POLSTAB_2$	The State Fragility Index*(-1)	http://www.systemicpeace.org/inscrdata.html
Independent Variables		
NATRENTS	Total natural resource rents (% of GDP)	WDI
GDPERCAP	GDP per capita (current US$)	WDI
POLITY2	POLITY2 index	http://www.systemicpeace.org/inscrdata.html
logPOP	The logarithmic form of total population level in a country	WDI
TRADE	Trade (% of GDP)	WDI

Our dependent variable used in this paper is political stability (POLSTAB) and two measures of political stability (i.e., $POLSTAB_1$ and $POLSTAB_2$) are utilized. The dataset of $POLSTAB_1$ was gathered from World Development Indicators of the World Bank while the dataset of $POLSTAB_2$ indicator was collected from INSCR (The Integrated Network for Societal Conflict Research) data page. First, $POLSTAB_1$ variable focuses to measure the value of political stability index in a country in which the values of this index range from -2.5 to 2.5, with a larger score indicating higher political stability level. Second, $POLSTAB_2$ variable generates the state fragility index by combining various dimensions of state fragility, including security, political, economic, and social dimension. This paper includes the state fragility index as a proxy of political stability (see also Marshall and Elzinga-Marshall, 2017: 51). Although the original values of this index vary from 0 (i.e. no fragility) to 25 (i.e. extreme fragility), it is recalculated by multiplying it with -1 to make the evaluation straight and easier. As a result, it is important to pay attention that higher $POLSTAB_1$ and $POLSTAB_2$ values will imply higher political stability level in each country.

Generally, rents are defined as a positive value between revenues and costs of extracting the resources (Bjorvatn and Farzanegan, 2015: 761). In this paper, instead of including different varieties of rents as in the former rent literature, we prefer to use total natural resource rents (NATRENTS) as a main determinant of political stability because it covers all types of rents. In other words, the sum of oil rents, natural gas rents, coal rents, mineral rents, and forest rents gives total natural resource rents in an economy. Also, data for NATRENTS are provided by WDI and it is measured as the percentage share of total natural resource rents in GDP (see also Koyuncu and Lien, 2002). Although the state that controls market activities aims to prevent adverse economic competition for rents and gains between member and non-member groups to government, they will be ready to attend competitive struggle for political control of economic activities. Therefore, this fight among opposite interest groups may leads to political instability (Mbaku and Paul, 1989: 64). As a result, it is expected that there will be a negative relationship between total natural resource rents and political stability variables.

Moreover, the set of control variables used in this paper includes GDPERCAP, POLITY2, logPOP, and TRADE variables.

GDPERCAP is GDP per capita measured in current US dollars as a proxy of the level of economic development in each country and was obtained from the World Development Indicators. When an economy achieves higher levels of GDP per capita, it will be more developed economy and thus may have more stable political environments. This argument implies that GDPERCAP has a positive impact on the level of political stability (Kimenyi and Mbaku, 1993; Arriola, 2009; Farzanegan and Witthuhn, 2014).

In addition, we use POLITY2 score of the INSCR data from Center for Systemic Peace. The POLITY2 variable used in our estimations as an independent variable refers to the level of democracy in an economy. This score is assessed on a scale from 10 to -10, with higher scores representing stronger level of democracy. In other words, a lower democracy score demonstrates a higher autocracy level of country. Political power implies a higher ability in control the national governing system. The elites may monopolize an excessive number of political power than non-elites who are the members of community in a nation. Thus, it is important to note that the level of democracy in a country is directly associated with the relative balance of power between elites and non-elites. Thus, it can be expected that the level of democracy will be higher when the non-elite members have great control over the elite members (Bollen, 1990: 9). If a decrease in the level of democracy as a proxy of institutional quality occurs, it may lead to the emergence of a power struggle between the related parties and thus lower political stability level of country. Blanco and Grier (2009) revealed that democracy level in an economy has a significant and negative effect on political instability. As a result, this paper was expected to have a positive relationship between democracy and political stability. This implies that when a country's democracy level against the autocracy level rises, political stability will increase (see also Asongu and Nwachukwu, 2016).

Another independent variable included in this paper is logPOP variable. To determine whether population level has an empirical effect on political stability, we include the logarithmic form of the total population level in a country. The logPOP data are obtained from WDI. Higher population level for a country may not be good for political stability because larger population may create a bigger demographic burden that causes an increase in the pressure on economic resources (Bjorvatn and Farzanegan, 2015: 764). In addition, the increasing young population through rising population level does not only have economic instability, but also social and political instability. In the today's global world, high unemployment level in the world economies, especially youth unemployment rates, have caused street events by the large amounts of young people of today, thus triggering political instability (Bjorvatn and Farzanegan, 2013: 337) (see also Farzanegan and Witthuhn, 2014). Steinward (2015) also empirically confirmed that population level in an economy is negatively and significantly associated with political stability level. As a result, an increase in logPOP variable is expected to produce a decrease in political stability.

Finally, we include a trade variable of independent variables in this paper, based on existing literature on the determinants of political stability or instability. In other words, our final independent variable is TRADE that indicates a country's total exports plus imports as a share of GDP from the WDI. This variable implies how opened or integrated a country into world economy (Magee and Massoud, 2011: 62). Therefore, we investigate the long run effects of economic openness on political stability because TRADE variable refers a country's the level of integration with world economies. When looking at Neoclassical thought, the long-term effects of trade openness will be positive on economic welfare. According to them, more open economies have more comparative advantages because of increasing efficient through the division of labor between countries, and

thus having more economic activities, such as production and consumption, than the closed economies (Bussmann et al., 2006: 51). Thus, a high level of trade openness is expected to reduce the risk of political instability because economic well-being contributes unity of groups in the community with governments. On the other hand, according to opposites of globalization, it can result in the destabilization policies because if a state applies socially painful reforms to transform country from the closed economy to the open economy, the risk of increased political instability may emerge from the aim of economic openness (Bussmann et al., 2006: 50). In this sense, in the paper of Chao (2015), higher openness to trade was found to increase political stability while the paper of Magee and Massoud (2011) provide the findings that the level of trade openness has both of positive and negative effects on internal conflict. Thus, we expect the effect of trade openness on political stability to be ambiguous.

4. EMPIRICAL FINDINGS AND THEIR DISCUSSIONS

4.1. Panel Unit Root Test

Before estimating our models, we first check the stationarity level of the variables. As indicated by the panel unit root test results in Table 2, GDPERCAP variable is stationary in first difference (i.e., I(1)) whereas remaining variables are stationary in levels (i.e., I(0)). In order to avoid potential spurious regression problem in our analyses, we utilize the stationary forms of the variables. In other words, we use the first difference of GDPERCAP variable and levels of the other variables in our estimations.

Table 2. Panel Unit Root Test (H_0: Unit Root, i.e. Nonstationary)

		Level		First Difference		Result
		Test-Stat.	P-value	Test-Stat.	P-value	
$POLSTAB_1$	Levin, Lin & Chu Test	-12.7473	0.0000	-	-	I(0)
	Im, Pesaran and Shin Test	-9.3514	0.0000	-	-	I(0)
$POLSTAB_2$	Levin, Lin & Chu Test	-6.5541	0.0000	-	-	I(0)
	Im, Pesaran and Shin Test	-2.4640	0.0069	-	-	I(0)
NATRENTS	Levin, Lin & Chu Test	-14.5069	0.0000	-	-	I(0)
	Im, Pesaran and Shin Test	-12.4642	0.0000	-	-	I(0)
GDPERCAP	Levin, Lin & Chu Test	13.5522	1.0000	-41.9712	0.0000	I(1)
	Im, Pesaran and Shin Test	20.9420	1.0000	-37.7110	0.0000	I(1)
POLITY2	Levin, Lin & Chu Test	-9.4443	0.0000	-	-	I(0)
	Im, Pesaran and Shin Test	-8.9317	0.0000	-	-	I(0)
logPOP	Levin, Lin & Chu Test	-76.8544	0.0000	-	-	I(0)
	Im, Pesaran and Shin Test	-61.9730	0.0000	-	-	I(0)
TRADE	Levin, Lin & Chu Test	-5.9132	0.0000	-	-	I(0)
	Im, Pesaran and Shin Test	-4.7466	0.0000	-	-	I(0)

4.2. Panel Data Analysis Findings

To investigate the impact of total natural resources rents on political stability in this paper, we employ panel data analysis by differentiating seven regional country groups. Also, we implement the Hausman specification test to decide between the fixed effects model (FE) and the random effects model (RE) and decisions are made at the 1% level. Table 3 and Table 4 display the regression results of the multivariate models and report the results separately for $POLSTAB_1$ and $POLSTAB_2$ dependent variables. Hence, we estimated fourteen models to confirm the relationship between the total natural resource rents and political stability.

Estimation results for $POLSTAB_1$ dependent variable suggest a highly negative relationship between the natural resource rents and political stability. As seen from the Table 3, we suggest that the estimated coefficients of the NATRENTS are negative and significant at the 1% level in model 1, 2, 5, 6, and 7. On the other hand, the coefficient has the expected sign but is not significant in model 3, (i.e. sample of OECD countries) while NATRENTS has negative and statistically significant effect at the 5% in model 4. Meantime, the impact of logPOP variable on $POLSTAB_1$ is negative and statistically significant at the 1% level in all models. When looking at the results of GDPERCAP, its coefficients, as expected, are positive and statistically significant, at the significance level ranging from 1% to 5% levels in all models. Table 3 indicates that the estimated coefficients of POLITY2 variable in all models are also statistically significant at the 1% level and possess positive effect on $POLSTAB_1$ variable, except the sample of developing countries. Finally, the results show that there exist positive and statistically significant at the 1% level relationship between TRADE and $POLSTAB_1$ variables in all models except Model 3 in which the association is insignificant and Model 5 in which we identified a negative impact at 1% level.

Table 3. Multivariate Estimation Results for $POLSTAB_1$

	Dependent Variable: $POLSTAB_1$						
	Entire Sample	**Developing Countries**	**OECD Countries**	**East Asia and Pacific Countries**	**Latin America and Caribbean Countries**	**Sub-Saharan Countries**	**African Countries**
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
CONSTANT	**1.9912*****	**2.8545*****	**-0.4894**	**2.4029*****	**3.9411*****	**2.9026*****	**2.8885*****
	(0.2128)	(0.2259)	(0.3480)	(0.5132)	(0.6195)	(0.3874)	(0.3716)
NATRENTS	**-0.0097*****	**-0.0093*****	**-0.0043**	**-0.0128****	**-0.0216*****	**-0.0249*****	**-0.0211*****
	(0.0015)	(0.0016)	(0.0058)	(0.0061)	(0.0054)	(0.0026)	(0.0023)
GDPERCAP	**0.00004*****	**0.00003*****	**0.000009****	**0.0001****	**0.0001****	**0.0001****	**0.0001*****
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
POLITY2	**0.0313*****	**0.00003**	**0.3568*****	**0.0334*****	**0.0265*****	**0.0306*****	**0.0199*****
	(0.0031)	(0.0034)	(0.0150)	(0.0073)	(0.0088)	(0.0060)	(0.0054)
logPOP	**-0.1590*****	**-0.2177*****	**-0.1371*****	**-0.1554*****	**-0.2438*****	**-0.2297*****	**-0.2289*****
	(0.0119)	(0.0127)	(0.0172)	(0.0271)	(0.0342)	(0.0226)	(0.0213)
TRADE	**0.0045*****	**0.0045*****	**0.0006**	**0.0022*****	**-0.0055*****	**0.0074*****	**0.0073*****
	(0.0004)	(0.0004)	(0.0004)	(0.0006)	(0.0014)	(0.0010)	(0.0009)
Num. of Obs.	*2240*	*1465*	*525*	*256*	*332*	*611*	*684*
Num. of Countries	*158*	*106*	*35*	*18*	*23*	*44*	*50*
R-square	*0.2940*	*0.3038*	*0.6077*	*0.3105*	*0.2016*	*0.4361*	*0.3852*
F-statistic	*186.0715*	*127.3167*	*160.7838*	*22.5188*	*16.4663*	*93.5739*	*84.9668*
Prob(F-statistic)	*0.0000*	*0.0000*	*0.0000*	*0.0000*	*0.0000*	*0.0000*	*0.0000*
Hausman Stat.	*9.9835*	*2.9058*	*8.3066*	*6.7685*	*14.7851*	*4.0242*	*7.4385*
Prob(Hausman Stat.)	*0.0757*	*0.7145*	*0.1401*	*0.2384*	*0.0113*	*0.5459*	*0.1900*
Selected Model	*RE*	*RE*	*RE*	*RE*	*RE*	*RE*	*RE*

[a] (***), (**) and (*) show significance at the 1%, 5% and 10% levels, respectively.
[b] Standard errors are in parenthesis.
[c] RE means random effects model.

The estimation results of $POLSTAB_2$ are reported in Table 4. According to the findings, in all models in Table 4, the effect of NATRENTS on $POLSTAB_2$ variable is negative and statistically significant at the 1% level. In addition, with the exception of model 10, the observed results in Table 4 confirm that the estimated coefficients

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of GDPERCAP are positive and statistically significant for the case of the $POLSTAB_2$ in each model. The coefficient of POLITY2 variable demonstrates that democracy variable has a positive impact on political stability and this nexus is statistically significant at the 1% level in all models. The estimation results of logPOP variable hint that our empirical support for the negative effect of population on political stability is weak since we have mix results for the coefficient of logPOP variable. For instance, its coefficient is negative and statistically significant at the 1% level in the case of developing, Sub-Saharan, and African countries whereas the estimated coefficient of logPOP variable in East Asia Pacific countries is positive and significant at the 10% level. On the other hand, it is insignificant for entire sample, OECD, and Latin America and Caribbean countries, namely, in model 8, 10, 12. Finally, the coefficients on the TRADE variable in Table 4 are similar to those of logPOP variable because it has also positive and negative coefficients. For instance, although TRADE variable has a statistically significant (at the 10% level) negative effect on $POLSTAB_2$ dependent variable for the sample of Latin America and Caribbean countries, the coefficients between TRADE and $POLSTAB_2$ are positive and statistically significant at the 1% levels in the remaining six models.

Table 4. Multivariate Estimation Results for $POLSTAB_2$

	Dependent Variable: $POLSTAB_2$						
	Entire Sample	**Developing Countries**	**OECD Countries**	**East Asia and Pacific Countries**	**Latin America and Caribbean Countries**	**Sub-Saharan Countries**	**African Countries**
	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14
CONSTANT	**-10.9009****	**-8.6979*****	**-14.2666****	**-13.7993*****	**-5.1882**	**-2.9616***	**-8.0808*****
	(1.1646)	(1.2543)	(1.0122)	(2.3329)	(3.3553)	(1.6251)	(1.7919)
NATRENTS	**-0.1279*****	**-0.1154*****	**-0.1129*****	**-0.2289*****	**-0.1156*****	**-0.1735*****	**-0.1878*****
	(0.0090)	(0.0094)	(0.0190)	(0.0297)	(0.0318)	(0.0107)	(0.0110)
GDPERCAP	**0.0004*****	**0.0004*****	**-0.0000005**	**0.0003****	**0.0007****	**0.0007*****	**0.0008*****
	(0.0000)	(0.0001)	(0.0000)	(0.0001)	(0.0003)	(0.0002)	(0.0002)
POLITY2	**0.3499*****	**0.1229*****	**1.3973*****	**0.4228*****	**0.3562*****	**0.2712*****	**0.1057*****
	(0.0165)	(0.0187)	(0.0428)	(0.0343)	(0.0473)	(0.0242)	(0.0257)
logPOP	**-0.0888**	**-0.3128*****	**-0.0394**	**0.2193***	**-0.2339**	**-0.9206*****	**-0.5768*****
	(0.0654)	(0.0708)	(0.0504)	(0.1234)	(0.1878)	(0.0950)	(0.1033)
TRADE	**0.0378*****	**0.0409*****	**0.0057*****	**0.0209*****	**-0.0133***	**0.0625*****	**0.0736*****
	(0.0021)	(0.0024)	(0.0014)	(0.0030)	(0.0068)	(0.0042)	(0.0046)
Num. of Obs.	*3230*	*2113*	*766*	*376*	*486*	*873*	*981*
Num. of Countries	*158*	*106*	*35*	*18*	*23*	*44*	*50*
R-square	*0.3791*	*0.2690*	*0.6141*	*0.4577*	*0.2259*	*0.5951*	*0.4578*
F-statistic	*75.2157*	*29.5312*	*241.9076*	*11.3311*	*5.1530*	*47.8171*	*30.9793*
Prob(F-statistic)	*0.0000*	*0.0000*	*0.0000*	*0.0000*	*0.0000*	*0.0000*	*0.0000*
Hausman Stat.	*52.4376*	*79.4342*	*13.2642*	*17.6596*	*44.2825*	*52.9009*	*43.2108*
Prob(Hausman Stat.)	*0.0000*	*0.0000*	*0.0210*	*0.0034*	*0.0000*	*0.0000*	*0.0000*
Selected Model	*FE*	*FE*	*RE*	*FE*	*FE*	*FE*	*FE*

[a] (***), (**) and (*) show significance at the 1%, 5% and 10% levels, respectively.

[b] Standard errors are in parenthesis.

[c] RE and FE mean random effects model and fixed effects model, respectively.

5. CONCLUSION

In this empirical paper, we examined the nexus of total natural resource rents and political stability, covering the period from 1990-2017. Also, it includes four more determinants of political stability, such as GDP per capita, democracy, total population, and trade openness level in parallel to the studies in the literature. We found a strong relationship between total natural resource rents and political stability. In this regard, the impacts of total natural resource rents on political stability were determined to be negative and significant. In other words, according to the findings, the abundance of total natural resources is one of the reasons of political instability in a country. These results are different compared to those of Bjorvatn and Farzanegan (2015), who presented that the impact of total natural resource is positive on political stability. Thus, the main contribution of this paper is that it firstly provides an opposite result relative to existing results in the literature. Secondly, it can shed light on the literature in the natural resources-political stability nexus when we explore differences between regions because it can imply different results in terms of region-specific characteristics. In this sense, the results of our analyses show that the negative association between the total resource abundance and political stability in each region or country groups remains unchanged.

In addition, when looking on the findings of four more determinants of political stability, our results are consistent with political stability literature. In this regard, an increase in the GDPERCAP variable as a proxy of the level of economic development leads to more stable political environment. Also, the higher levels of democracy in an economy cause political stability while POP variable has a negative impact on the level of political stability. Finally, higher trade openness is associated with increase in levels of political stability.

In sum, it is very important to note that the fighting in controlling natural resources for these regions leads to an increased political instability. At this point, factors in determining the struggle for controlling natural resources should be investigated in further papers.

APPENDIX A: Regional Groups and Countries in the Regions

Regions and Countries

Entire Sample (158 Countries)

Afghanistan, Albania, Algeria, Angola, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahrain, Bangladesh, Belarus, Belgium, Benin, Bhutan, Bolivia, Botswana, Brazil, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Cape Verde, Central African Republic, Chad, Chile, China, Colombia, Comoros, Congo, Congo Democratic Republic, Costa Rica, Croatia, Cuba, Cyprus, Czech Republic, Denmark, Djibouti, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, Gabon, Gambia, Georgia, Germany, Ghana, Greece, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hungary, India, Indonesia, Iran, Iraq, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Korea Republic, Kuwait, Kyrgyzstan, Lao P.D.R, Latvia, Lebanon, Lesotho, Liberia, Libya, Lithuania, Luxembourg, Madagascar, Malawi, Malaysia, Mali, Mauritania, Mauritius, Mexico, Moldova, Mongolia, Montenegro, Morocco, Mozambique, Myanmar, Namibia, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Romania, Russia, Rwanda, Saudi Arabia, Senegal, Serbia, Sierra Leone, Singapore, Slovak Republic, Slovenia, Solomon Islands, South Africa, Spain, Sri Lanka, Sudan, Suriname, Sweden, Switzerland, Syria, TFYR Macedonia, Tajikistan, Tanzania, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Uganda, Ukraine, United Arab Emirates, United Kingdom, United States, Uruguay, Uzbekistan, Venezuela, Vietnam, Yemen, Zambia, and Zimbabwe.

Developing Countries (106 Countries)

Afghanistan, Algeria, Angola, Argentina, Bahrain, Bangladesh, Benin, Bhutan, Bolivia, Botswana, Brazil, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Chile, China, Colombia, Comoros, Congo, Congo Democratic Republic, Costa Rica, Cuba, Djibouti, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Ethiopia, Fiji, Gabon, Gambia, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, India, Indonesia, Iran, Iraq, Jamaica, Jordan, Kenya, Korea Republic, Kuwait, Lao P.D.R., Lebanon, Lesotho, Liberia, Libya, Madagascar, Malawi, Malaysia, Mali, Mauritania, Mauritius, Mexico, Mongolia, Morocco, Mozambique, Myanmar, Namibia, Nepal, Nicaragua, Niger, Nigeria, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Qatar, Rwanda, Saudi Arabia,

Senegal, Sierra Leone, Singapore, Solomon Islands, Somalia, South Africa, Sri Lanka, Sudan, Suriname, Tanzania, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkey, Uganda, United Arab Emirates, Uruguay, Venezuela, Vietnam, Zambia, and Zimbabwe.

OECD Countries (35 Countries)

Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Japan, Korea Republic, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, and United States.

East Asia and Pacific Countries (18 Countries)

Australia, Cambodia, China, Fiji, Indonesia, Japan, Korea Republic, Lao P.D.R., Malaysia, Mongolia, Myanmar, New Zealand, Papua New Guinea, Philippines, Singapore, Solomon Islands, Thailand, and Vietnam.

Latin America and Caribbean Countries (23 Countries)

Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Uruguay, and Venezuela.

Sub-Saharan Countries (44 Countries)

Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Congo Democratic Republic, Cote d'lvoire, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, South Africa, Sudan, Tanzania, Togo, Uganda, Zambia, and Zimbabwe.

African Countries (50 Countries)

Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Congo Democratic Republic, Cote d'lvoire, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, South Africa, Sudan, Tanzania, Togo, Tunisia, Uganda, Zambia, and Zimbabwe.

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