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## **Determinant Factors of Remittances in Albania**

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### **Abstract**

Over the years, remittances have attracted the attention of researchers, policy-makers, civil society representatives and the international community due to the variation of their flows each year and more. The main purpose of this paper is to reflect some of the main macroeconomic and macroeconomic remittances in developing countries. In the case of Albania, the paper aims to present the impacts of income from remittances with well-being and the decisions of Albanians regarding the use of these revenues. In this paper we will elaborate in detail the factors that determine the remittances of Albanian emigrants. The model that results best in showing the link between remittances and their determining factors is the linear dummy independent model. The source of information is the World Economic Outlook. Data on remittances are obtained from the Balance of Payments of the Bank of Albania and include the monetary transfers of emigrants who are employed in the host country and are considered resident in this country's economy

The data are in time series and I have seen the impact of these factors on the performance of the years, respectively for the last 30 years. And we have come to the conclusion that the GDP factor is the factor that has the greatest impact on the remittances of Albanian emigrants. Unlike other economic issues, on the issue of remittances in Albania the studies undertaken are scarce, and the study of this field is a innovation for our country. The results of the work indicate that remittances are an important item of the Balance of Payments that affects the macroeconomic stability of the beneficiary country and also contributes to increasing household consumption, reducing poverty and improving the level of living.

**Keywords:** unemployment, GDP, emigration, developing countries, remittances, consumption, income, balance of payments.

## **Introduction**

Almost 12 years after the start of the transition, about 1/5 of Albanians or over 600,000 people, mostly young people, have migrated abroad, especially in Greece and Italy. While internal migration has included hundreds of thousands more. One of the most important aspects of this phenomenon, which has a great economic and social impact, is remittances.

Remittances are an important source of income for households, especially for developing-country families. Ever since the labor market was internationalized and became part of the globalization process as many other markets, and people could move freely from one place to another to work, the importance and attention paid to remittances has been growing ever. What is to be noted is that the growth rate of remittances has been stable even during the crisis years compared to foreign direct investment.

Referring to the most recent official data, it was estimated that about 1.2 million Albanians lived in emigration in 2008, accounting for a significant part of the Albanian population (about 25%). Out of them, 85% live and work in Greece and Italy, while the rest in Western Europe and the United States.

According to official data of the Bank of Albania, remittances to Albania have increased at an average annual rate of 5.6% over the last 15 years. The last five years show a decline in remittances from 952 million euros in 2007 to half in the years 2012-2013.

## **Method**

The goal of this paper is to identify the determinants of remittances of Albanian emigrants. The data used in the search are secondary and taken from the Bank of Albania, World Bank and World Economy Outlook (WEO). This data is a series of times, for 30 years. Specifically, data on GDP and Albanian population levels as well as GDP, unemployment rate, interest rate and Greek population level were obtained.

I used econometric modeling to measure the statistical relevance of the link and factor influence. The model that results best in showing the link between remittances and their determinants is the linear model with independent variables.

Official data on remittances include transfers sent via formal channels (commercial banks or money transfer agencies) and informal channels (cash at border points). Therefore, in this study it is considered that the methodology of measuring remittances together with their dynamic performance and the chaotic state of Albanian emigration may present limitations that need to be considered, as it may affect its empirical findings.

## **Main problem**

Through this research I want to throw the first steps in clarifying this little problem beating in the case of Albania. It is known that this issue is less addressed with regard to remittance determinants. One of the reasons why I chose to study this phenomenon is that remittances constitute one of the sources of income in our country. Relying on statistics that have resulted in larger shipments have from our neighboring country Greece. Also, given that Greece is affected by the global economic crisis, will analyze how this phenomenon has affected shipments of emigrants.

### **• The impact of the Greek crisis on remittances**

Greek crisis brought less revenue coming from Albanian emigrants, the deterioration of the status of migrant workers, while a number of enterprises, confection type, that have activity in southeast and southern Albania lost market in Greece.

Consequently, the production volume decreased by reducing the number of employees. During 2010, the Greek financial and economic crisis led to Albanian immigrants live and work in Greece to lose confidence in the Greek banking system.

Under this panic and insecurity, most immigrants have seen Albania as safer. The fear and the collapse of Greek banks made in our country come to EUR 514 million as remittances. The measures taken by the Greek government did not affect imports alone. They had a direct impact on Albanian emigrants working and living in Greece. The resultant is that Albanian immigrants remain less savings to send families here, and to develop a business or buy property in Albania. Below is a graph of the main countries from which we have the largest incomes. Albanian economist Adrian Civici, says it is difficult to estimate the number of returnees, because many are not fully back, they come and go. In many cases migrants return to their villages that they may have left 15 years ago to see if it is possible to find a job, or even work in agriculture. Seeing both as impossible, they return to Greece. Based on the chart and seeing that the largest income is from the Greek state I have done exactly these research subject for remittances coming from Albanian emigrants.

#### • Variables

The research question is: determination of key macroeconomic variables to consider as potential factors remittances.

Following the literature on macroeconomic remittance determinants, we have classified the variables that could potentially affect the behavior of remittances in three categories:

- The variables that represent the macroeconomic situation of the country of origin;
- The variables that represent the macroeconomic situation of the host country;
- The variables that capture the links between the host country and the country of origin.

#### **I. Economic variables of the country of origin**

The economic activity of the country of origin used in many studies as a proxy to reflect the employment opportunities and generating income of immigrant families (Sayan and Tekin-Koru, 2007; El-Sakka, 2005; and Eric Lüeth and Marta- Ruiz Arranz, 2007). However, the effect of GDP on remittances depends on the remittance remittances prevailing in Albanian emigrants. If altruism is the main push, negative shocks to GDP in the country of origin will encourage immigrants to send more remittances. But if remittances are sent for investment purposes, negative shocks in the country's origin production will reflect worsening investment opportunities and consequently lead to a reduction in remittances. In this model, we choose as variables of representatives of the origin country: GDP, population and level of interest rates.

#### **II. The host country's economic variables**

To represent the host country we use Greece's unemployment rate. To build the index, the weights that give the unemployment rate is based on the remittances that come from this country. Previous studies show that the GDP of the host country is also an important determinant of remittances because it translates to greater labor demand, higher wages, higher incomes and consequently higher shipments. (Higgins et al., 2004).

In this topic, the host country's representative variables are: the unemployment rate, the gross domestic product, the interest rate as well as the host country. Data for Greece are taken from World Economic Outlook.

### **III.Economic variables of the host country and place of origin**

To represent the connection between the host country and country of origin, use nominal exchange rate ALL / EUR, by the Bank of Albania.

#### **• Model**

The central hypothesis of this research, which I will try to evaluate is: Remittances of Albanian emigrants are determined by the factors of the host country (Greece) and the factors of the country of origin (Albania).

Concepts and their measurement:

- Remittances are incoming transfers from outside, which constitute one of the main economic engines. It is the variable we have taken in the study in the form of a dependent variables.
- Gross domestic product is the market value of all final goods and services produced in one country over a given period of time. This information I provided for 30 years by the World Economic Outlook and the data are in millions. This factors've seen in the form of the independent variable and in the context of the two countries, namely Greece and Albania
- The unemployment rate represents the percentage of unemployed from the entire capacity of the workforce in a certain area within a country or across the country. So, this economic indicator shows the level of untapped labor force in economic processes in a geographic area. This concept will bring as the independent variable, measuring it with Greece's unemployment rate.
- The level of population is another factor that plays an important role in the determinants of remittances. I have taken into account the total number of population for both countries.
- The interest rate is the regular cost that the lender decides on the borrowed funds. This is usually expressed as a percentage of the loan amount, and is calculated on an annual basis. Interest rate inevitably affects the amount of the monthly installments to borrowers. In the model it is introduced in the form of an independent variable as provided for Greece.
- Dummy has been introduced to the model as an independent variable to show how the crises and the general messes of 1997 had affected. To see this effect we made a breakdown of the years, before 2000 we marked 0 and after 2000 I marked it with 1. The model is in the form of an independent variable.

#### **• Model with all factors**

The model used to determine the Remittances factors is linear model with independent dummy. This model best expresses this connection. I inserted the variable model with independent dummy to show structural differences between the two periods, before 2000 and after 2000. I have chosen this period because of two major events, the Albanian transition in 1997-1998 and change monetary crisis that occurred in the EU countries, including Greece (the introduction of the Euro). The following model contains all the determinants of remittances.

The model is:

$$Y = 0.0025 * X + 0.016 * Z + 2.62 * P - 24584456 * L + 261,31 * M - 700,86 * K - 20637465 * I + e$$

P - Dummy, L - Greek unemployment rate, M - Greek population, K - Albanian population, I - Interest rate, e - Remaining terms.

Based on the above probabilities, the model turns out to be important as well as the majority of coefficients, indicating that there is multicollinearity, to eliminate it we seek a better model.

Table 4 - Model with all variables.

Variable	Coefficien	Std. Error	t-	Prob.
Greek Gdp	0.002664	0.000698	3.814317	0.0009
Albanian Gdp	0.016471	0.006906	2.384921	0.0261
Dummy	2.62E+08	1.30E+08	2.018886	0.0559
Unemployment rate rrrrate	-24584456	9164176.	-2.682670	0.0136
Greek population	261.3114	130.4865	2.002594	0.0577
Alb. population	-700.8577	366.9467	-1.909971	0.0693
Interest rate	-20637465	30764432	-0.670822	0.5093
R-squared	0.895596	Mean	dependent	7.67E+08
Adjusted R-squared	0.867123	S.D.	dependent	3.84E+08
S.E. of regression	1.40E+08	Akaike	info	10.55882
Sum squared resid	4.31E+17	Schwarz	criterion	40.88885
Log likelihood	-581.1028	F-statistic		31.45340
Durbin-Watson stat	2.213211	Prob(F-statistic)		0.000000

## Results

Testing the importance of the model is made by the Fisher test, which we mark with F. The hypotheses to be tested are:

Basic hypothesis (Ho): The model is not important.

The alternative hypothesis (H1): The model is important.

We claim that the model is important because by comparing the value of Prob (F-statistic) with the 5% level, we will notice that  $0.00\% < 5\%$  this indicates that our model is important at very good level, as it is very less than 5%. Of particular importance when discussing the quality of the model gets the determination coefficient, which expresses the extent of the variation of remittances explained by the variation of factors taken into consideration in the composite in the form of the model being considered. In our case it is 0.893461. So, 89% of the variance of remittances is determined by the Greek GDP, Albanian GDP, Greek unemployment rate, Greek and Albanian population. While  $R = 89.3\%$  is very close to 1, then we can say that there is a strong link between the additive and the independent variables.

## The Test of heteros

The E-views program performs White's test in two options, with and without cross-section. The test for the presence of heterositi free cross-section follows this procedure steps:

1) The hypothesis is formulated:

The hypothesis (Ho): Heterosi is not present.

The alternative hypothesis (H1): Heterosi is present.

2) To find the actual value used formula  $(R^2 * n)$ , where n means the number of data. In our case it is 30.

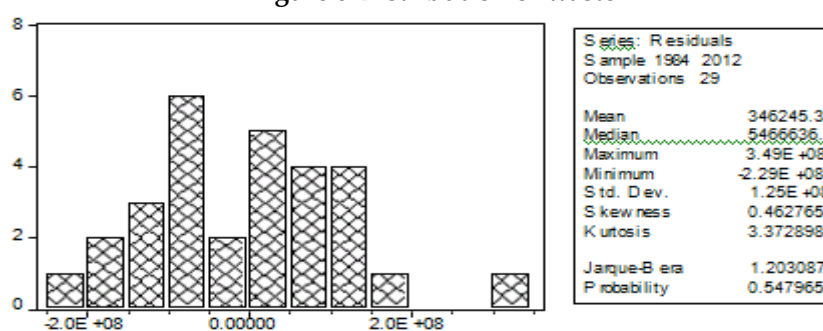
- 3) Appreciate the critical value of this criterion, which has  $\chi^2$  distribution with probability  $\alpha$  and with degree of freedom as the number of parameters.
- 4) Compared the actual Watt test value with its critical value. If  $n * R^2 > \chi^2$ , then we say that the alternative hypothesis is accepted and rejected it based on the opposite say that the model does not suffer from heterosi.

White Heteroskedasticity Test:

F-statistic	2.354202	Probabilit	0.054777
Obs*R-squared	17.50715	Probabilit	<b>0.093744</b>

In our model we will see that the probability  $0.093744 > 0.05$ , then the basic hypothesis on the absence of heteros are not discarded, so our model does not show heteroskedasticity. We can say that this is due to a large enough number of data.

**Figure 8 Distribution of waste**



In order to verify the normal distribution of the term error, we first formulate the hypotheses:

Basic Hypothesis ( $H_0$ ): The term of error is normally distributed.

Alternative hypothesis ( $H_1$ ): The term of error is not distributed normally.

An econometric model would be better if the error term will have normal or nearly normal distribution. To show this comes in aid criteria Jarque Bera (JB).

In our model we will see that probability  $0.547965 > 0.05$ , then the basic hypothesis about the normal distribution of the error term is not discarded, so the term of error of our model shows normal distribution.

### **The addition of variables**

Examining excess variables is assessed by the student test (test t), which we have discussed above. There are several methods to control from the statistical viewpoint the absence in the model of important variables. The test that we will use is Reset testing. The hypotheses that are tested are:

The hypothesis ( $H_0$ ): The model is well specified or there is no need to add other variables.

The alternative hypothesis ( $H_1$ ): The model is not well specified or needs to add other variables.

Ramsey RESET Test:

F-statistic	0.592582	Probability	0.56188
Log likelihood	1.592138	Probability	<b>0.45109</b>

From the table we arrive at the result that the probability  $0.451099 < 0.05$ , then the basic hypothesis is accepted. The model is well chosen or does not need to add other variables.

## Discussions

- ✓ Greek GDP: If Greek GDP will increase by one unit, while keeping all other factors constant, the Albanian remittances will increase by 0.002547 units.
- ✓ Albanian GDP: If the Albanian GDP will increase by one unit, while keeping all other factors constant, then Albanian remittances will increase by 0.016516 units.
- ✓ Dummy: Since the coefficient before the dummy variable has been significant, this means that there are structural changes between the two periods before 2000 and after 2000.
- ✓ Unemployment rate: If the unemployment rate will increase by one unit, while keeping all other factors constant, then Albanian remittances will be reduced to 24,033,061 units.
- ✓ Greek population: If the Greek population will increase by one unit, while keeping all other factors constant, then Albanian remittances will grow 207.1191 units.
- ✓ Albanian population: If the Albanian population will increase by one unit, while keeping all other factors constant, then Albanian remittances will be reduced by 569.0991 units.

## Conclusions

The main purpose of this paper was to point out the effects of remittances in developing countries by focusing specifically on the case of Albania. Following the analysis of the micro and macroeconomic effects, the following conclusions are reached:

First, it can be said that the main difficulty of studying the effects of remittances lies primarily in defining this concept because different researchers give different versions.

- Concerning the microeconomic effects of remittances, it has been concluded that remittances have adverse effects on participation in employment, but in relation to private enterprises and human capital formation studies show that they positively influence. In terms of inequality, most studies support the fact that remittance income increases inequality even though there are studies that show the opposite. What other researchers agree is that remittance income mitigates poverty.

- Concerning macroeconomic effects, it is concluded that remittances are an important item of balance of payments that positively affects economic stability, but whether the issue affects them in economic growth or not, the researchers are divided and can not provide a final answer. But what is to be said is that remittances affect the appreciation of the real exchange rate and the rise in inflation.

In the case of Albania:

- At a macroeconomic level, remittances are an important source of funding to finance the current account. They are the main source of income from abroad and affect a high percentage in mitigating the current account deficit.
- At the micro level, remittances also play an important role in improving the lives of families receiving them. Analyzed on the basis of rural and urban areas, remittances account for a

significant percentage of monthly income especially in rural areas. For families with lower levels of income, they are a source of vital income. But they are still used in the mass for consumption and at very low levels for private entrepreneurship and for the creation of human capital.

Secondly, it became the recognition and identification of a link between remittances coming from our neighboring Greece state, which I have taken in the study, and their determining factors. The hypothesis was raised, I found the data and after some attempts I specified that the best model is the dummy independent linear model. It is worth pointing out that the most important and most influential factor of the built model is GDP, because of the country it occupies in the country's economic growth. Relying on probabilities, it results in lower propensity, too close to zero. It remains a matter of further research to identify any other factor that directly or indirectly affects remittances, which come not only from Greece but also from other countries that have a certain share in the remittances of Albanian emigrants, such as Italy, as well as seeing how the crisis has affected those countries in Albanian remittances.

### **Suggestions**

Migration has a strong positive impact on the development of human resources, the reduction of unemployment and vocational and intellectual training, through the occupations and experience they gain in destination countries.

- Migration brings benefits to a cost-benefit balance only if properly managed for the benefit of the individual, the family, but also the companies of the country of origin and the host country.
- In general, remittances can contribute to the development of the country (in addition to rising consumption) or directly to productive investment, or by increasing the bank's liquidity level, thus making it possible to obtain loans from entrepreneurs with competitive interests.
- Albanian emigrants in most cases work in sectors that are not preferred by locals, and the vast majority of them have undetermined pay, they serve as a regulatory mechanism in the labor market and contribute to the domestic production of the host country.
- In general, remittances have played an essential role in the Albanian economy and in particular by preventing and alleviating poverty.
- Remittances are an essential component of the current balance of payments account.
- The structure of the use of remittances has changed over the years. If in the first few years the remittances were mainly oriented towards food, clothing, or purchase of household appliances, in the following years the destination was expanded with the improvement of housing conditions (such as residential areas, reconstruction or new constructions) easily visible in areas with high level of migration outside Albania.
- In recent years the inflow of remittances has declined, due to the difficulties created by the negative effects of the economic crisis that have undergone countries of the Eurozone as a whole.
- Migration issues are treated simply as a consequence, but not by finding and recovering in the cause of it. So, first and foremost, state policies have to carry out in-depth studies, what are the causes of migration, which should bring the focus of state policies to discourage escape from the periphery of the country.
- The economic crisis has forced many immigrants to return to Albania, remaining unemployed. Returned migrants may not actively seek information and services from institutions such as

Regional Employment Offices. Consequently, awareness campaigns and activities can be used to reach this population that sometimes tends to be invisible.

- Migration of voluntary and involuntary return is still seen as a personal failure and intervention strategies should focus on reducing negativity and promoting a positive climate that encourages acceptance.

-The figures given above, however, are only a part of the total remittances. It is hard to get accurate statistics of real data concerning inflows, as ways of sending remittances, in most cases, are not officially registered. What turns out so far is that the transfer of money through banking or postal institutions is a minimally used procedure by emigrants outside of Albania.

Measures that can be taken are:

Measure 1: Expand and improve the collection of data, practices, research, analysis, policies and procedures related to remittance remittances.

Measure 2: Expansion of banking services in Albania, related to remittance remittances.

Measure 3: Promote the Albanian banks and correspondent banks in migrant host countries (particularly in Greece and Italy) to improve services related to remittances from migrants.

Measure 4: Strengthening the capacities of the Albanian Institutions Micro Finance (IMF) to provide remittance transfer services from immigrants.

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## Appendices

	Export	Import	IDH	Remitanc
1996	194.6	736.4	72	399
1997	140.2	614.5	42.3	157
1998	184.8	721.7	40	400
1999	258.2	884.4	38.5	345
2000	277	1,174.20	156.6	581
2001	340.3	1,489.10	230.7	610
2002	348.4	1,566.50	141.4	685
2003	394.9	1,571.80	156.9	711
2004	485.6	1,762.30	267.4	822
2005	530.2	2,006.90	209.3	894
2006	630.7	2,289.60	250.3	935
2007	786.3	2,890.40	470.1	952
2008	917.5	3,348.90	620	830
2009	750.7	3,054.40	680.3	780
2010	1172	3,176.50	720	690
2011	1406	3,539.00	831	665
2012	1526	4,029.60	890.2	675
2013	1732	3,831.90	923	497

### % of remittance to Gdp

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
	13.5	11.6	13	12	9.7	9	10.9	10	9	5
Year	Remittance	Export	% of remittances in export							
2002	693	345	200.65							
2003	774	427	181.4							
2004	774	486	159.26							
2005	802	530	151.32							
2006	937	631	148.49							
2007	952	786	121.08							
2008	833	918	90.82							
2009	781	751	104.08							
2010	690	1,172	58.88							
2011	665	1,406	47.31							
2012	675	1,526	44.23							
2013	497	1,732	28.71							



## **The Potentialities of RFID-Based Traceability System in the Olives Post-Harvest Stage**

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### **Abstract**

Given that the major challenges for olive production and for producers are to improve fruit and oil quality, a plethora of analytical techniques are carried out for the purpose of traceability and validation of the authenticity of olive oil. However, due to many considerations, all of these methods remain only applied in the testing phase. Therefore, the olive oil supply chain actors have to cope with the new advancements in intelligent food logistics to address some traceability concerns. In this specific line of research, this paper aims to propose a theoretical framework for embedding RFID into the traceability system of olives in the post-harvest stage. Then, a discussion is centered on the potentialities of adopting RFID in this target process. RFID is a new emerging technology which opens up windows of opportunities for an effective and efficient traceability system design in the supply chain and logistics of a valuable commodity.

**Keywords:** *Olive Oil Supply Chain, Analytical Techniques, RFID, Traceability.*

### **1. Introduction**

Virgin olive oil is a precious commodity with excellent nutritional characteristics. Besides to its health and sensory properties, it constitutes a typical source of food and income throughout the Mediterranean region (Papaefthimiou, Ventouris, & Tabakis, n.d.) (Mansour, Gargouri, Flamini, & Bouaziz, 2015). It is the result of a mechanical extraction from fruits and it can be directly consumed by the addition of chemical substances (Manel Issaoui et al., 2015). The International Olive Council has classified the virgin olive oil under the following categories: extra virgin olive oil (the top quality), virgin olive oil, ordinary virgin olive oil and lampante virgin olive oil (unfit for consumption) (International Olive Council, 2015). This classification is hinged on the quality features such as the pressing from which olive oil comes, the flavor and the acidity. In fact, the quality of virgin olive oil is associated with many endogenous and exogenous factors. The geographic origin of the olives (Manel Issaoui et al., 2010) (Ouni et al., 2011), the extraction systems and cultivars (Issaoui et al., 2009) and the agricultural practices impact significantly the quantity and the activity of endogenous enzymes that mainly influence the phenolic profiles and the sensory characteristics of olive oil (Baccouri et al., 2008). Likewise, the method of olive oil extraction, the conditions of storage for olives and virgin olive oil, the packaging materials and shipment conditions constitute the external factors that may exhibit a significant impact on quality as demonstrated in many previous studies (Vekiari, Papadopoulou, & Koutsaftakis, 2002) (Pristouri, Badeka, & Kontominas, 2010) (Valli et al., 2013) (Lozano-Sánchez et al.,

2012)(M Issaoui et al., 2009). Therefore, several parameters must be properly applied to derive a high quality of virgin olive oil that will go from farm to fork.

Due to its high price compared to other vegetable oils, virgin olive oil is highly subject to the risk of adulteration, mislabeling and misleading. The fraudulent practices include inter alia, the adulterations in the composition of the organoleptic character of the product and of geographical indications, adulteration (addition or subtraction of specific components of the product), sophistication (addition of foreign substances), and falsification (substitutions of specific components) (Girelli, Del Coco, & Fanizzi, 2017). These misconducts are motivated by the search for more economic benefits from the sale of unauthentic virgin olive oil. To respond to the concerns of public and quality control evaluators of olive oil, it is necessary to study the traceability of virgin olive oil. With regard to this approach, The EU commission makes a narrow definition of traceability in the context of food industry as the ability to trace and follow a food, feed, food-producing animal or substance intended to be, or expected to be incorporated into a food or feed, through all stages of production, processing and distribution. Simply stated, it is an effective method which aims to ensure food safety and quality and to reduce the costs associated with recalls (Regattieri, Gamberi, & Manzini, 2007). Drawing on this perspective, producers' awareness of the potentialities of adopting adequate traceability systems has been raised to improve transparency in their production. Besides, a traceability system as defined by Giametta & Sciarrone (2009) is intended to identify all the farms/businesses involved in the manufacturing of the product in question (including their organizations and flows of materials) as well as the relevant products or components whose tracing and backtracking is necessary to put in place the traceability system in question. As a result, the tighter control of producing and importing countries of virgin olive oil, the effective marketability of olive oil products and the plethora of analytical techniques and methods for ensuring the authenticity of olive oil are pushed to a new stage by government regulations and consumers' requirements.

Considering the potentialities of technology in the supply chain, its adoption in the agricultural supply chain is very important. For most olive oil businesses in which denominations of origin is mandatory, the use of a traceability system could be highly leveraged with the adoption of the emerging technology of radio frequency identification (RFID). RFID is a generic term for technologies that use radio waves to automatically identify objects (Roberts, 2006). This implies to say that it associates an RFID tag unique identifier with the concerned object. The increasing popularity of RFID is manifested by the favorable results it brings to the agricultural supply chain. In view of this fact, several companies and even some European projects proposed the use of RFID technology to build full traceability systems (Expósito & Cuiñas, 2013).

This study aims to propose a theoretical framework of an RFID-based traceability system for olives. Even though many scholars have studied the applications of RFID in the agriculture sector, very few studies dealt with the adoption of RFID in olive oil supply chain and to the best of my knowledge, this is the first paper to propose RFID-based traceability system for olives and to discuss its potentialities at the post-harvest stage. Hence, the remainder of the paper begins with screening the literature of the RFID-based traceability systems in the agriculture, the different analytical methods for ensuring the authenticity of virgin oil. The following part will present the theoretical framework of the RFID-based traceability system of olives in the post-harvest stage accompanied with a discussion of its functioning and its contributions to the industry and to businesses involved in the olive oil value chain. The last part will cover a brief conclusion for the paper.

## **2. Literature Review**

As supported by a vast amount of facts, the applications of RFID in the agro-food have attracted the attention of academicians and researchers in the last years (Ruiz-Garcia & Lunadei, 2011). Many scholars have studied the applications of RFID and their implementation in the agro-food supply chains. To cite some of them, Qian et al. (2012) proposed an RFID-based traceability system for a

wheat flour mill in China by incorporating the RFID technology and 2D barcodes. They studied the cost-benefit of the system and found that the total cost of the system increased by 17.2% but generating an increase in sales income by 32.5% which therefore validates the potentialities of the suggested traceability system in medium and large wheat mill enterprises in China. Chunxia, Weimin, Yingyan, & Huiyuan (2009) discussed the RFID adoption in the vegetable supply chain which contains the vegetable cultivation, processing, storage, transporting and retailing in China. They explored the role of this technology in improving the efficiency of the vegetable supply chain and the existing challenges and obstacles to its adoption (e.g. technology, standard, and cost challenges). In the same vein, Yang & Wang (2012) introduced the basic working principle and technical characteristics to establish an RFID-based traceability system for vegetable quality safety in China. Also, Hertog et al. (2008) proposed the implementation of a quality change model based on smart traceability system for tomatoes in Belgium. Tomatoes were stored at an artificial temperature scenario to validate the quality changes model and RFID labels with integrated temperature sensors were used to monitor the whole supply chain of tomatoes from the grower to the retailer. Their experimental findings indicate that the integration of quality change models with RFID-based traceability systems is beneficial for the satisfaction of consumers. In the manufacturing and processing of wines, Wang, Kowk, & Ip (2012) suggested an RFID-based quality evaluation system that combines RFID and sensor technologies in order to monitor the whole supply chain of wine. Their system can discover accidents in time to reduce losses and prevent therefore counterfeit. Moreover, Exposito, Gay-Fernandez, & Cuinas (2013) studied the traceability in wine sector and proposed a system that traces the wine from vineyard to the consumer glass based on the joint use of RFID technology and Wireless Sensor Networks (WSN). They came to conclude that the system could provide a competitive advantage to the companies operating in the wine production sector by improving the visibility of the processes performed and the associated control over the quality of wines. In the dairy cheese production, Barge, Gay, Merlino, & Tortia (2014) designed a complete item-level RFID traceability system for a high-value, pressed, long-ripened cheese. They experimented with the different techniques for fixing the tags to the cheese to automatically record the cheese wheels movements during the production, handling in the maturing room and warehouse, delivery, packing and selling stages. The authors conclude that the successful integration of an RFID system in a food production process depends on multiple factors related to the RFID devices features and the production process layout. Similarly, Regattieri et al. (2007) developed a general framework for the traceability of cheese products based on an integration of alphanumeric codes and RFID technology. Their study allows to conclude that the proposed system is working well with very good outcomes for both cheese producers and consumers.

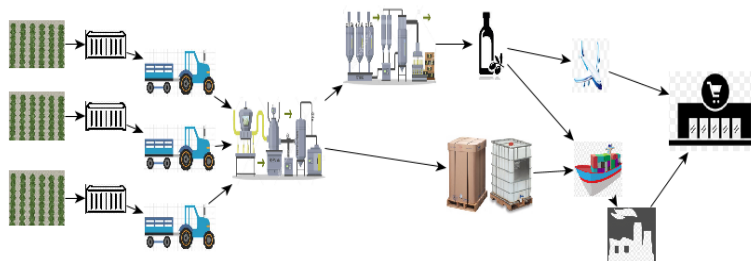
RFID technology has been widely discussed in the plant monitoring. For the purpose of tree identification, RFID tags can be embedded in the tree trunks without a significant impact on plant health, growth and production. Several tests have been conducted in different kinds of plants such as citrus, grapevine plants and *Prunus* spp (Bowman, 2010) (Luvisi et al., 2010) (Luvisi et al., 2011). All the marked plants can be easily monitored and will be able to supply various information including identity, growth parameters, susceptibility to biotic stress factors, and productivity. All the related information is accessible via an online database (Luvisi et al., 2010). Not only that, RFID tags can be also attached to the products (e.g., seeds, fertilizers, etc.) and the readers installed in the machinery, detecting what is put into the implement's hopper or tank (Ruiz-Garcia & Lunadei, 2011). This results in more transparency and quality assurance by having a grasp of all the details related to fertilizers spread patterns, pesticides, and insecticides used in the process (Watts, Miller, & Godwin, 2002) (Peets, Gasparin, Blackburn, & Godwin, 2009). In the same line, Ampatzidis et al. (2009) proposed the use of RFID to match bins of harvested fruits with corresponding trees during harvesting in orchards. Their system proved to be successful in overcoming the limitations of existing yield mapping systems for manual fresh fruit harvesting and in the case of the unavailability of GPS data caused by foliage.

Since olive oils are subject to the combination of high and low-grade virgin oil and the inclusion of numerous edible oils, several analytical techniques are deployed to detect adulteration and ensure the authenticity of virgin olive oil (Ben-Ayed, Kamoun-Grati, & Rebai, 2013). Several scholars review the technological advancement in the traceability of olive oil using several techniques such as the isotope analysis (Camin et al., 2010), chemometrics (Bevilacqua, Bucci, Magrí, Magrí, & Marini, 2012), and DNA analysis (Pasqualone, Montemurro, Caponio, & Blanco, 2004). The isotope analysis has emerged as a powerful tool for tracing the geographical origin of the agro-food products and varying degrees of success have been recorded in identifying and differentiating the different agro-food products including olive oil (Badia-Melis, Mishra, & Ruiz-García, 2015). Bevilacqua et al. (2012) analyzed the potential of infrared spectroscopic fingerprinting coupled with chemometric discriminant and modeling classification techniques in the traceability of olive oil samples with the protected designation. Their obtained results confirmed the high accuracy and the affordability of the infrared spectroscopy with chemometrics besides to the non-invasive/non-destructive techniques of olive oil traceability. In addition, Ben-Ayed et al. (2013) reviewed the DNA-based technology to characterize olive oil and detect possible adulteration. They stated that the genetic identity is the most appropriate method for overcoming the shortfalls of most chemical analyses with limited significance. According to Ben-Ayed et al. (2013), the blend of olive oils of the same category but from different provenances makes the use of DNA markers suitable in providing unequivocal identification for authentication and traceability.

Despite the importance of these techniques in authenticating olive oil and discriminating it from different geographical origins, these analytical instruments are limitedly available and costly to purchase (Othman, Salim, Moosa, & Mostapha, 2006). Plus, there is a lack of technical capability and expertise among the national food laboratories to implement these techniques such as the difficulty of databases collections, proficiency testing, statistical data for chemical profiling. The olive oil monitoring has been conducted with the use of offline sample analysis wherein the sampling needs costly instruments (e.g., accurate electrical balances, microscopes, and automatic particle counters) and high time demanding human processes which thus preclude the early diagnosis of olive oil and yield to system failures and prevention (Papaefthimiou et al., n.d.). Also, the verification of the geographical origin for cultivar should be done by a comparison with known, authentic and reliable samples. Therefore, these new advancements can only help to overcome some gaps such as the historical control but they are still applied only in the testing phases and they require a big deployment of resources not affordable always for the olive oil supply chain partners. Owing to this, the present study aims to engage the technology of RFID in addition to these advancements in the olive oil traceability at the harvest stage. This research topic remains unaddressed in the existing and increasing literature of intelligent food logistics. Hence, it comes the idea to advance olive oil traceability in this direction.

### 3. The Typical Design of Olive Oil Value Chain and the Theoretical Framework of the RFID-based Traceability System

#### 3.1. The Olive Oil Value Chain

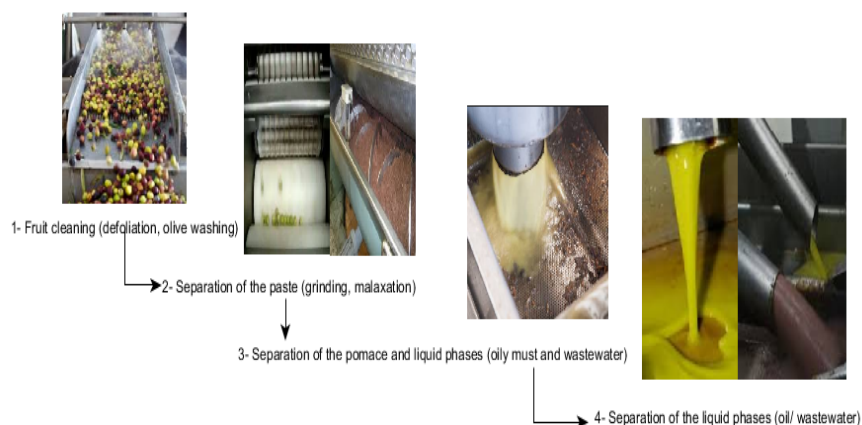


**Figure 1. The Typical design of the olive oil value chain**

As shown in figure 1, the value chain begins in olive orchards where farmers carried out the different cultivation activities. These include the installation of irrigation by droplet, the planting and the better selection of olive groves variety, the sanitary treatments applied at the trees (e.g., insecticides, pruning, etc.), and the scheduling of harvesting and olives collection. Thus, a suitable environment and proper cultural care are necessary for the full development of the agronomic characteristics of the trees (Boskou, 2000). In addition to the cultural care, other measures are taken to ensure a more steady fruit production and to mitigate the fluctuations by encouraging the use of irrigation (intensive or hyper-intensive growing) and increasing the proportion of irrigated olive orchards (Angulo et al., 2011).

The harvesting stage (involving pruning) constitutes the most critical and expensive operation which affects significantly the production cost and the quality of produced olive oil (Abenavoli & Marcianò, 2013). The methods employed to harvest depend on cultural techniques, orographic conditions of the ground, and variety of olive trees. In the usual way, the tarps are drawn under the foliage of the olive tree and the workers gently dislodge the olives using their hands or a rake. The wooden poles are usually used to beat the far unreachable fruiting boughs. The workers collect the olives fallen into the nets and gather up any strays on the ground in the traditional jute sacks (or plastic ones) after clearing them from leaves and twigs and then they transport the olives immediately to the oil mill. Olives are harvested at the point of ripening; meaning that they reach the maturity state or the green-yellow or black-purple stage (Boskou, 2000) and the oil accumulation in the olives is interrupted (García & Yousfi, 2006).

In order to avoid the undesirable enzymatic reaction and the oxidative and fermentative processes (e.g., yeasts and molds...), a fast and proper to-the-last mile transport is necessary to carry olives to the olive mill. After that, the olives will be stored temporarily and spread in shallow layers and kept in cool and dry areas. It is highly recommended that the time lag between harvesting and processing should be as minimum as possible to retain the quality characteristics of olives. Subsequent to that, the olive extraction phase comprises mainly 4 operations as illustrated in figure 2.

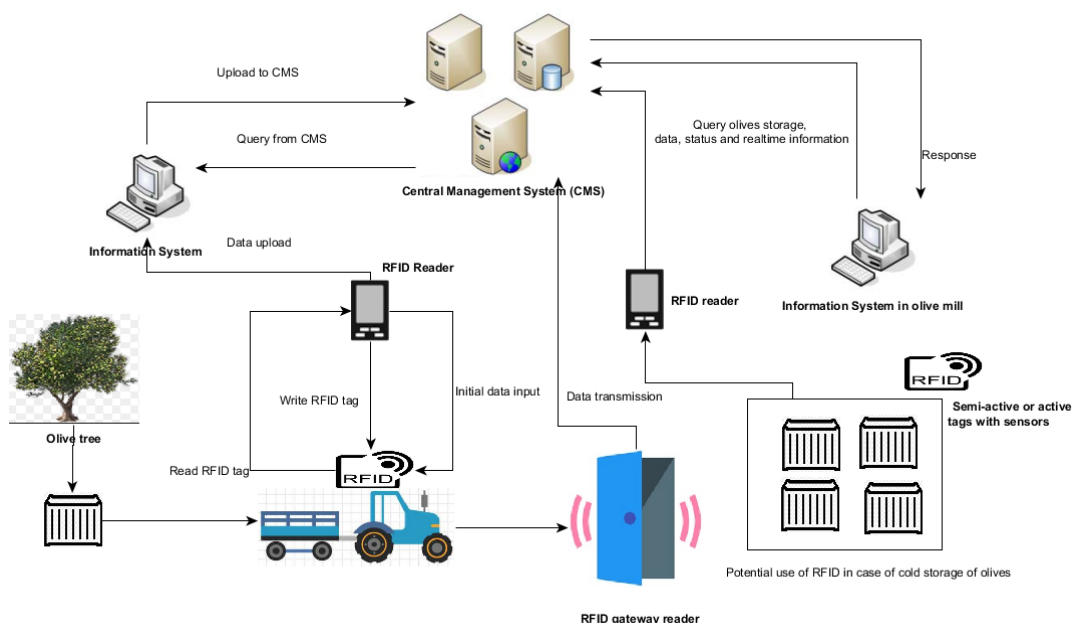


**Figure 2. The olive oil extraction process (adapted from (Boskou, 2000))**

The process starts by washing, cleaning and deleafing olive fruits. Defoliators are used to delete perfectly leaves, twigs and other impurities from all the picked olives through a powerful airflow generated from a calibrated air jet. To improve the washer efficiency, the washing vat is equipped with a shaker that shakes any impurities through screens as well as an air injection system to create turbulence in the mass (Boskou, 2000). The olives are then crushed with a hammer crusher (or stone mills) to turn them into a fine paste. This paste is then malaxed in order to make it uniform and to agglomerate the oil droplets. The separation of the solid and liquid phase (i.e., the pomace, the oily must and the wastewater) goes through the pressing step. The obtained olive paste is spread into mats or fiber disks which are stacked onto a press plate, where a hydraulic piston carries out the pressure. As a result of this, the pomace and the liquid phase are produced. The final liquid phase containing oil and vegetation water is separated by a standard process of decantation (Manel Issaoui et al., 2015).

### **3.2. Theoretical Framework of RFID- Based Traceability System**

RFID is an emerging internet of things technology which is increasingly embedded in logistics and supply chain management. It relies on the wireless radio waves to identify objects from a distance without the necessity of line of sight or physical contact. The technology consists mainly of 3 parts: tags (or transponder, labels), antenna and readers (also called interrogators or coupling devices). For the purpose of tracking olives, RFID technology can be applied to ensure a sound traceability of the harvested olives as shown in figure 3.



**Figure 3. Conceptual flowchart of the RFID-based traceability system in the post-harvest stage**

The proposed system covers only all the activities prior to the olive oil extraction (i.e., the post-harvest and the storage of olives). It addresses the questions related to the variety of olives, the orchard from which they are harvested, the quantity, and the storage handlings. The system will help to monitor the olives from the harvesting to the storage stage in the olive mill by gathering all the information in the central management system.

After collecting olives, it is highly recommended to separate the olives harvested from the trees and those collected from the soil. The perforated boxes from the sides and the base will be chosen due to their roles to ventilate olives and delay the fermentation processes during the storage phase (García & Yousfi, 2006). Besides, they imply also the introduction of palletization system at further stages which can minimize the fruits damage caused by handling, save the space and ease RFID attachment to either case or pallet level.

All the information related to the boxes loaded on the tractor or the van track will be entered in a rewritable passive tag attached to the container sides or door. These information trace back the complete history of each box of olives (e.g., the olive variety, the collection date, the olive growers, irrigation practices, the geographic location of the region, orographic conditions, soil slope, and level of mechanization in harvesting, etc.). This helps to avoid the inclusion of non-traced olives and a better monitoring of lots. In addition, the source of olive oil will be clearly defined by knowing the olive variety from which oil is truly derived and thus this could be used latterly in the geographical indications of agricultural products' origin which allows the producers to obtain market recognition and often a premium price (Othman et al., 2006).

These initial data will be encoded in the RFID tag using a reader connected with a computer which the information stored in the tag will be transmitted to and uploaded to the central management system. Through this system, the management function of data collection, processing, remote transmission, and storage will be digitalized. As a consequence, the problems and the failure (either inadvertently or deliberately) inherited by the present paper-based system that passes the information along with the commodity (Othman et al., 2006) will be significantly minimized since RFID uses encryption and includes a trusted security mechanism for data protection. Next, the crates of olives will be transported to the olive mill. The tag attached to the vehicle will be read at the entrance of the mill with a portal reader. The information on the tag will be transferred and stored in the back-end database of the central management system. This reading method enables operational

efficiency and helps to avoid the collision problem since there is only one reader mounted on the olive mill bay door.

In their study, Abenavoli et al. (2016) suggested the use of QR codes (i.e., two-dimensional codes) printable for the olives containers (e.g., bins, crates, etc.) for the traceability of olives during the harvesting phase. However, they overlooked the problematic readability of barcodes due to their poor resistance to dirt, moisture, and bending; resulting in reduced accuracy of reading rates, particularly in successive handling situation and in difficult environment (Ollivier, 1995) (Moore, 1999). Besides, depending on environmental conditions and maintenance, barcode read rates often decline to less than 90% over time, unlike RFID which can achieve 99.5% to 100% first-pass read rates (Instruments, 2006). Also, the major advantages of RFID over barcodes are that it does not require line of sight reading, most RFID tags are highly resistant to environmental temperature and other external factors, and can be read and re-programmed at least 300,000 times before replacement (DeJong, 1998). This leads to say that in our proposed system, the tags attached to the vehicles containers transporting the olive fruits from the farms to the olive mill can be used many times. Although barcode-based systems are claimed to provide most of the needed functionality, RFID is still a very promising technology to unprecedented levels and will remain as such thanks to its potentialities with reference to olives traceability.

The storage is the most critical stage in defining the quality of olive oil. The poor handling of olives during the time between harvesting and processing results in great deterioration of olive oil (García & Yousfi, 2006). To avoid the degenerative processes caused by the improper handling and heaping of fruit piles, the industry is recommended to reduce the interval time between harvesting and processing by an increase in the milling capacity. Nevertheless, the investment in the equipment necessary for preventing the accumulation of olive fruits might be not profitable and feasible since it will only be used in the peak season (i.e., January). Therefore, the implementation of an RFID system could help the members who deal with stages of olive storage and processing to monitor the capacity of the mill in a way to set quickly a JOB or action to match the processing needs of the mill with the appropriate quantity of olives to be harvested. As a result, this implies to say that the RFID-enabled system will yield to a pull-based approach in which problems linked to the prolonged time of olive fruits storage and the presence of microorganisms will be minimized to a large extent, thus leading afterward to the preservation of olive oil quality and the maintenance of its oxidative stability (El et al., 2018).

In case of resorting to the use of refrigeration for the storage of olives intended for oil to delay the deterioration activity of pathogens and in which the following requirements should be met: a cool room capable of storing the olive fruits that cannot be absorbed by the mill machinery, a temperature of 5° C over a period time  $\leq 12$  hours (García & Yousfi, 2006), the technological compatibility of RFID corresponds to an important degree with the cold storage of olives. In fact, some RFID tags with embedded temperature sensors can be used to automatically capture all the related data that are critical to the quality and the safety of olive fruits (such as the history of temperature, humidity, and time period), thus providing the central management system with a real-time description of the state of the storage. Moreover, the sensors can be set to work as an alarm, being able to work only within a certain temperature range (Costa et al., 2013) and alert the responsible person if there is an excess over threshold limits. Practically, this can be done by installing commercial active and semi-passive tags (Amador, Emond, & Nunes, 2009) (Jedermann, Ruiz-Garcia, & Lang, 2009) in the walls, the pallets or the boxes of olives which are capable of monitoring efficiently and consistently the temperature.

With regard to the cost of RFID technology adoption, tagging applied to the transport-unit level (i.e., vehicle, tractors or vans), pallets or storage containers can generate many potential benefits in terms of considerable reduction in capital investment (Kärkkäinen, 2003). This is because RFID tags are not embedded within the individual consumer packages, where sometimes it is too costly and expensive to afford them, but they are recurrently utilized in the traceability of harvested olives. In this way, the

RFID-based traceability system is concerned with the tracking of the content and not the package of olive oil products, hence furnishes a link back to the point of origin of olive oil (i.e., olive orchards).

As a result, the investment in transponders might achieve a great cost efficiency in the long run since RFID tags will be continuously utilized (Kärkkäinen, 2003). Consistently with (Shutzberg, 2004) who points out that the application of RFID in specific processes in the chain can save a company from important costs, the automation of traceability brought by RFID will have an important impact on reducing the time spent in collecting, recording, and retrieving of data related to the harvested olives. Besides, it helps the handlers to assess the precise permanence of the olives at the harvesting and pre-processing stage. Plus, Savings in cost may be attainable through automating the checkout process and reducing the human intervention associated with storage management. For that reason, companies operating in the olive oil industry may consider the implementation of RFID technology in the post-harvest stage because a more simplified and focused approach to RFID incurs much less risk in implementation (Fontanella & Bilodeau, 2003) and the investment payback may come in quiet short-term since the investment is targeted to a specific process.

A potential synergy between olive oil supply chain actors may be achieved through the integration between the central management system and the partners' information systems based on the use of web-service technology (Meixell, 2006). All the partners of the chain can access information in the central management system using the internet. The share of information between the participants helps in turn to improve the visibility of the chain by providing exhaustive information on the origin of the product in question and raises consumers' confidence in the originality of the supplied olive oil.

Aside from the efforts made by many countries to improve the competitiveness of the olive oil in both the domestic and international market and to promote the marketability of the olive oil products through the Protected Designation of Origin (PDO), Protected Geographical Indication (PGI) and Traditional Specialty Guaranteed (TSG) in varieties indication (Abdelhamid et al., 2013), the governments may support and stimulate the olive oil industry by encouraging the deployment of RFID and information technologies due to their potential benefits to not only the producers of olive oil but also to the technical staff in charge of the quality certification (i.e., the Regulatory Board of PDO) by speeding up the information access, saving the time and simplifying the tasks far different than for the existing paper-based system of data record and collection. Although this technology entails some changes in the enterprise's business processes, the implementation of RFID along with the appropriate information structure can enable a sound traceability to be spread over a very important stage in the olive oil supply chain at small, lowering cost of RFID (Ruiz-Garcia & Lunadei, 2011). The availability of a cheap labor force in some producing countries could justify to a certain extent the use of RFID which remains in all cases a one step forward to voluntary traceability raised from the conviction of a better organized and improved work along the production chain (Expósito & Cuiñas, 2013).

#### **4. Conclusion and Recommendations**

Considering the benefits that new emerging technologies can bring to the supply chain, this paper aims to investigate the potentialities of RFID adoption in the olives post-harvest stage. Besides to the analytical techniques used to detect the authenticity of olive oil, RFID technology could leverage the internal traceability and helps to smooth the internal procedures of the olive oil producers to trace the origin of olive fruits after their harvest. The use of RFID implies a traceability with a high-level resolution and near-perfect information visibility throughout the supply chain. Furthermore, the information related to the olives variety, the orchards from where they are collected, the orographic conditions of the groves, and the storage status of fruits in the olive mill, etc. could be speedily traced through the proposed RFID system with cost savings and minimum human intervention. RFID could potentially be used in the refrigeration of olives to monitor consistently the temperature in the cold

storage rooms and thus alerts the responsible operator to take the necessary measures in case of threshold violation.

For more competitiveness, producing countries could capitalize on the advantages brought by the use of RFID-enabled traceability in the post-harvest stage of olives and set into motion the beginnings of RFID technology adoption in an industry highly concerned by traceability but which uses it little (Karâa & Moranab, 2016). This can be achieved through a set of material and immaterial incentives (funds, promotion and advertising of RFID-enabled traceability systems, grants, etc.) since the implementation costs of RFID could be a restricting factor for some olive oil producers and exporters. Also, raising the producers' awareness about the promising opportunities of RFID and its ability to improve the transparency of their production processes may bring impactful benefits that span across all the olive oil supply chain members.

Despite all these benefits offered by the RFID technology, several issues may raise concerns associated with the quality of information input within the traceability system and the degree of its reliability. Besides, the evaluation of the cost-benefit analysis, the technical and economic feasibility of an RFID-based traceability system in the post-harvest stage of olives, and the deployment of RFID in other processes may be addressed in future research.

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## **Socio-Cultural Impact of illegitimate Land Sale or Land Grabbing in Community, in Dire Dawa City of Ethiopia**

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### **Abstract**

This study has investigated “**Socio-Cultural Impact of Land Sale or Grabbing on Community in Dire Dawa City**” which tried to show the impact of illegal land sale and land grabbing on cultural influence, food insecurity, water insecurity, less development of infrastructure and environmental degradation.

Therefore, the researcher used instruments of data collection both primary and secondary methods. The primary data are collected from the field through Interview, Focus Group Discussion and Researcher Field Observation. In interview about 100 street vendors’ informants were involved and in FGD about 40 discussants in six groups were involved the secondary sources are obtained from written sources.

Consequently, qualitative method of data analysis was used by the researcher to analyze the collected data’s through the above mentioned instruments of data collection. The data from interviews, focus group discussion and field observation were transcribed, and triangulated with secondary sources.

The study further investigated the effect of cultural violation by the new arrivals create problems and social relationships, and violated land owning right which tend to influence their food and water insecurity. The government officials contribute to less development and environmental degradation. Generally, it is unlikely that social problems can be resolved by in dealing with such informal activities among these local communities and analyzing the societal and individuals ties in particular and the whole community had been broken in wide-ranging. The implications of the outcomes of the study is that in providing recognition and to create the awareness how local communities have to solve problems with the government and the new comers to their local areas formally and informally,. Thus, it is crucial to conduct further studies in a broader scope to advance into the significance of social problems for poor targeted development interference in Dire Dawa.

**Keywords:** Social, Cultural, Impact, Illegitimate Land Sale or Land Grabbing, the Community

## **1. Background of the Study**

The most common definition of the global land grab refers to large scale land acquisitions by foreign investors either through purchase or lease for agricultural production (Cotula, Vermeulen, & Keeley, 2009). Land grabbing refers to land acquisitions by transnational corporations, business enterprises, private investors, and foreign governments through sale or lease contracts – some of which are for up to 99 years - which are highly detrimental to the interests of local communities. Highly productive land and access to water are acquired by investors usually for the production of food crops most of which are for export (including genetically modified organisms which continue to be at the centre of fierce international debate owing to health and environmental concerns), bio-fuels, and extraction of raw minerals. The deals are frequently reached without including at all in the process of consultations and negotiations the local communities living on the land being sold or leased. In many cases host communities, and even host governments are NOT compensated appropriately for the actual value of the land. In numerous instances the local communities have NOT given their free, prior and informed consent to the purchase or lease of land, on which in many cases they have lived for centuries (Liversage, 2010).

As a result, in many parts of the world land grabbing is already leading to social conflicts, massive internal displacement of people as well as loss of their cultural identity, systematic human rights violations, destruction of livelihoods, poverty, permanent environmental damage, pollution and loss of biodiversity. Indigenous people's leaders, community leaders and human rights defenders who speak out on behalf of their communities affected by land grabs are frequently persecuted, are victims of torture, arbitrary detentions, enforced disappearances and assassinations (Borras, Kay, Gómez, Wilkinson, 2012). The key issue is now whether the prospects for food security and poverty reduction in developing countries, and globally in general, are better with or without agriculture investments, and what are the best ways to maximize benefits and avoid negative effects on agriculture investments in sub-Saharan countries. For a continent that is quite used to being exploited, small-scale farmers have to be a priority, as well as protecting Africa and making sure the continent benefits equally from global investors. Otherwise, farmers of developing country will be the first victims of the present rush for land. According to various reports, it indicates that in less than a year, foreign investors and companies acquired around 56 million hectares of land globally (Deininger & Byerlee, 2011). Of these, above half of them (29 million ha.) were in sub-Saharan Africa countries (Lehavi, 2015).

World Development Movement (WDM) published a report also in April 2014 titled "Carving up Continent". It underlines that the multinational corporations take over African food systems and farming lands. According to the report, multinational companies have signed agreements with a number of African countries to establish agriculture investment under the aspect of fighting poverty and food insecurity (Mwesigire, 2014).

## **2. Unlawful Land Grab in Ethiopia**

The Ethiopian government and international bodies such as the World Bank have presented the commercialization of land and the shift to large scale agriculture as being an essential measure

for agricultural modernization and to the improvement of production efficiency which will lead to increased food production and economic growth (World Bank, 2007). According to the World Bank's argument, population growth in the developing countries like Ethiopia will lead to increased demand for food products, expanding urbanization, and rising incomes which needs to be met by bringing more land into farming and by improving productivity. Like many scholars worldwide, the WB's conclusion is that Africa will benefit greatly as it has plentiful potential farmland and by closing the productivity gap on the ones under cultivation. Supporting the WB's argument the Ethiopian government also confirms that there is plenty of "unused" land for investors to operate efficiently without posing a threat to the livelihood of smallholders.

Ethiopia is an important case in the international debate on large-scale land acquisitions (WFP & CSA, 2014). It challenges assumptions about foreign dominance of land investment, or that large-scale land deals are primarily for food crops for export (Rahmato, 2011). It is a case where land deals for plantation agriculture are central to government agricultural strategy, but also where allocations have been subject to controversy in terms of impacts on rights and livelihoods at the local level (Keeley, Seide, Eid, & Kidewa, 2014). Land deals promise to contribute to improved food security, through the generation of foreign exchange; improved incomes as a result of on- and off-farm employment created by investment projects; and food production that is marketed within Ethiopia (FAO, IFAD and WFP. 2015). If people directly lose their land without compensation or adequate resettlement, including access to productive resources, however, they will likely be worse off and more food insecure. Where there is a loss of access to resources that are important parts of livelihood systems and coping mechanisms, such as forests, rangelands, and water resources, there are clear risks of pockets of greater food insecurity at the local level (Damtie, & Bayou, 2008).

These local-level impacts are not currently well documented for Ethiopia, partly due to the political sensitivities of carrying out this kind of research in many key land investment areas (Liu, 2014). Land deals in Ethiopia promise to create significant amounts of employment. Lack of presentation means that job creation has not lived up to expectations, however, although this may change if investments are fully operationalized. For a limited number of investments, substantial numbers of jobs have been created (Oakland Institute, 2011). In developing regions, these are often taken by workers from outside the regions, rather than ethnic groups from within the region. This has contributed to conflict in some instances, and needs to be better addressed through quotas and training programmers. The cultural difference between a pastoralist lifestyle and wage labor employment on a plantation should not be underestimated, however; the change in identity required may well be resisted by many pastoralists. As with other aspects of land deals, creation of clear baseline information, in this case on employment and livelihoods in targeted areas, would allow for monitoring of performance over time (Geary, 2012).

### **3. Methodology**

#### **3.1 Research Design**

This study was designed to focus on the Socio-cultural impact of illegal land sale and land grabbing in Dire Dawa city which leads to strive for daily food and with communities who are with no additional income and those with little income.

The rationale for the selection of the area and the topic was that there is more importantly abundance of land grabbing in the area and around the city by the government officials and by the community itself, who are living around in Dire Dawa city engaged in different types of business. Communities in and around city of Dire Dawa engaged in these activities as means of escaping from poverty, as means of survival and some others used as additional income. This has to be comprehensive enough, to look into the lives of these communities that enables the researcher to show the magnitude and heavy link between illegal land sale as means of survival, and that brought social and cultural impact on their life which are exceptionally strike these group of people in identifying contradictory behaviors, beliefs, attitudes, emotions and relationships of individual. Therefore, this research was based on the illegal land sale by community and land grabbing by government officials in Dire Dawa city. The researcher was used supplement the information's from books, bulletins, and different articles written in addition to gathered data's from field.

#### **3.2 Data of Source**

Both Primary and secondary source of data were used by the researcher. The primary sources were obtained from the field through Interview, Focus Group Discussion and Field Observation by the researcher. Secondary sources of data were data obtained from published and unpublished sources. These secondary sources of data were used to relate and triangulate the research problem of their past with situations on real ground which was obtained from primary sources of data, that were obtained from the field (Wolcott, 2009).

#### **3.3 Type of Data**

Primary and secondary types of data were used to understand this paper. The primary data's were the data's collected from field through different techniques of data collection such as interview, focus group discussion and field observation. The data obtained from interview, focus group discussion and from field observation were triangulated in line with the importance of the sources as discussed in review literature earlier. Thus, primary data's were collected from the field and through direct observations while secondary data types were also used from different written sources.

#### **3.4 Instrument of Data Collection**

Three types of primary data collections apparatus were used to collect the relevant, appropriate and reliable primary data from the field. These include interview, focus group discussion and

field observation, and which are very important to explore the issue under study (Leedy, and Ormrod, 2009).

In Interview about 100 informants, in focus group discussion about 40 discussants were participated and field observation was used to get the first hand information from the field to fulfill the gap identified by the researcher. Secondary sources were also used to strengthen the validity of paper. Therefore, the researcher employed different these three types of tools or instruments to collect the most reliable data that are necessary to strengthen the reliability of the outcome of the study (Finke, (2010).

### **3.5 Method of Data Analysis**

Qualitative method data analysis was used to make the research influential and significant for the sake understanding the issue under discussion (Richie, and Lewis, 2003, Byrne, 2002). The researcher tried to look into the view of informants and discussants to investigate the issue of social and cultural impact of illegal land sale and their livelihood and challenges they meet in nowadays and future. One occasion important for the researcher is that data collected from the field were qualitative which were collected from the field through personal observation, interview and focus discussion (Flick, (2009). The researcher also used secondary data sources to strengthen the ideas obtained from qualitative data. The researcher used various information to complete and triangulate the collected data to increase and strengthen the validity and reliability of the outcome the research.

### **4. Ethical Consideration**

Anthropologist key question to investigate the problems of societies under study, they have to have permission, and they must have to consider the permission of the host community about the research whether the research had a risks to these group of people (Mathers, Nigel; Howe, Amanda; and Hunn Amanda, 1998). The researcher has the responsibility to avoid the risks that these societies will face due to this study; the society have to continue their everyday activities without interruption of the researcher work in to their social and economic affairs to investigate the issue under examination. That is why every Anthropologists need to have permission to study societies at their original setting in search of solution for problems that the societies have faced or bring negative impact to the communities under study (Mauthner, (ed.), (2002). Everything about the society under study would be kept in secret or not exposed without the consent of the host societies.

Therefore, the researcher had confirmed these Street vender Women's about this study in which the investigation did not affect any body negatively either communities in focus or the others who were in methods for realization of this paper. The researcher gave much attention for dignity, respect, privacy life and democratic thinking, for people under study and for the informants and discussants in data collection.

## **5. Finding And Discussion**

### **5.1 Perspectives of Land Grabbing**

#### **5.1.1 The Social Situation of Land Grabbing in Area**

The main access to land and who have land right is the local community in and around the city who have the social and economic institution there. The situation on land sale in area was involved by the community who are residing in and around the city itself. It was the source of food insecurity in the area and as the same times the sources of conflict over the right of the land. The community who engaged in illegal selling of land was in conflict with neighbors and with their own relatives' brother father and so on. Even those with the right of entry to public information are illegal land sellers or land grabbers who were largely restricted to some parts of society who claimed that as if they were original residents. These communities sell land illegally for those communities who are out of their original community who reside for the sake of having shelter. The illegal buyers are composed of different communities of different ethnic groups. This brought social situation more concentrated between these different ethnic groups.

There the researcher observed that the social circumstance in the land grabbing area is not good for the reason that both communities are not in a good condition to interact to each other. This was intensified by the political condition in the region now.

#### **5.1.2 The Political situation of Land Grabbing**

Ethnically the late comers or those who bought land illegally brought every movement as politically designed to provide livelihood to these different ethnic groups. Illegal land selling by the original community and land grabbing by the government officials brought tension between the two communities and becoming place of turmoil. The issue of political situation in the area is always in tension and government police forces are deployed for the security reason in the area. The irregularities of observation by the government official's was intentional not look what is going on the ground to open dissent towards the government and its policies is not tolerated. For those who oppose the government, harassment, detentions, and imprisonment are common practices in today of societies who are on land sale or land grabbing in Dire Dawa and as a result, there is a widespread fear of culture with regard to opposing the government.

#### **5.1.3 The Economic Circumstance of illegal Land sale or Grabbing**

The local communities' displacement of as a result of illegal land sell and land grabbing deals clearly has a disadvantageous effect on their ability to source food and water as well as housing with consequential impacts on health and wellbeing. Without making alternative arrangements for local community members of those communities to who grow on their parents land have less accesses to food and water. The accesses to land have as a means of survival is common for the societies who reside around the city. But such displacement should have to be considered a violation of the rights on land ownership for the local and original communities. But the problem was they themselves who sale land on illegal way for the new comers or the residents of city. Questionably, these communities sale their land for two reasons, one for the economic

reason and on the other hand for reason of land rights that government sale their land without enough compensation to their land.

Thus, the practices by the government officials have negatively impact on original land owners make to have neighboring landholders. Moreover, the long-term effect of land grabbing and destructive way of snatching land practices from the local communities had diverse effect on the environment will affect the ability of future generations to feed and house themselves with the potential for violation of their right to an adequate standard of living. The principles of sustainable use, equity and the protection of rights under the Ethiopian government Constitution are thus mutually reinforcing. The government work to ensure sustainable use of natural resources is also reflected in the protection provided for the land rights of indigenous peoples to the natural resources in their lands. Displacement of indigenous communities of the kind taking place in Ethiopia, especially forced removal of communities, in our view, is a clear violation of the rights of these communities protected by international law.

## **5.2. The Impact of Illegal Land Sale and Land Grabbing**

### **5.2.1. Leads to Loss of Culture**

Illegal land sale by the local communities and land grabbing by government officials brought impact on the cultural practices local communities who owned the land previously. The new comers brought new cultural composition in the area resides by original communities before. One of my informants expresses the situation like this:-

*We know our culture before our land was occupied by the new comers. Many new cultural practices are happened nowadays in our locality. We tend to forget our cultural practices and its significance. For instance there was annual celebration of festivals, but today many annual celebrations are celebrated. Our land was reduced and we become urban dwellers totally and we were treated as if we were urban dwellers, and there is no social status between elders and youngers.*

Several local communities were affected by illegal land sale and land grabbing culturally and land is closely bounce with cultural identity and associated to a variety of cultural practices. Some land areas are considered as the spiritual significance areas by local communities, and some parts of land are considered as sources of foods, where food was collected from particular areas that have a fertile background. The researcher observes:

*In area of Sost killo about five kilometers away from the city, the area is more fertile with small and scanty rainfall and grown Sorghum which was sources of livelihood for the local communities. But now a days this fertile land was sold for city residents, which brought problem on food consumption for local societies.*

The long-established and spiritual ceremonies of communities depend up on plants and trees tend to decrease. For indigenous communities, the loss of inherited land strikes at the core of their very identity, harmfully affecting their way of life.

### **5.2.2 Loss of Insecurity of Land rights**

Local communities land use and ownership of land which was governed by communal land holding systems with local communities rarely having formal land possession rights. Formal ownership of land, especially in surrounding rural areas of the city is often belongs to society who claimed that it was their ancestral land.

But individuals had access to land through local customary possession systems which have the right to share their ancestor land, and benefit from it only weak legal protection in accordance of government law and constitution. This leaves local communities to loss their legal proprietary rights vulnerable against government officials land grabbing and illegal selling of land by themselves to protect their land snatched by the others.

This is the situation in Dire Dawa and around the city was directly involved by the local community and officials who share local land in the name of the protection of law. Local community customary land rights are protected by "law", this is because government officers were involved by means of legal protection. Indeed, land grabbing may likely make worse urban poverty in the city that are already stressed and result in a net transfer of wealth from the poor to the rich. The next part examines the relationship between land grabbing and principles of sustainable development in international law.

Illegal land selling and land grabbing has provoked a great deal of debate between local community or land owners and government officials who demand for land to be purchased by the name of legal protection. The local communities who claimed their land was often passed to these generation from their ancestors, feel more insecurity of their land. According to them their land was snatched by government formal and legal protection of law and by the name of investment. One of my informants described the situation like this:-

*Government officials are always on quarrel with us on our ancestor land. The issue is not for the sake government investment, but for the sake they. We feel unsecured because of our land, and sometimes fight with them for our own right.*

The insecurity on land ownership consider various impacts of land grabbing on local populations affected by transnational land getting hold of can benefit from the land itself. It is dynamically debated whether land contract actually benefit local communities and whether the interests of communities are protected when such transactions are formed or to the government officials who sale land under the umbrella of legal protection. A study of land acquisition contracts has completed that land renewal requirements are not generally included.

### **5.2.3 Leads to Water insecurity**

Illegal sale of land by local communities land grabbing by the government officials has significant implications for water insecurity due to the reliance on the availability of fresh water for drinking and small scale farming around the city. One of the principal considerations for land grabbers are the acquiring land is often is the looting of their personal ownership on land. Therefore, access to water resources, is unsecured due to the increased interest in water by the new comers which has also driven by the impact of climate change, with rising temperatures and more frequent droughts likely to intensify the need for more water supply to the residents. Matrimonial practices occur in relation to water insecurity on the land sold land or grabbed land disagreements will happen due to the scarcity of the availability of fresh water to drink.

There is little or no contemplation of the unfavorable impact of increased water taking out and no stated limitation on the use of water.

Unregulated water use may further lead to overuse of water by the new comers or the people who purchase land for construction. The implications for water insecurity are similarly the concern of the government and the city administration. This issue may lead the society to a conflict over water share.

#### ***5.2.4 Less Employment and Infrastructure***

The employment caused in the area of illegal land selling communities and government officials grabbing of land, was sever to the local communities. Their land is often promoted as providing opportunities for employment to revitalize the benefit of local communities by providing food security and reliance on the skills development, and access to technology and connection to global markets. Employment is largely considered by the local community as widely seen to be necessary to bring more development of their area into production and to provide local employment opportunities. Local communities assumed that governments and government officials on the basis that land leases and grabbing were to provide them with the necessary resources to buy food on the global market. The questionable is that for the benefit local communities who owned the land, or for the benefit of government officials who sold the land under legal protection. The case of infrastructure development is also give emphasis to an advantage of local communities in the area. On the other hand, whether and how land sale can benefit local communities depends to a large extent on their design and management. Less development of infrastructure leads the community to quarrel with the government. It brought tension between the government and the local communities.

#### ***5.2.6 Leads to ecological damage***

Ecological damage resulting from illegal land sale by the community and land grabbing by the government officials was the practices includes destruction of soil fertility, pollution of water sources, loss of biodiversity and draining of everglade. Illegal land sale and land grabbing is a series effect on the local environment, such as indigenous trees, and some bushes in the area.

The changes the natural ecosystem affects biodiversity in areas and has a diverse effect on local communities. The absence of tree plantations has led to soil erosion and flooding in surrounding land. An environmental dreadful condition forces local communities and some urban dwellers to leave their native lands. Some relocate to cities, while others clear bushes for construction or peat land to continue home building, thus perpetuating the cycle of environmental destruction.

#### ***5.2.5 Leads to food insecurity***

The final demand of illegal land selling and land grabbing demonstrates that land grabbing often involves the relocation of local communities in order to clear land for purchase. New comers are usually more interested in having home constructed than addressing local unemployment or food insecurity. They favor flat and suitable areas for construction of beautiful homes, which are not exposed for erosion sometimes. Until now, many of the areas leased to the new comers who can purchase from the government formally and others are vulnerable to drought, flooding, and conflict.

This condition leads the local communities and even the new comers to food insecurity who have no other options to do rather than waiting for what happening than doing something better. Food insecurity is common in around the city of Dire Dawa, due to the existence of the city in harsh environment. Dire Dawa is the hottest city where edible fruits and cereals are not grown

except for sorghum crop. Land sale has reduced access to water sources and degraded water supplies as a result of water erosion, in many cases where communities have been relocated to accommodate officials; and the replacement in money land has been made available to local communities in insufficient way.

## **6. Conclusion**

Land grabbing is a fast growing trend in the developing countries like Ethiopia, which has gained momentum particularly in these countries as government access to land. The illegal selling by the local communities and grabbing by the government officers is not limited to tillable land; it goes further to capture urban lands and its surrounding. Land reserves in urban and rural areas are purchased by the name of investment to riches. The sale of land started when the legal legislation permitting the government sale the land buy land every-where in every pockets of the country urban-rural areas. Other factors came to deepen the structural, institutional, cultural, historic, legal, and economic, reason that the government began to sale the land under the coverage of legal protection.

These conditions lead the local society or communities to several local communities were affected by illegal land sale and land grabbing culturally and land is closely bounce with cultural identity and associated to a variety of cultural practices. Some land areas are considered as the spiritual significance areas by local communities, and some parts of land are considered as sources of foods, where food was collected from particular areas that have a fertile background.

Local community customary land rights are protected by "law", this is because government officers were involved by means of legal protection. Indeed, land grabbing may likely make worse urban poverty in the city that are already stressed and result in a net transfer of wealth from the poor to the rich. Unregulated water use may further lead to overuse of water by the new comers or the people who purchase land for construction. The implications for water insecurity are similarly the concern of the government and the city administration. Less development of infrastructure leads the community to quarrel with the government. It brought tension between the government and the local communities. The absence of tree plantations has led to soil erosion and flooding in surrounding land. An environmental dreadful condition forces local communities and some urban dwellers to leave their native lands. Food insecurity is common in around the city of Dire Dawa, due to the existence of the city in harsh environment. Dire Dawa is the hottest city where edible fruits and cereals are not grown except for sorghum crop.

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## **The Role of Investment and Development Road Traffic Infrastructure for Vietnam's Economic Development**

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### **Abstract**

This study was carried out to analyze the current situation of investment in road traffic infrastructure development in Vietnam, thus analyzing the contribution of investment in development of road infrastructure with Vietnam's economy development. To analyze the role of investment and development road traffic infrastructure for Vietnam's economic development, researchers used modeling method to analyze the role on, then to propose a number of recommendations to contribute to further enhance the role of investment in road traffic infrastructure development with the Vietnam's Economic Development

**Keywords:** Road traffic, development and investment, road traffic infrastructure, economic development, Vietnam

### **1. Introduction**

Investment in the development of road traffic infrastructure is an important part of investment in general, the results of investment in the development of road traffic infrastructure are the road traffic infrastructure system complete, contribute to promoting traffic between the local as well as between countries, thereby contribute to the promoting growth and economic development of each country.

In addition, investment in road traffic infrastructure construction is part of the total investment of the whole society, therefore, like other investments, investment in the development of road traffic infrastructure also has a direct impact on the economic development of each country.

In particular, when a traffic project is constructed, it generates income for the construction enterprises which joined the project, it also creates jobs and income for employees. Then these enterprises and employees use their income to buy goods and services. Thus they contribute to increased productivity and GDP per capita of the economy. Just like that will have an increased production chain, employment and GDP per capita.

For such reasons, this research analyzes the role of investment in the road traffic infrastructure development with economic development in Vietnam, it points out the achievements, constraints and recommendations that contribute to enhancing the role of investment in development of road traffic infrastructure with economic development of Vietnam.

## **2. Overview of Research**

Investment in transport infrastructure with economic growth and development has received not only the attention of policymakers but also of researchers around the world.

The research by Glen Weisbrod (2009) on the economic impact of public investment on transport has shown that the development of transport will help to save production costs and create mobility in economic activity, creating jobs, growth for the economy...Investments in the transport system will have an impact in the long term, so it needs to seriously consider the benefits, costs and investment levels for optimal traffic.

Similar to the view of Glen Weisbrod (2009), Susan Handy (2005), in her research showed necessary requirement of investing the transport system which focus system construction of highway, Susan Handy said that the construction of the highway system would contribute to the development of shopping centers, tourism development, It helps to reduce production costs, increase economic growth and increase the aspirations of the urban population to live in the suburbs

Meanwhile, Pham Thi Tuyet (2015) has a different approach when it comes to practical development of road traffic Vietnam in the previous period and propose capital requirements for developing road traffic in the coming period (forecast for investment capital till 2020), the author also pointed out that the current investment in transportation infrastructure focuses on three main sources: Foreign loans, Government bonds and mobilized from the State budget, the results and limitations are also the author pointed out, then to propose a number of recommendations aimed at developing road traffic system in Vietnam. Similar approach of Pham Thi Tuyet but not forecasted capital requirements for road traffic in the coming period, Pham Dinh Hanh (2016) uses data from the Ministry of Transport on the current situation of investment in transport infrastructure development to analyze the achievements and limited aspects to propose recommendations to contribute to further improve the investment activity and development of transport infrastructure in Vietnam.

There is a relative similarity in the problem approach as well as the use of statistical methods to describe and interpret research results with Pham Thi Tuyet (2015), with data from the annual review reports of the Ministry of Transport, Vu Dinh Anh (2016) in his study analyzed the need for capital for investment in road traffic infrastructure development. The author also points out that, experiences of countries around the world show that, there are three main sources of capital to be mobilized for the development of transport infrastructure: (1) investment from the state budget; (2) Domestic mobilized capital (through the banking system, enterprises, issuance of bonds ...); (3) Capital mobilized from foreign countries (international loans, international bonds, foreign direct investment ...). Simultaneously, the research also pointed out that due to limitations on the size of the state budget so most of the capital investment in the development of infrastructure in developing countries in Asia are mobilized from abroad (primarily ODA) and private investors at domestic and abroad.

Also selected object of study is the transport infrastructure system of Vietnam as previous studies of Vu Dinh Anh (2016), Nguyen Van Bay (2016), Pham Thi Tuyet (2015), However, research team of Tran Dinh Thien and Vinh Tuong (2016) focused on the development of transport infrastructure in Vietnam to meet the requirements of industrialization and modernization in the context of international economic integration. , the new context has been focus on explored by the authors. The study analyzes successes and limitations in transport infrastructure development in Vietnam, the development of enterprises in transport infrastructure has also been analyzed by the research team, the author also pointed out the development in both quantity and quality of these enterprises in the author's research period.

Challenges in road traffic infrastructure development have also been mentioned, on the basis of which the author has proposed proposals to clear the capital for transport infrastructure development in Vietnam, one of the important areas is the road traffic infrastructure development. Specifically, the author analyzes the strategy of transport infrastructure development, priorities and roadmap for investment in transport infrastructure; solutions have also been pointed out for the development of transport infrastructure in Vietnam in the context of international economic integration today.

### **3. Research methodology**

The data for the research was collected from the annual review reports of the Ministry of Transport, General Statistics Office, data from scientific works published in scientific journals in domestic and abroad, some data are collected such as: Investment capital for development of road traffic infrastructure, GDP per capita of Vietnam in the period 2001-2016, ...With the data collected, the research uses a descriptive statistical method to analyze the dynamics of Vietnam's investment in road traffic infrastructure development. The relationship between investment in road traffic infrastructure development and economic development is quantified through the quantitative model with the dependent variable GDP per capita; it represents the economic development and the investment capital for the development of road traffic infrastructure - representing the investment in the development of road traffic infrastructure.

### **4. Research Findings**

The actual situation of investment in the development of road traffic infrastructure in Vietnam is as follows: Investment capital for Highway (excluding Highway 1 and the HCM road) fluctuating around 255 701 invested billion, on average 31 963 billion / year, which, non-budgetary capital of VND17,023 billion and VND 84,222 billion have not been found.

**Table 1: Capital investment in upgrading national roads (not including the Ho Chi Minh road and Highway 1)**

*Unit: VND billion*

No	Source	2012-2020	2012 – 2015	2016 - 2020
1	ODA	92.956	66.297	26.659
2	State budget	16.908	12.711	4.197
3	Government Bonds	44.592	23.850	20.742
4	Off-budget funds	17.023	10.711	6.313
5	No source	84.222	19.822	64.400
	<b>Sum</b>	<b>255.701</b>	<b>133.391</b>	<b>122.311</b>

*Source: Decision No. 355 to adjust the Transport Development Strategy of Vietnam to 2020 with a vision to 2030*

Investment capital for development of National Highway 1 is VND 89362 billion for the whole period, VND 22340 billion for the whole year, VND 240839 billion for the Ho Chi Minh road, VND 26760 billion per year. In 2012-2015, the total investment capital for upgrading national highways in Vietnam is about 133391 billion dong, which accounts for most of the state capital with the contribution of state budget capital (about VND 12711 billion) official development assistance (VND 66297 billion) and government bond capital (VND23850 billion) Renovation

project, expansion and upgrading of National Highway 1 and Ho Chi Minh road as key projects in the period 2012-2020, funding for the implementation of this project are as follows:

**Table 2: Capital for upgrading and expansion of National Road No.1, Ho Chi Minh road**

*Unit: VND billion*

No	Road name	Tổng	2012 - 2015	2016 - 2020
1	Highway 1	89.362	67.022	22.340
2	Ho Chi Minh road	240.839	69.997	170.842

*Source: Decision No. 355 to adjust the Transport Development Strategy of Vietnam to 2020 with a vision to 2030*

*\*) The role of investment in development of road traffic infrastructure with economic development in Vietnam*

Research using OLS regression model to analyze the role of investment in infrastructure development road with economic development in Vietnam, firstly, the authors examine the appropriateness of regression models and some defects of the model:

**Table 3: Summary of model parameters**

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.835 <sup>a</sup>	.697	.675	366.460

a. Predictors: (Constant), VDT

*Source: Calculated results of the author*

With R Square = 0.667, the independent variables in the model account for about 66.7% of the dependent variable.

**Table 4: Analysis of Variances (ANOVA)**

**ANOVA<sup>a</sup>**

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	4316358.978	1	4316358.978	32.141	.000 <sup>b</sup>
Residual	1880099.459	14	134292.819		
Total	6196458.438	15			

a. Dependent Variable: GDPnguai

b. Predictors: (Constant), VDT

*Source: Author's calculations*

Results from the data table show that, with coefficient Sig = 0.000; Tested F = 32,141, so the research model is suitable.

**Table 5: Regression coefficients**

**Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	68.374	215.436		.317	.756
VDT	57.688	10.175	.835	5.669	.000

a. Dependent Variable: GDPnguai

*Source: Author's calculations*

The results of the analysis showed that, to invest in the development of the road traffic infrastructure (the scale used is investment capital), which is closely related to economic development (the used scale is the GDP per capita annually). The beta adjusted to 0.835, this suggests that investment in infrastructure development of road traffic impacts directly or indirectly to economic development and this is particularly effective with the local difficulties, remote areas, thus creating the economic development of the locality.

## **5. Recommendations**

To better promote the role of investment in roads traffic infrastructure development creates positive change with economic development of the locality in particular and Vietnam in general, a number of recommendations, the authors suggest as follows: It is necessary to select the right investment projects for development of road traffic infrastructure: Priority should be given to key area investment, remote areas in order to promote the economic growth and development of the difficult localities. It is necessary to build and train a contingent of cadres directly involved in investment in the development of road traffic infrastructure from project construction to project disbursement. Increase the level of specialization and reduce plurality of the State management to get good experts, assume its role and responsibilities in the management of the State for investment projects in infrastructure development of road traffic. To use and mobilize effectively the investment capital sources for the development of road traffic infrastructures, contributing effectively to raising the quality of investment in the road traffic infrastructures development, contributing to reduce pressure for the State budget capital for investment and development of road traffic infrastructure, thereby contributing to economic and social development of the country.

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