



“Arab Sovereign Wealth Funds and Investments in Land and Water in Sub Saharan Africa Countries”

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Raffaele Bertini

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“Arab Sovereign Wealth Funds and Investments in Land and Water in Sub Saharan Africa Countries”

Raffaele Bertini¹

Università degli Studi di Firenze

Abstract

One important phenomenon that characterizes the international economic scenario and especially the Least Developed countries as Sub Saharan African countries is the acquisition of land and water resources by domestic and foreign investors in the last years. Especially during last years of international economic and financial crisis and after the increase in food and cash crops in 2007-2008, lots of investments in land and water flowed and continue to flow towards rich land and water resources' countries. At the same time, rising international oil prices drive many Arab oil rich countries to establish or invest more resources in their Sovereign Wealth Funds. These countries show particular characteristics in their agriculture sector as water and arable land scarcity. This paper aims at analyzing the reasons of the investments' flows towards land and water made in order to fulfill the demand of these resources of their countries' people. Many GCCs and other MENA countries in fact do not own enough arable land and water resources and investing in these sectors abroad should represent a new opportunity to solve scarcity problem in these fields. Moreover, the paper presents an overview of the condition of water in SSA countries. Political and economical reasons create the space of maneuver for increasing investments flows towards Sub Saharan African countries. Moreover, this paper aims at analyzing the reasons of the investments' flow towards land and water made in order to fulfill the demand of these resources in Arab countries. Given the scarcity of data, the main aim of this paper is the analysis of the possible links between Sovereign Wealth Funds in Arab Countries and the acquisitions of land and water resources in Sub Saharan African Countries through different analytical analysis and the implementation of a probability model.

¹ PhD Student on Politics and Economics of Developing Countries with Economics Sciences at Florence University of Studies” . I Thank Professor G. Giovannetti for her support and competent advice during the paper elaboration.

Index

Introduction.....3

1. Research Question.....5

2. Sovereign Wealth Funds in Middle Eastern and North African Countries.....6

2.1 General Definition and main characteristics of Sovereign Wealth Funds.....6

2.2 Arab Sovereign Wealth Funds Characteristics.....7

3.1 Land and Water Resources in Sub Saharan African countries.....11

3.2 Water Resources in Sub Saharan African Countries.....13

4.1 Arab Sovereign Wealth Funds Investments in Sub Saharan Africa countries.....17

5.1 Econometric Model.....20

5.2 Model and Dataset Description.....20

5.3 Main Results of Probability Model.....22

6 Conclusions.....25

Bibliography.....26

Web List.....28

List of Tables and Pictures

Figures 1 and 2: Sovereign Wealth Funds by Funding Resources and by Region.....8

Figure 3: OPEC Countries Spot Prices* FOB Weighted by Estimated Export Volume (Dollars per Barrel).....9

Figure 4: Percentage of arable land as total land in selected SSA countries in selected years....13

Figure 5: Water Use between sectors in the period from 1997-2008.....14

Figure 6: Proportions of renewable water resources withdraw as %of total available.....15

Table 1 List of Arab Sovereign Wealth Funds at October 2011.....10

Table 2 Water Use between sectors in the period from 1997-2008.....14

Table 3: Investment in Land by Arab Public Authorities in Sub Saharan African countries.....18

Figure 4: Estimation Results utilizing Investments’ Dummy for Arab Countries as Dependent Variable.....23

Figure 5: Estimation Results adding two variables for irrigation and institution.....24

Introduction

Sovereign Wealth Funds are a new player in international economic, financial and, for certain regards, political scenarios. These players are not “new” in strict sense- the first Sovereign Wealth Fund was established in 1953 in Kuwait -but they started to span all over the world and to invest in Developing and Least Developed countries during the last decade. Following the path established by Kuwaiti Sovereign Fund, other countries belonging to GCC group and others oil and natural gas rich countries such as Libya and Algeria established Sovereign Wealth Funds thanks to rising foreign resources derived by increasing natural resources’ prices –see Table 1. Investments – through Sovereign Wealth Funds-, thanks to foreign reserves accumulated by these countries, traditionally flowed towards OECD countries but, especially after the international financial and economic crisis in 2008-2009, started to flow towards other kinds of investments such as land and water resources’ acquisitions and therefore towards countries riches of these available resources such as Sub Saharan African countries. International Sovereign Wealth Funds are not a homogenous group and their wealth sources are different such as their destination countries even if for certain characteristics they are similar. Some of these financial organizations especially among Arab Middle Eastern and North African countries present similar characteristics from resources source till investment target countries. These countries, moreover, present the availability of oil and natural gas reserves, lack of arable land, lack of water sources and the need for food and water. A descriptive picture framework of these financial actors is presented in the first part of the paper in order to implement the following steps of the analysis.

Another important phenomenon, as well documented in press and literature that characterizes the international economic scenario and especially the Least Developed countries as Sub Saharan African countries is the acquisition of land and water resources by domestic and foreign investors. Especially during last years of international economic and financial crisis and after the increase in food and cash crops in 2007-2008, lots of investments in land and water flowed and continue to flow towards rich land and water resources’ countries. This paper aims at analyzing the reasons of the investments’ flow towards land and water made in order to fulfill the demand of these resources of their countries’ people. Many GCCs and other MENA countries in fact do not own enough arable land and water resources and they invest in these sectors abroad. The second part of the paper presents an overview of the condition of water and arable land scarcity in these countries. Political and economical reasons create the space of maneuver for increasing investments flows towards Sub

Saharan African countries. This paper aims at analyzing the reasons of the investments' flow towards land and water made in order to fulfill the need of these resources in their countries.

Water management represents a relatively new issue in most of the MENA countries and in particular in the GCCs². Major basins' administration³, scarcity of water for agricultural activities, growing urbanization, deterioration of water pipelines and increasing demand for renewable energy produced by water increase problems for the management of the scarce water resources in large part of Middle Eastern and North African countries⁴. Climate change and increasing desertification take out possible investments in this area in many countries and open the way to investing abroad in water-rich countries in order to exploit natural resources there. Agriculture production- crops and bio-fuels at the same time- is deeply related to water availability therefore investing decisions in water rich countries can be explained through the will to exploit these resources.

Moreover, investments in land have to take into consideration the particular conditions of agriculture where the production system is different compared to industrial and tertiary. These investments are particularly striking in the contest of land and resources abundant but, at the same time, poor and underdeveloped countries such as Sub Saharan African countries. Land acquisitions in these countries pose questions about the impact in these contests in terms of sustainability for environment, local agricultural systems and for poverty reduction policies. As debated in literature, in the contest of chronic lack of investments in agricultural in SSA countries, foreign investments should represent an opportunity for the development for their agricultural and economic systems⁵.

Given the conditions reported above, the interest of investors for the acquisition in land and water in the agricultural sector increased during the last years. According to recent literature, different motivations drive international investors and especially Sovereign Wealth Funds towards the land acquisitions in Sub Saharan African countries. Land scarceness in many countries, bio-fuels production for alternative energy production, food crops production for increasing food demand in Emerging countries and a high yield in intensive agricultural production compared to other kinds of investments and other political motivations led investment towards land and water rich countries. These acquisitions on land are based on a medium long period and this feature is a particular

² P. Woodhouse, A.S. Ganho "Is Water the Hidden Agenda of Agricultural Land Acquisition in sub-Saharan Africa? "

³ Agreements in the exploitation of Euphrat and Tigri between Turkey and the Arab Republic of Syria and Iraq, or the agreement for the exploitation of the Jordan River between Israel and Jordan. Other kinds of agreements have been signed and implemented in Asia and in Africa.

⁴ NCB Capital, "GCC Agriculture: Bridging the Food Gap", March 2010.

⁵ L.Cotula, S. Vermeulen, R. Leonard and J. Keeley, "Land grab or development opportunity? Agricultural investment and international land deals in Africa",
FAO, IFAD, 2009

characteristic of the SWFs' investments. Through the analysis of the flows of investments towards agricultural sector from SWFs seems possible to explain the reasons that drive these investments. This analysis is the core of the second part of this work aiming at explaining the reasons at the base of this increasing phenomenon.

In order to analyze the reasons beyond the investments in land and water an econometric model is implemented. Given the actual scarcity of data both from the SWFs and the receiving countries side, a different approach permits to analyze this phenomenon. Given certain characteristics of host country, a probit model is implemented. The aim of this third part and of the model implementation is to explain the drivers at the basis of the investments of Arab SWFs in land and water as source for reducing arable land and water scarcity in Middle Eastern and North African countries.

The first paragraph presents the main characteristics of the Arab Sovereign Wealth Funds focusing on the investments' decisions and other their past behavior. In the second paragraphs land and water situations in Sub Saharan African countries is briefly described, while, in the third the phenomenon of acquisitions of land in SSA country is introduced. A probability model is presented and in order to analyze the probability of investing in Sub Saharan African countries by Arab Sovereign Wealth Funds. The main aim of this paper is to implement a comprehensive analysis and a probability model in order to analyze the possible directions of future investments in land and water by Arab Sovereign Wealth Funds.

1. Research Question.

Given the conditions presented above and explained in the paper the research question is:

- Which are the main conditions in the receiving country that drove investments in arable land and water resources rich countries in Sub Saharan Africa by Arab Sovereign Wealth Funds?

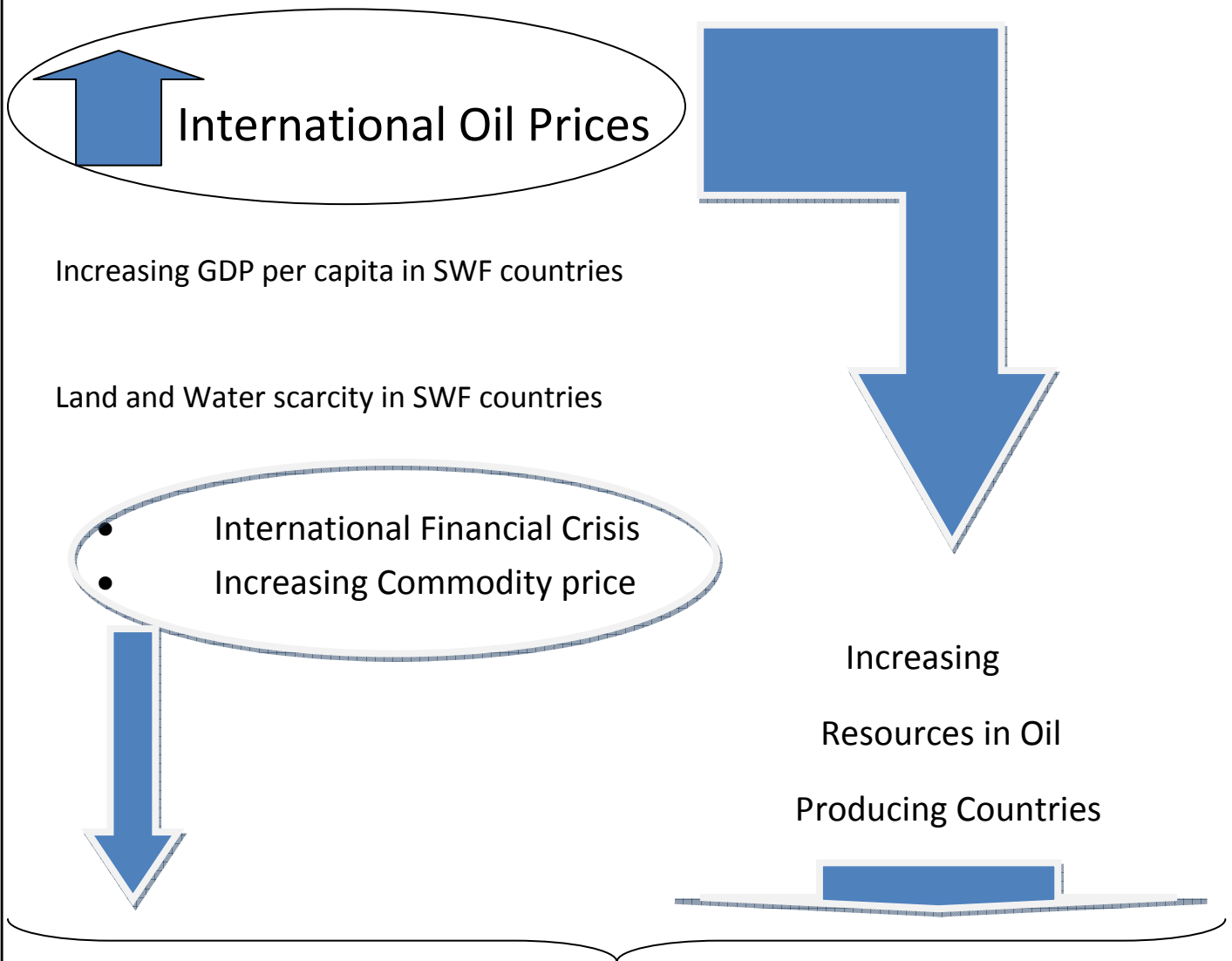
All the linkages reported above are placed in Box 1 in order to explicate the reasons driving our analysis and research interest.

2. Sovereign Wealth Funds in Arab States

As well-known the first Sovereign Wealth Fund was established in Kuwait in the 1953 followed by a Saudi Wealth Fund within the Finance and Monetary Authority. Others started to operate in the seventies and eighties but especially during the last decade following the dramatic increase in oil and natural gas in the international markets. Given the importance of oil production in the majority of Gulf countries and in other Middle Eastern and North African countries, these countries and

governments received a great amount of financial surplus that they- governments and ruling families- invested these surpluses in the implementation and creation of Sovereign Wealth Funds.

Box 1: Main Characteristics of the Land and Water Acquisitions in SSA by Arab SWF



**Sovereign Wealth Funds in Arab Oil and Gas Producing Countries
Arab Countries Invest in Land and Water Acquisitions in Sub
Saharan Africa Countries.**

2.1 General Definition and main characteristics of Sovereign Wealth Funds

According to literature on this field a general accepted definition of Sovereign Wealth Funds does not exist. Many institutions define these financial actors therefore it can be only defined in negative

in order to differ them from other similar institutions (hedge funds, stabilization funds and pension funds):

- government investment vehicle which is funded by foreign exchange assets,
- government manages those assets separately from the official reserves of the monetary authorities
- Higher risk tolerance than traditional officials⁶.

Some other important characteristics are those related to the kind of investments both in terms of economic sector and in timing spectrum. In the past decade these financial institutions invest in OECD and Emerging Economies in industrial and service sectors showing a special interest in long term investment both in green field and brown field projects⁷. These characteristics can be considered a long term strategy aiming at insuring from economic and political risks. After the clash of OECD countries with the increasing downward trend in financial and economic systems of the previous investment 'host' countries, SWFs started to invest in other countries and markets. This latter can explain the increasing interest of SWFs in acquiring arable land in Sub Saharan African countries where this resources is available. This issue would help Arab countries owner of SWFs to fulfill the water and arable land scarcity. Let focus now attention on the main characteristics of these financial institutions in Middle Eastern and North African countries.

2.2 Arab Sovereign Wealth Funds Characteristics.

As reported in the previous paragraph, the first Sovereign Wealth Fund was established by Arab countries rich of oil and other natural resources. In the following decades and especially in the last, the countries that have a SWF based in their-own territory belong to the OPEC and are oil or gas rich countries that. To fulfill our analysis to the MENA countries, the Gulf oil producing countries can be added two other North African countries as Libya and Algeria. Arab United Emirates holds six SWFs while others such as Kuwait, Algeria, Libya and Bahrain holds one showing different approaches to this phenomenon. On the other hand, some MENA countries are object of investments by SWFs in land acquisitions and other kinds of investments as showed in many cases by acquisitions of land, for instance, in the Arab Syrian Republic by Oman Fund and investments in Egypt by different Gulf funds but this other direction of investments is not studied in this paper.

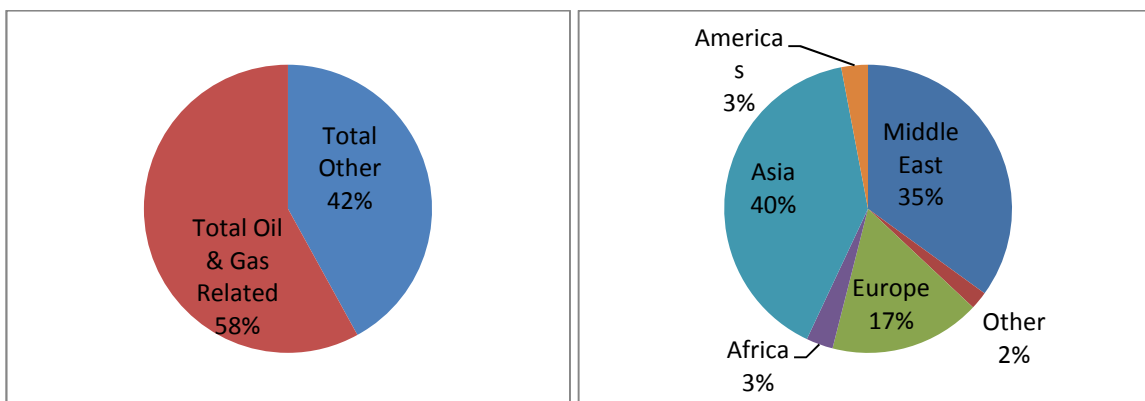
⁶ Deutch Bank, "Sovereign Wealth Funds- State Investment on the Rise", 2007

⁷ Truman, "Four Myths about Sovereign Wealth Funds", 2008

In this view, it is interesting to analyze the mandate of these financial institutions. On general terms, the mandate of the SWF is to achieve long term returns on state's surpluses oil or gas revenues and to provide an alternative source of government income for the future period when the country resources are depleted⁸. In this general mandate- that is treated by KIA- it is clear the attempt to drive actual resources towards future period when natural resources will be scarce through investments on medium-long period in profitable markets abroad.

Sovereign Wealth Funds are an international phenomenon that follows some characteristics of international trade and development such as increasing reserves surpluses in exports due to rising raw materials' prices and/or exports in manufactures- especially in Asian Economies. As shown in the pie charts below around three fourths of the SWFs are based in MENA or Asian countries and natural resources is the largest funding resource with 58% of the total. Consequently this phenomenon can be inserted in the process of shift of economic and political power towards emerging countries.

Figures 1 and 2: Sovereign Wealth Funds by Funding Resources and by Region.



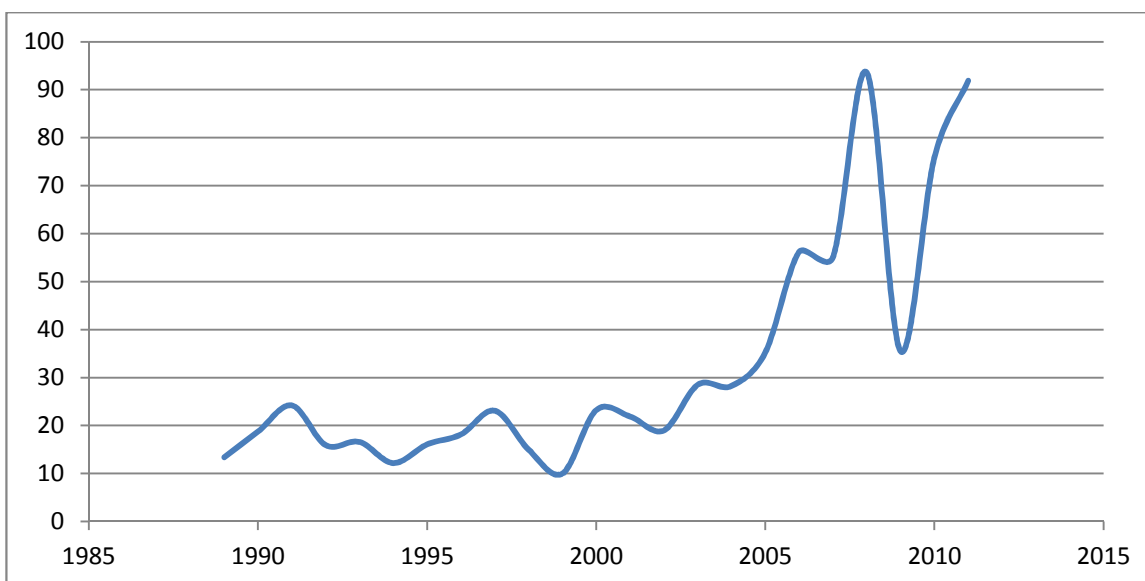
Source: Sovereign Wealth Fund Forum

As observed in the chart, moreover, the most important source of financing for these financial institutions is 'Total oil and gas related' and given the richness of these resources in analyzed MENA countries and this fact can explain the increasing rule of SWFs in international financial and economic framework. According to the available data and recent literature, more than half of budget of international Sovereign Wealth Funds is located in Arab countries showing again the importance of these financial institutions for the economic and financial of Middle Eastern and North African countries. This share of market owned by MENA countries is likely to increase given the richness of mineral resources in these countries.

⁸ S. Behrent, "When Money Talks: Arab Sovereign Wealth Funds in Global Pub Policy Discourse", CARNIGIE, 2008.

As reported above and shown in Graph oil is the main source of financing for Arab SWF and consequently volatility in this international market is deeply linked to the increase of the analyzed phenomenon. Oil prices in international markets followed a random walk in the nineties following oil crisis in the seventies and the decisions of its most representative organization- OPEC. In this organization an important role is detained by Arab producing countries and in particular by Saudi Arabia in determining production and consequently prices of this commodity in the international market. Saudi Arabia in fact owns the largest oil resources all over the world both in terms of present available and discovered resources. Anyway during the nineties a flat trend can be observed in oil prices- with the sole exception of the First Gulf war in 1991- but, after 2002 this index started to increase constantly till reaching a peak in 2008. This increasing trend had probably influenced producing countries, especially Arab countries, in creating Sovereign Wealth Funds. This correlation cannot be traced from an empirical point of view but the flourishing of these investment organizations is timely linked to the increasing oil prices and consequently flows of resources towards producing countries – see Box 1.

Figure 3: OPEC Countries Spot Prices* FOB Weighted by Estimated Export Volume (Dollars per Barrel)



Source: Organization of the Petroleum Exporting Countries- OPEC, 2011

*The reported prices are those recorded in the first working day in the referring year.

In order to better understand the largeness of this phenomenon for Arab countries and especially Gulf countries in the following table a complete list of Sovereign Wealth Funds in Arab countries is reported. Seven countries owns at least one SWF, five belong to the Gulf Council while the others are Libya and Algeria. As can be easily observed in Table 1, there is an upward trend in establishing

Sovereign Wealth Funds in the last decade even if the first was established in 1953 in Kuwait. Abu Dhabi Investment Authority and Saudi Arabian Monetary Agency are the largest in terms of declared budget while, at the same time, there are institutions that do not publish their budget. These institutions cannot be considered homogeneous group with relation to transparency and this suggest that there is lot of missing in reveling data for investments and even for budget. This issue creates some problems in implementing economic analysis that can be overturned in the last part of the paper.

Table 1 List of Arab Sovereign Wealth Funds at October 2011

Name	Year	Country	Origin	Estimated Size in billion \$
Abu Dhabi Investment Authority	1976	UAE	Oil	627 \$
International Petroleum Investment Company	1984	UAE	Oil	58 \$
Mubadala Development Company	2002	UAE	Oil	13.3 \$
Istithmar World	2003	UAE	Oil	12 \$
Dubai International Capital	2004	UAE	Oil	13 \$
RAK Investment Authority	2005	UAE	Oil	1.2 \$
Investment Corporation of Dubai	2006	UAE	Oil	19.6 \$
Emirates Investment Authority	2007	AUE	Oil	n/a
Mumtalakat Holding Company	2006	Bahreïn	Oil	9.1 \$
State General Reserve Fund	1980	Oman	Oil & Gas	8.2 \$
Oman Investment Fund	2006	Oman	Oil	n/a
Qatar Investment Authority	2005	Qatar	Oil	85 \$
Kuwait Investment Authority*	1953	Kuwait	Oil	296 \$
Saudi Arabian Monetary Agency	1954	Saudi Arabia	Oil	472.5 \$
Public Investment Fund	2008	Saudi Arabia	Oil	5.3 \$
Algerian Sovereign Wealth Fund	2000	Algeria	Oil	56.7 \$
Lybian Investment Authority	2006	Libya	Oil	70 \$

Source: Author's elaborations from different sources

Problems related to transparency are well analyzed in different paper- see Cuffaro & Hallam⁹- where the need for an international code of conduct is traced by different sources and Arab SWF are not all well ranked in this view in accordance to International Statistics. Differences in transparency

⁹ Cuffaro, Hallam, "Land Grabbing" in Developing Countries: Foreign Investors, Regulation and Codes of Conduct", FAO, 2011

of institutions exist between Arab Sovereign Wealth Funds, for instance, Mubadala Development Company records first top classification while Algerian Sovereign Fund records the lowest result.¹⁰

In conclusion, with the increasing emerging of financial and economic crisis in OECD countries and given the risk adversity of large part of non speculative international private capital, international investments flow to different destinations in a sort of reallocation process of international capital markets. Low growth economies will not more attract investments that are likely to flow towards more dynamic markets: emerging markets could benefit from this trend. Sub Saharan African countries are in the uncertain position to be attracting or not yet for international investment. This can be accelerated by international financial and economic crisis of the last year and in the following paragraph the main characteristics of agricultural sector in SSA countries is briefly analyzed.

As finance becomes more expensive and less available this may cause projects to be delayed or cancelled or for a push to be made for alternative financing sources. International private capital is especially risk-averse to economic crises and particularly in developing countries where other risks are already high. On the positive side, the crisis could lead to a reallocation of capital, with weak growth in Europe and the USA leading investors to look for more dynamic markets. Emerging markets could significantly benefit from this reallocation. On the other hand, it is unclear if SSA countries will attract international capital, as it is still far from being an emerging market. All in all, many people now see SSA as the next region of investment opportunities after the catastrophic decades of the 1980s and 1990s. The global financial crisis may speed up this process.

3.1 Arable Land and Water resources in Sub Saharan African countries.

Agriculture is the main sector in the majority of Sub Saharan African countries and the largest part of the population live and earn its sustain from agriculture- FAO and World Bank reports say- and in the rural areas even if a general trend of urbanization can be observed in the last two decades. At the same time, demographic trends in all the countries considered show an increasing population either in rural either in urban areas. This brief observations bring us to analyze the main characteristics of the African agricultural sector focusing especially on arable land and water resources comparing, moreover, them with the data referred to other continents.

Firstly, it is interesting to observe the increasing trend in the percentage of total land that is cultivated showing the rising utilization of African land for agriculture- see Figure 4. As observed above, the increasing population in rural areas is surely one factor that can explain in large part the

¹⁰ Sovereign Wealth Fund Forum.

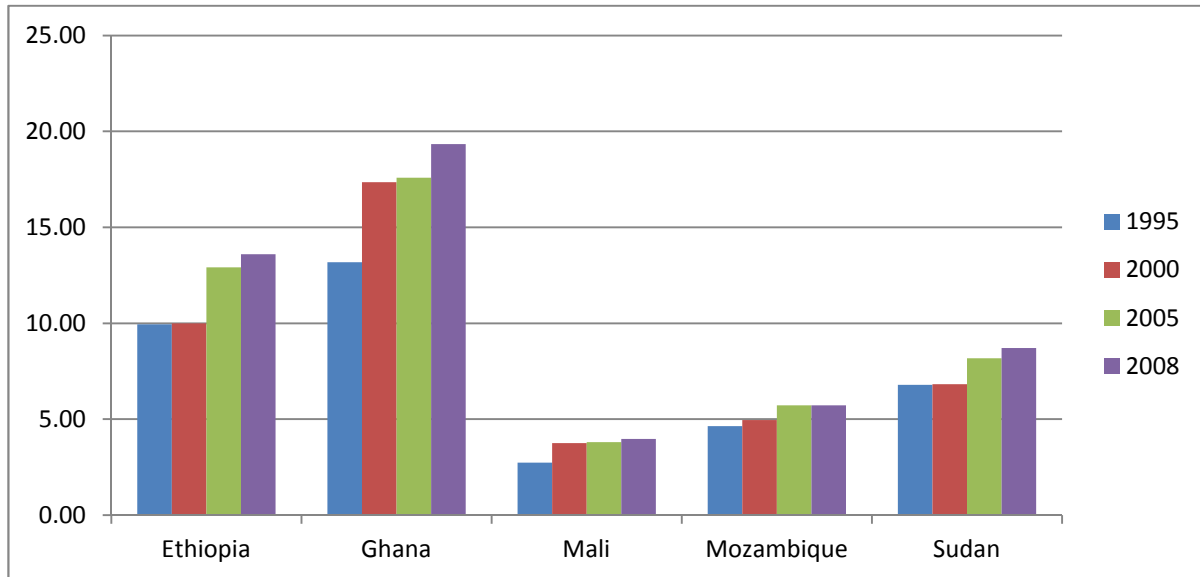
previous trend but other causes can explain this trend. An increasing interest in arable land in SSA countries is not a new phenomenon but some factors create a new environment for increasing this trend. Changes in agricultural policies in SSA countries and especially opening to international investments in observance to TRIMS and WTO agreements have been recorded in the last decade. Many governments of capital-scarce nations want to attract private and foreign investment. Some set up investment promotion agencies, and revise their investment codes. They have also sought to reduce barriers to investment, such as complexity of customs clearance, or number of days required to establish a business. Other factors are at the base of the new interest for African arable land are for instance the rising in commodities' prices in the last years and the international financial crisis that caused the flow out of international investments towards OECD economies systems. Internal conditions in African countries such as new land tenure legislations especially in fields such as common land ownership and definitions of property rights. Community based analysis have been implemented in many African countries examining the process of reforms in this field following the increasing acquisitions of common or state-owned land by national and foreign investors¹¹.

As first step in our analysis, it is important to observe that in the last fifteen years the percentage of arable land over the total land increased in majority of Sub Saharan African countries. Moreover, it is important to observe that some physical constraints exist in this field, for instance, Sahel countries such as Mali and Niger suffer of a 'land constraint' linked to process of desertification-read climate changes- that interested large part of those areas. Other legal and physical constraints interest other African countries linked to the definition of common and state-owned lands and the presence of physical obstacles such as forests. At the end it is possible to affirm a general upward trend in the percentage of arable land on total land as can be observed in selected countries reported in the table below, even if each country presents its peculiarities.

Other important characteristics of agricultural sector that will be utilized also at the end of the paper are linked to the problems linked to utilization of African lands for agricultural use. According to this, it is important in our advice to analyze characteristics linked to water resources availability that can be utilized in agriculture activities. According to this, it is important to observe that in Sub Saharan African countries water is utilized in large part in agriculture and secondly in domestic activities. Given the structure of African- typically poor and less developed- economies and the water-intense activities linked to agriculture as irrigation, the utilization of water resources is concentrated into activities linked to agriculture. On the other hand, African agriculture is typically a rain fed agriculture and small user of tractors and fertilizers even if in the last decade this trend

reversed especially in large agribusiness enterprises- either foreign either domestic led. For all these reasons in our opinion it is important to observe the characteristics of water resources in Sub Saharan African water utilization especially in rural areas¹².

Figure 4: Percentage of arable land as total land in selected SSA countries in selected years.



Source: World Development Indicators 2010

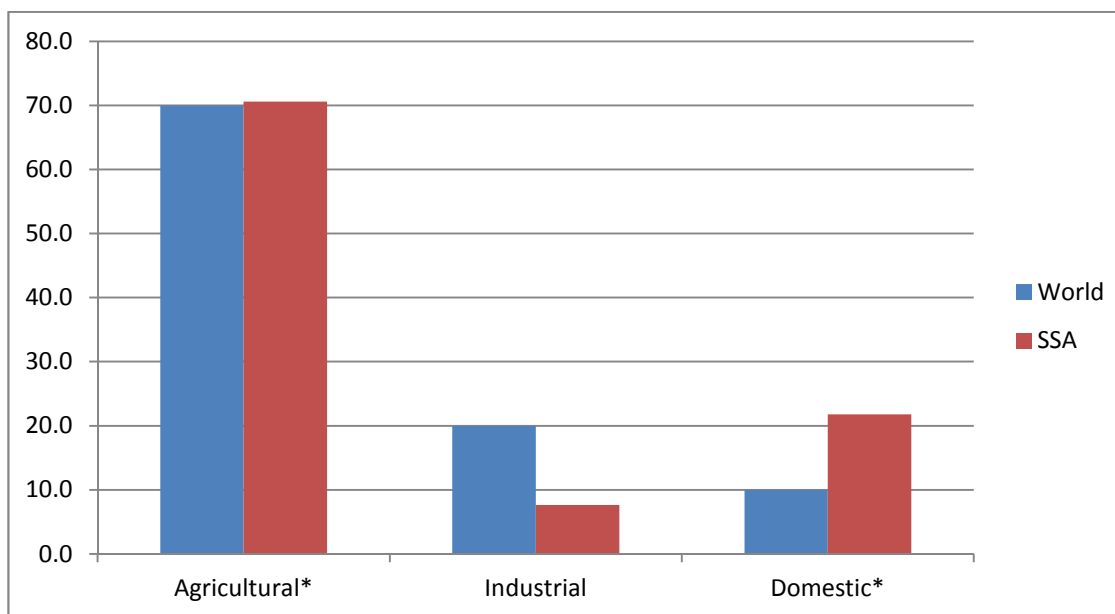
3.2 Water Resources in Sub Saharan African Countries

Agriculture is by far the largest user of water, accounting for almost 70 percent of global withdrawals and 90 percent of global consumptive water use and up to 95 percent of withdrawals in developing countries. While a person may drink 2–4 liters of water a day, it takes 2,000–5,000 liters of water to produce a person’s daily food. Water is important for food security, crop growth, livestock, and food markets. Food security is defined by the Food and Agriculture Organization - FAO- as the regular access of people to enough high-quality food to lead active, healthy lives, depends heavily on water. Lack of water can be a major cause of famine and undernourishment, especially in areas where people depend on local agriculture for food and livelihoods. Erratic rainfall can cause temporary food shortages, while floods and droughts can lead to intensive food emergencies. Some important linkages can be traced between land and water resources consumption and exploitations. In this paper a possible general effect of demand and supply for land and water will be implemented in order to satisfy entirely the research question.

¹² “The State of the World's Land and Water Resources for Food and Agriculture (SOLAW)”, FAO, 2011

Absolute availability is the key constraint in some contexts, where water is being exploited beyond its renewal capacity, often at the expense of ecosystems. At its most extreme, such apparent cases of ‘physical scarcity’ provoke alarming warnings of ‘water wars’ between competing users. But conceptualizing and measuring water scarcity is not straightforward. At national level this conflict can be seen in this share between different activities while at international level this struggle represents one of the most striking issue in the continental political framework.

Figure 5: Water Use between sectors in the period from 1997-2008



Source: FaoStat, Statistic Division FAO 2010

Looking at the national level it is clear that continental characteristics are similar in each African country – see Table 2- with some exceptions such as South Africa and Uganda where larger space for manufacture activities and Somalia where almost all (99.6%) water is utilized for agriculture. This frame reflects the characteristics of the analyzed economies where large part of Gross Domestic Product comes from agriculture and large part of the active population is occupied in agriculture. In the last decade, following the progressive process of urbanization, economies in these countries started a path of ‘tertiarization’ well documented by data and literature.

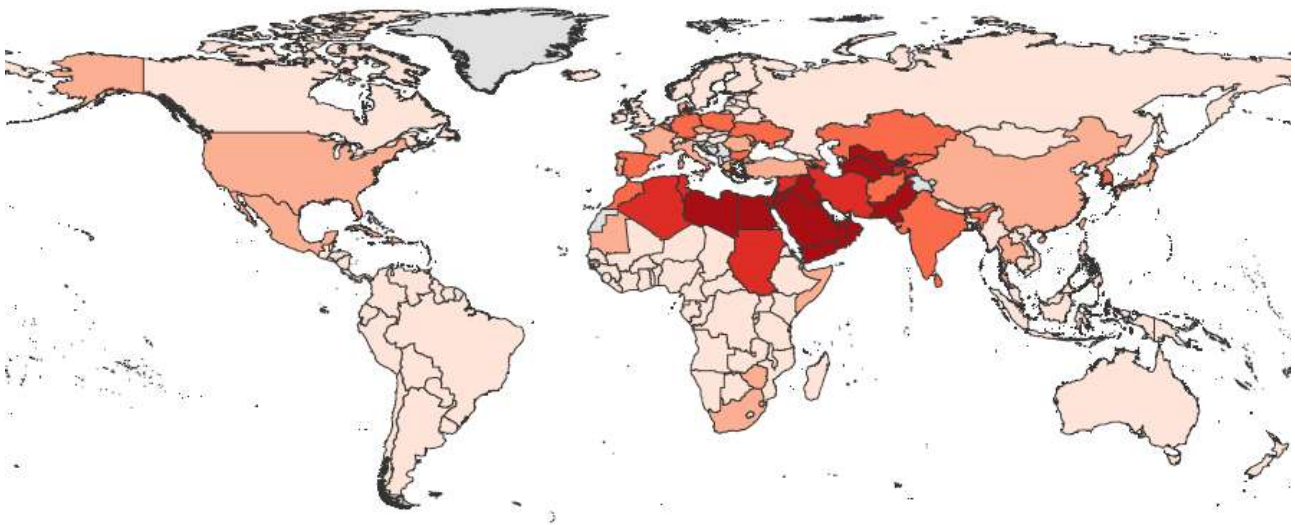
Table 2 Water Use between sectors in the period from 1997-2008

	Agricultural	Industrial	Domestic
Angola	60.0	17.1	22.9
Ethiopia	93.6	0.4	6.0
Mali	90.1	0.9	9.0
Sudan	96.7	0.7	2.7
United Republic of Tanzania	89.4	0.5	10.2

Source: FaoStat, Statistic Division FAO 2010

Focusing on water availability and especially renewable water resources withdraw it is clear that there are some stress areas that utilize their available resources at higher level compared to others. This can be seen as an availability indicator. In fact, Sub Saharan African countries did not withdraw their resources: large part of these countries but Sudan, South Africa and Zambia utilize less than 10 per cent of their total resources. As we observed above, water withdraw is linked to agriculture activities and consequently this lack can be view as an opportunity in investing in these areas. Gulf Council Countries and North African countries show an opposite feature: overstress in

Figure 6: Proportions of renewable water resources withdraw as percentage of total available



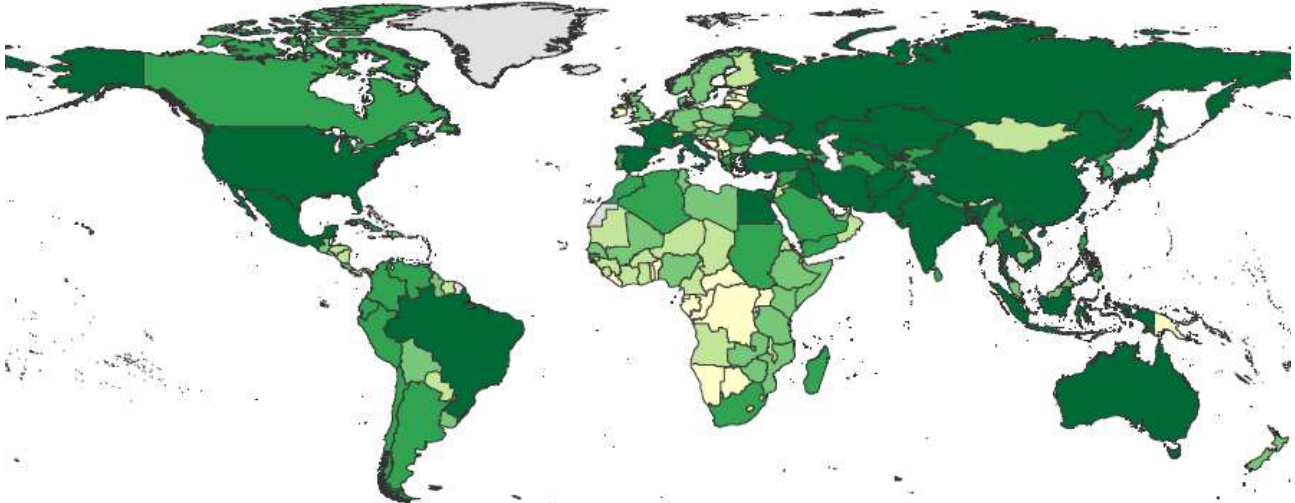
Notes: from with till deeper red as water withdraw rises; Sources: Aquastat FAO 2008

water withdraw because of the lack of this resource in these- for large part of them- desert countries. The observed features leave space to managing increase in water resources withdraws in Sub Saharan and other Developing countries as Latin American countries.

The data analyzed above are replaced focusing on the proportion of renewable resources withdraw for agriculture. These data- reported by AQUASTAT- FAO database- are unfortunately dated around 2001 but show a clear picture where Middle Eastern and North African countries and Sudan utilized more than forty per cent of their resources while most of SSA countries, on the other hand, use less one percent of renewable water resources withdraw for agriculture. This latter is not true for Mauritania, South Africa and Zambia. Water utilization is a key variable to analyze potentiality of the national agriculture to implement a process of development in this core sector for large part of these countries' economies. At this regard, a crucial variable, in our opinion, for analyzing a national agriculture potential is the part of cultivated land that is irrigated. According to the

characteristics reported above, African agriculture is based on rain-fed agriculture system. This implies that the percentage of irrigated land over the cultivated land is not more than one per cent of the cultivated land.

Figures 7: Part of Cultivated Area Under Irrigation as percentage of cultivated area



Notes: from with till deeper green as irrigation percentage rises; Sources: Aquastat FAO 2008

Another important characteristic of African agriculture is the presence of large basins that can influence the implementation of African agriculture. These basins are the largest sources of fresh water in many countries where rainfalls are scarce. Countries as Sudan, Ethiopia, Mali, Niger and others base their agriculture systems on resources derived by water withdraw from main rivers and lakes. Exploitation of this resources is also a source of conflict between countries and within the same countries between groups and regions.

Water scarcity is a major driver of international flows of investments in land; furthermore it has been argued by some that water is the hidden agenda behind many land acquisition deals. Thus investors may be seeking to gain control of water resources in states perceived to have a surplus of water today instead of land .This securing of water rights has become a critical part of the process of acquiring land.

In the end, even if a general framework available for each country is not correct, the problem of water allocation in Sub Saharan African countries is not a problem of availability but water must be utilized in effective way to drive a sustainable development. These efforts in the direction of the appropriate use of water resources can be driven by private or public, foreigner or national actors

but market failures in different markets from credit till land acquisitions by foreign investors in large part of African countries still remain.

Box 2: Gulf Council Country Agriculture

Agriculture sector in GCCs are facing to new and important challenges implementing changed Policies compared to the past decades. In previous decades governments in these countries implemented inward oriented policies aiming at satisfying their internal food demand. The target of Those policies were to create conditions to self- sufficiency. From 1990s agricultural policies Have been oriented towards an international framework where GCCs can buy food crops and In the early years even land in other countries such as Sub Saharan African countries¹³. Problems Related to agriculture in these countries are linked to constraint issues such as:

- i) Scarcity in land and water resources- arable land in GCCs is nowhere more than ten per cent of the total available land even if yield increased scarcity in natural resources especially water and arable land.
- ii) Population growth create increasing demand for food all over the area,
- iii) Growing per capita income and consequent changes in food patterns is a typical phenomenon that characterizes growing economies and summed to population growth is one of the main issue for Arab governments,
- iv) Dependency on foreign agriculture production is a new issue related to newly implemented agricultural policies in GCCs. Volatility in commodities' market makes these countries more concerned on this market and on land acquisition abroad.

New challenges faces agriculture and food policy in Gulf Council Countries and the consequences of the implemented policies in these fields during the last decade¹⁴.

4.1 Arab Sovereign Wealth Funds Investments in Sub Saharan Africa countries.

As reported above, there are important old and new reasons for Sovereign Wealth Funds from all over the world and especially from Middle Eastern and North African countries to invest in SSA countries. These countries started to invest in Sub Saharan Africa in the last decade of the past decade through different actors especially governmental or institutional authorities. Sovereign Wealth Funds in Arab countries are deeply linked to governments and royal and/or ruling elites and consequently other institutions are involvements in the investment process. Qatar Investment Agency planned to invest in Sudan for a large amount of arable land in order to implement food production to be exported worldwide.

¹³ The State of the World's Land and Water Resources for Food and Agriculture (SOLAW)

¹⁴ GCC Agriculture: Bridging the Food Gap", NCB Capital, March 2010.

Table 3: Investment in Land by Arab Public Authorities in Sub Saharan African countries

Country	Arab SWF	Value	Extension	Source of Information
Ethiopia	Dubai World Trading Company (UAE)	300\$millions	5000 ha	ILC blog screening, IFPRI
Ethiopia	Ethio Agri-CEFT (Saudi Arabia)	Unknown	19,200 ha	GTZ
Ethiopia	Mohammed al-Amoudi, Sheik	Unknown	30000	ILC blog screening
Ethiopia	Saudi Star Agricultural Development Plc.	Unknown	500000	ILC blog screening
Kenya	Qatar	US\$2.3	40,000 ha	IFPRI GTZ
Liberia	Libya	Unknown	15,000	ILC blog screening
Madagascar	Qatar	Unknown	450,000 ha	ILC blog screening
Mali	Project Malibya LAP (Lybia)	Unknown	100,000 ha Rice	IFPRI GTZ
Mali	Al-Korayev (Saudi Arabia)	Unknown	100,000 ha	GTZ
Mali	Libya Projet de SOSUMAR	US\$ 170 million	Unknown	GTZ
Mauritania	Government, the Islamic Development Bank, Saudi Arabia Investment funds	Unknown	15000	ILC blog Screening
Senegal	Abu Dhabi Fund for Development	Unknown	Unknown	IFPRI GTZ GRAIN
Sudan	QIA- Qatar Investment Agency	Unknown	100000 ha	ILC blog Screening
Sudan	Hail Agricultural Development Co	Unknown	9,200-10,117 ha	IFPRI
Sudan	Abu Dhabi Fund for Development	Unknown	Unknown	IFPRI
Sudan	Saudi Arabia	Unknown	500,000 ha	GTZ
Tanzania	Saudi Arabia (Saudiske investors)	Unknown	Unknown	IFPRI, GTZ

Sources: GLP Report, "Land Grabbing in Africa: Emerging Land System Drivers in a Tele connected World":2010

Given the lack of transparency in this field especially from Sovereign Wealth Funds, till now no other direct investments by Arab SWFs in land have been planned but press inquests and declaration of intents show an increasing interest in land acquisitions in SSA countries. In order to better understand this phenomenon in its wideness the Table above reported from different sources a list of investments in land by Public Institutions and ruling elites. According to the elements presented above directions and countries receiving investments spreads the entire continent. Ethiopia, Mali and Sudan are at the centre of this process of investments but also other countries are emerging as target as Tanzania and Kenya. Saudi official investors are planning to invest in different projects in Sub Saharan African countries. Another important form of investment is the creation of joint ventures between different international actors in order to invest in different African countries. For instance, The Abu Dhabi Investment Authority and the Swiss bank, UBS, started a joint venture in early to focus on infrastructure projects in Africa including agriculture. Moreover other forms of cooperation are those proposed by some official and public owned companies that interact with national or foreigner groups. An example is the Libyan Arab African Investment working with Libyan Arab Holding Company –GLAHCO- to make agricultural investments in Ghana. Sovereign Wealth Funds as other official public economic and financial institutions use to invest in coordination with host country authority or company in order to overpass internal law or to strength their investments. Project MalLibya can be considered an example of this kind of investment¹⁵.

As shown above different kinds of investments have been implemented in the last few years. In this paper just large amount of land and budget have been reported and analyzed below in order to study the large land acquisitions phenomenon. Moreover SWFs and other financial public institutions invest in other countries out of Sub Sahara Africa but the focus of the analysis is on the phenomenon in that continent where characteristics reported above seem to be particularly interesting for international investors. On the other hand, SWFs from other continents invest in land in SSA countries- see Daewoo plan to invest in Madagascar- and these are utilized in the following analysis implemented below.

In the next paragraph an econometric model is implemented in order to analyze the probability for African countries to receive investments in land given certain characteristics reported above and

¹⁵ “Land tenure and international investments in agriculture”, The High Level Panel of Experts on Food Security and Nutrition, *HLPE 2RE PORT* Committee on World Food Security High Level Panel of Experts on Food Security and Nutrition Rome, 2011.

other that will report in the next paragraph. Given results obtained by the model conclusions will be traced in the last paragraph.

5. Econometric Model

Different attempts have been made in order to analyze the behavior of international actors in investing in land acquisitions in Developing countries. Some models have been implemented in the last years. An example of this kind of model is that of Klaus Deininger where he analyzes the probability for developing countries to be invested by international acquisitions¹⁶. In implementing these model, shortages in available data especially for what concerns the total amounts of investments in land and water by Arab and international SWFs and other public financial institutions is clearly present. This first attempt represent a specific issue in the general framework of international trade and investment flow, but the aim of this model is to be implemented again when data will be available and analysis will be recorded and available. The model is a probability model- probit and logit- and will consider and implement data presented above and some others that are presented below. In the first part of the paragraph general and dataset description is introduced, while in the second part main results are reported and analyzed and, in the end, conclusions and some general recommendations are presented.

5.1 Model and Dataset Description

The implemented model is a simple probability model made in order to analyze the possible investments in land and water in SSA countries. The choice of the probability model is linked to direction of the analysis that aims to understand the causes of the investments' flow in Sub Saharan African countries from the receiving countries' point of view. Obviously, implementing a probability model impedes to analyze some important factors that enter in the decision choices of the investors but that, in our point of view and given the scarcity of data in this field, can be studied separately with different approaches and models. These important factors are the increase of international prices of main agricultural commodities in the 2007-2008 and the international crisis that invested OECD and global economies. These phenomenon and, more importantly, the increase in the Gross Domestic Products per capita in the most part of the Arab countries analyzed above, are some of the most important factors of the process of land acquisitions in Sub Saharan African countries. At the base of our analysis there is the attempt to study the behavior of the international investors and especially Arab Sovereign Wealth Funds in the Arab countries leaving fixed conditions in investing countries and in the international and financial markets.

¹⁶ Deininger, Beyerlee, "Rising Global Interest on Farmland: Can it Yield Sustainable and Equitable Benefits", WB 2011

As reported above, the countries analyzed are from the dependent variable those seven Arab countries owning at least a Sovereign Wealth Fund that is supposed to be a possible investor in land and water. These countries are GCCs and two North African countries as Algeria and Libya. On the other side, African countries analyzed are the main target of the land acquisition in the past years. They are a group of twenty nine countries that have been selected according to academic and press articles worldwide as those presented in the previous paragraph. These countries are all Sub Saharan African countries but some countries have not been selected because of their political situation- Somalia- or their small dimension in land availability and in general economic attractiveness.

Considering now the construction of the dataset, the selected variables are briefly introduced. The dependent variable utilized is the dummy variable related on the fact that at least one large acquisition in land has been implemented in the African country selected during the last ten years by Sovereign Wealth Fund or other financial public institutions. The definition of large investment in land means that the acquisition have to oversize 10, 000 hectares and the data for this variable construction are reported in Table 3. On the other hand, one of most important variable is the population growth in the selected African country recorded in 2008 and in particular the variable analyzed is the population growth in rural areas because of the relevance of rural population in our analysis. The second variable considered in the basic model is the man on land pressure measured as the hectares per person in 2008. Another variable that is considered as one of the key economic and social variable considered in the model is the percentage of gross domestic product in 2008. This variable is considered inversely correlated to the probability model because of the supposed fact that in a general economic framework for the African country characterized by growth is less likely to be invested by international investments in land; moreover, a rising economy can increase the likelihood that national companies or institutions invest in land and other resource acquisitions. On the other land, variables for agriculture and water availability are utilized. The first variable utilized in the basic model is the agricultural water withdrawal per year in 2008. This can be considered as the key variable for the water availability in SSA countries where water utilization is a focus variable and is expected to be significantly and positively related to the likelihood of receive investments by foreigner institutions. Another variable that introduced in the second part of the model implementation is the irrigation potential for each country in the last available year generally 2008 expressed in natural logarithms. This variable is a proxy for land and water in African countries and this should be positively correlated to the investment implemented by foreign investors. Many other variables can be utilized in this main issue for example those related to the water availability and main rivers basins. One of these that should be utilized in the model is the

yearly yield of cereals in the African country. This variable resumes technical, climatic and social characteristics of the agricultural systems in these countries. All the variables presented above for water and agriculture are supposed to be positively linked to the likelihood of receiving at least a large land acquisition by Sovereign Wealth Funds and other public financial institutions. The last variable utilized is a sort of proxy for ‘institutions’ and is taken from World Bank Business Report 2009 where different institutional and economic variables are presented and countries are ranked for these indices. The most relevant indicator for our aims is the enforceability of contracts- that is an index assuming variables from 0 to 10- by national authorities that are referents for this issue. This indicator is particularly striking for African countries and for these kinds of acquisitions as those analyzed in the analysis and in the model. This variable is supposed, for the kind of studied investment- both not transparent and linked to unclear and corruption practices- to be negatively related to the probability of being subject of investment by foreign investors. This can be explained by the fact that transparent and fair policymakers and economic and financial actors are not completely allowed to sell domestic land utilized by domestic peasants and farmers out of their consensus and laws. The model built below considers mostly of the presented variables and is estimated both as a probity and logit model.

The formula of the model is presented below:

$$(1) \quad Investment = RuralPopulationgrowth \cdot GDPpercapitagrowth \cdot HectaresperPerson \\ WaterAgricultureWithdraw$$

Large part of the variables are taken from World Bank- World Development Indicators and FAO Aqua stat Dataset that provides data on water availability and data related to irrigation. Other data are taken from different international sources such as World Bank- Doing Business in African countries.

5.2 Main Results of Probability Model

In the tables below only some estimations are reported but many others have been implemented. At the beginning a basic model is implemented and its results both in probit and in logit forms are presented.

According to the data presented in the table above it is possible to observe the factors driving investments from Arab Sovereign Wealth Funds and other public financial institutions towards Sub Saharan African countries.

In the table presented below the basic model is presented in its two forms- probit and logit- while in the following specifications only the results obtained in the probit form are presented. Looking at the results, it is possible to observe the value of coefficients of the different variables. All of them are significant at least at ten per cent but GDP growth. For what concerns the relevance of the model, both present high value of the pseudo R squared.

Figure 4: Estimation Results utilizing Investments' Dummy for Arab Countries as Dependent Variable

Independent Variable	Probit Estimation	Logit Estimation
GDP Growth	-0.1814 (.2031)	-0.3017 (.3491)
Rural population Growth	1.5303 (.7719)**	2.5699 (1.3635)*
Hectares per Person	-6.2557 (2.9433)**	-10.30612 (5.11235)**
Water Agriculture With.	1.0332 (.3996)***	1.78552 (.751493)**
Constant	-0.7811 (1.5221)	-0.7810 (1.5221)
Pseudo R2	0.6113	0.6066

Notes: * = significant at 10%; ** = significant at 5%; ***= significant at 1%; Standard Errors are reported in brackets.

All the variables present the expected signs. The first economic variable- GDP growth- even if not significant at ten per cent, is negatively related to the investment choices of Arab investors in land acquisitions in SSA. This can be explained by the inverse relationship between economic growth in the receiving country and foreign investments in land as explicated above. The second variable taken into consideration- rural population growth in rural areas- is positively related and significant at five per cent; this can be considered related to the fact that investments are positively related to population growth by different point of view depending on the kind of investments in land. The third variable is significant at five per cent and as expected is not positively related to investments by foreigners. This variable is particularly important showing that international and particularly Arab investments flow towards countries where there is a lower ratio of arable land per person and this seems easily explainable by the wider space for investment in land. The last variable analyzed is the most important. in our point of view, in order to explain the reasons that consider international investor in driving their attention. Water agricultural withdraw is significant at ten per cent. According to our point of view, water management and its exploitation in agricultural

activities is a focus point in the investment choices by financial institution especially from those coming from water scarce countries as GCC countries and other MENA analyzed. All in all, this model seem to answer to some of the questions at the base of the analysis but in the following part of the paragraph further specification of the model are presented.

Figure 5: Estimation Results adding two variables for irrigation and institutions

Independent Variable	Probit Estimation	Logit Estimation
GDP Growth	-0.2430 (.2461)	-0.0816 (.2291)
Rural population Growth	2.0067 (1.1161)*	2.1735 (1.3182)*
Hectares per Person	-6.8426 (3.3463)**	-9.2986 (5.1016)*
Ln Water Agriculture With.	1.0990 (.4712)**	1.4405 (.7212)**
Ln Irrigation Potential	.4664 (.5652)	..
Enforcing Contracts	..	-.8307 (.6559)
Constant	-4.3256 (4.7957)	1.3961 (2.2872)
Pseudo R2	0.6318	0.6744

Notes: * = significant at 10%; ** = significant at 5%; ***= significant at 1%; Standard Errors are reported in brackets.

In this specifications two new variables are introduced in the model in its basic form. The first is the irrigation potential that result positively related to the investment choices by Arab public financial institutions even if it is necessary to observe that the variable is not significant at ten per cent. At the same time it is interesting to observe that this variable can be seen as a proxy for either water availability and productive land given intensive utilization of these resources traditionally observed in large agribusiness production. The second variable introduced is the enforcing contracts index recorded by World Business Report 2009 and as predicted in the previous paragraph is negatively related to the choice of investing in land. This seems to be linked to the main characteristics of this kind of investments where transparency in the acquisitions contracts and in the entire process of investments. It is moreover important to observe the non significance of the variable at least at ten

per cent. This fact does not reduce the importance of the institutional issues in the process of investing especially in countries where this aspect is particularly striking in African countries where institutional weakness is represented by corruption and other bad practices. In the end, both this two variables even if not significant can be considered as two possible drivers of foreign investors.

6. Conclusions

International investments by Sovereign Wealth Funds worldwide during the last years acquire an important role in the international economic and financial debate. Another phenomenon that characterizes the last few years in the Developing World is the rising acquisitions process of land in Sub Saharan African countries. In the paper it is shown how in the last decade, with the increasing international oil prices, a series of rich oil countries in the Arab world established or increase the role of Sovereign Wealth Funds. Given the characteristics of the countries considered- Algeria, Libya and GCC countries- lacks of arable land and water resources, in the last part of the paper the analysis focuses on the African agricultural systems and especially on the availability of land and water in these countries in order to observe the possible investments by international investors in these sectors. Sub Saharan African countries present large shares of opportunities for international investments especially for those countries that lack in water and land availability. In the last part a probability model is implemented. Given the results reported in the model some important conclusions can be traced. According to the data, the water agriculture withdraw is an important driver of the phenomenon of investments in land in SSA countries. Other important variables are the economic growth in the receiving country and the available arable land per person are negatively related to the likelihood of receiving investments by Arab financial institutions as Sovereign Wealth Funds. Other important assumptions can be traced by the models implemented on the positive relationship between institutional weakness of the receiving countries and possibility to receive investments.

In the end, some problems emerge in implementing the analysis and model estimations. The main difficulties are related to the lack of data for certain issues analyzed but our attempts tried to overpass these barriers even if new efforts must be done in many directions in order to increase the availability of information either for Sovereign Wealth Funds in the Arab World either for Sub Saharan African countries.

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