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SAKARYA UNIVERSITY
INSTITUTE OF SOCIAL SCIENCES

THE MAJOR DRIVERS OF URBAN GROWTH AND URBANIZATION IN THE 21st CENTURY: EVIDENCE FROM DEVELOPING COUNTRIES IN SUB-SAHARAN AFRICA AND THE GROUP OF SEVEN DEVELOPED COUNTRIES

MASTER THESIS

Nadege Clemence Sourou Yabo AGOSSOU

Department: Economics

Thesis Supervisor: Assoc. Prof. Ali KABASAKAL

JULY 2018

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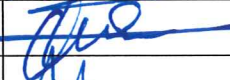**SAKARYA UNIVERSITY**
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"This thesis was accepted by the following jury on unanimity / voting on 10/07/2018."

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LIST OF ACRONYMS AND ABBREVIATIONS

AfDB : The African Development Bank Group

FDI : Foreign Direct Investment

G7 Countries : The Group of seven countries

HDI : Human Development Indicators

OCDE : The Organization for Economic Co-operation and Development

SSA : Sub-Saharan Africa

UN : The United Nation

UNDP : The United Nations Development Programme

UN-Habitat : The United Nations Human Settlements Programme

UNICEF : The United Nations Children's Fund

UNDESA : United Nations Department of Economic and Social Affairs

WDI : World Development Indicators

WGI : World Governance Indicators

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Gelişmekte olan dünyada bugün şehirleşme hız kazanmaktadır. ve sağlam kentsel uygulamalara duyulan ihtiyacı acilen gerektirecek birçok zorluk getirdi. Yine de, özellikle Afrika'da fenomenin temel nedenlerini açık bir şekilde anlamak mümkün değildir. Bunun yanı sıra, son on yıl boyunca gelişmiş ülkelerde kentleşme daha az incelenmiştir ve gelişmiş ülkelerin deneyimlerini basitleştirici ve yanıltıcı görünebilen kentleşme olgusunun üstesinden gelmek için gelişmekte olan ülkelere deneyimleme eğilimi vardır. Sahra-altı Afrika (SSA) ve Yedi Ülke Grubu (G7) meydana gelen kentleşmenin türüne ve nedenlerine ışık tutmak ve bu çalışma, 21. yüzyılda ortaya çıkan kentleşme sürecinde bazı değişkenlerin rolünü incelemektedir.

Bir panel veri setinde Sabit etkiler ve Havuzlanmış Olağan En Küçük Kareler regresyonları kullanılarak, SSA'da kentsel istikrarın azalmasına siyasi istikrarın katkıda bulunduğunu, G7 ülkelerinde kentsel yaşamın temel belirleyicisi olan yaşam beklentisinin olduğunu gördük. Bulgular aynı zamanda G7 ülkelerinde üretimde üretkenlik sabit kaldığından kentleşme hızının düşük ya da az ya da çok sabit kaldığını göstermektedir. Bununla birlikte, hızı uluslararası göç akışları tarafından sürdürüldü. SSA'da, doğurganlık, İnsani Gelişme Göstergeleri ve hükümet politikaları, daha sonra işsizlik eğilimlerinin artması nedeniyle tamamen dinlenmiş gibi görünen kentleşme hızını artırmıştır.

Anahtar Kelimeler: Kentsel büyümenin sürücüleri, kentleşme sürücüleri, Sahra Altı Afrika, G7 ülkeleri, Panel verileri.

Urbanization gaining momentum in the developing world today has brought about many challenges that urgently entail the need for sound urban practices. Yet there is no clear understanding of the fundamental causes of the phenomenon especially in Africa. Besides, urbanization has been less investigated in the advanced countries during the course of the last decades and there is tendency to extrapolate the experiences of developed countries to the developing ones to tackle the phenomenon of urbanization, which can appear as simplistic and misleading. To shed light on the type and causes of urbanization happening in Sub-Saharan Africa (SSA) and the Group of Seven (G7) countries this study investigates the contribution of selected variables in the process of urbanization in the 21st century.

By using Fixed effects and Pooled Ordinary Least Squares regressions in a panel dataset, we found that political stability contributes to the decline in urban share in SSA whereas life expectancy is the main determinant of urban share in G7 countries. The findings also show that the urbanization speed has remained low or more or less constant as productivity in manufacturing remains constant in the G7 countries. However, its pace has been sustained by international migration flows. In SSA, fertility, Human Development Indicators, and government policies have propelled the pace of urbanization, which later seems to have been completely brought to rest due to increased unemployment trends.

INTRODUCTION

The developing world is currently experiencing an unprecedented increase in urbanization especially in Africa (UN–Habitat, 2011). Between 1995 and 2015, the highest rate of urban rate has been recorded in the least developed areas with Africa being the most rapidly urbanizing continent (UNDESA, 2014). However, the phenomenon is accompanied with many challenges in the use and consumption of land and the spatial distribution of resources (people, land; other natural resources, etc.) in most of the developing countries (UN Habitat, 2014). Rampant urbanization has generated considerable socio-economic problems notably a rise in urban poverty and violence in cities, the spread of urban slums and inadequate infrastructures in cities, high population density and surging unemployment rates, congestion and pollution in cities, etc. (Bloom et al., 2008). For instance, the rapid urban growth has occasioned the proliferation of urban slums which account for approximately 12% of the area Nouakchott, the capital city of Mauritania (UNEP, 2002).

Moreover, the rise in urbanization might compromise transportation, food, energy and water supplies for the next decades. Gas emission and global energy consumption have severely increased as urban centers expand. In 2016, the world's landmass that is still under occupied at a rate of less than 5% has generated around 70 % of greenhouse gas emission and global energy consumption (Jennings et al., 2014). Research from Engineers Ireland (2016) reveals that three-fourths of the global population had experienced water shortages in recent decades. At the same time, the engineers expect transportation needs and water supply are projected to tick up to a 50 % increase in emerging countries. Moreover, Alexandratos & Bruinsma (2012) projected that food demand was to rise by 60% between 2011 and 2050 globally.

Furthermore, many differences have arisen between urbanization in developing and developed countries regarding speediness, structure, and repercussions. İn terms of speediness, urban growth has increased much more rapidly in today's developing countries. For example, it took only 6 decades (1960-2010) for Africa to experience an urbanization rate increase of 25%. In contrast, today's more developed countries achieved a similar increase during the 11 decades (1800-1910) (UN Habitat, 2010). Also, the phenomenon of urbanization has dramatically expanded in the developing world over the past years with Asia-Pacific and Africa hailed as the world's fastest-

growing urban regions (World Bank, 2009). Particularly in Africa, urbanization is growing by nearly 3.4 % annually (Arouri et al., 2014). At the same time, urbanization rate, still high in developed regions (around 70%) has started to significantly slow down in urban growth in 2014 (UNDESA, 2014).

While the percentage of urban population in the developing countries is getting closer to that of the more developed countries, urbanization seems not to be generating sustainable development in the case of SSA countries (Fox, 2012). It is considered that Africa is experiencing over-urbanization that refers to urbanization without industrialization, or population growth without employment creation (Fox, 2012). SSA is becoming more urbanized without a structural transformation or a substantial increase in income. In 1950 for instance, most of the world's largest cities were located in rich countries, but mostly all of them were in low or middle-income nations by 2015. Today, Dhaka, Kinshasa, and Manila are among the capital cities in Asia and Africa that have similar size population to the one recorded in the United States (New York), France (Paris) and the United Kingdom (London) respectively but at a much lower income level. In other words, urbanization in Africa is not accompanied by significant economic and social transformations as in developed countries (Fox, 2012; UNDESA, 2014; Fox, 2017).

Therefore, traditionally dealing with urbanization with simple extrapolations from developed to developing countries appears non-effective. African countries have their specific characteristics and features that need to be taken into account. Moreover, there is still a limited understanding of the concept of the city in Africa, and national urban policies are rare (Turok, 2015). This is even more challenging in a context where the countries in the area are already facing many problems (low income, poverty, weak institutions, and high unemployment rates) that make it the worst of times to develop urban policies (Renaud, 1987; Turok, 2015).

The literature also lacks a comprehensive explanation of the driver of urbanization (Malik et al., 2017). Moreover, most of the authors that investigated the topic in the developed countries have focused on urbanization in the 19th century, not in our contemporary era.

To close these gaps in the literature, this thesis aims at examining the significant drivers of urban growth and urbanization in the 21st century. We consider a set of developing countries in SSA and the G7 countries.

The study consists of four sections. The first part defines the concepts of urbanization and urban growth. It explains the determinants of the two concepts according to different urban theories. It briefly presents the geographic and socio-economic context of the selected groups of countries. It also summarizes the previous studies related to the drivers of urbanization and includes a summary of the historical and empirical determinants of urbanization in both SSA and G7 countries.

The following section focuses on the methodology adopted in the study. It also explains the procedure used in designing the data collection and the data analysis. Necessary information is also given about the sources of data and its measurement.

The third part of the study presents and discuss the main findings. It also describes the general trends observed in the data about the selected variables. This part ends with the discussion and interpretation of the results.

The thesis ends with a conclusion which presents the summary of the results, some recommendations and makes an opening statement on the topic of discussion.

The topic of the Study

This thesis determines the factors that are most closely related to urbanization and urban growth in SSA and G7 countries. We seek to investigate the factors that explain urban share and urban growth when countries are developing (SSA countries) or already developed (G7 countries). We include a variety of factors that explain urban share and urban growth of a country in the 21st century depends on its development stage. Some of the variables are economic factors such as per capita income, manufacturing value added, Foreign Direct Investment FDI, unemployment rate, agricultural output, Human Development Index HDI. Some are demographic factors such as fertility rate and international migration. The last group of factors includes political variables such as the political stability the absence of terrorism, the control of corruption, and government effectiveness index.

Objectives of the Study

We have quantified and compared the primary engines of urban growth and urban share in SSA and the G7 economies today. We investigate the patterns and dynamics of urbanization in these regions and take a close look at the pace of urbanization and the urbanization itself. The objectives of this study are to (1) quantify the main determinants (economic, demographical, and political factors) of urbanization and urban growth in SSA and G7 countries in the 21st century, and (2) compare the general trends of urbanization and urban growth in both set of countries.

The hypothesis of the Study

We hypothesized that some factors are more critical in driving urbanization and urban growth when countries are less developed or more developed. It is assumed that effective governance, HDI, FDI and fertility rates promote urbanization and urban growth in SSA nations whereas the increase of agricultural productivity, decline in political stability and high rate of unemployment curb urbanization and urban growth. In developed countries, we expect fertility rates and income per capita to be weaker in explaining urbanization. We also assumed that international migration is the leading cause of urbanization in advanced economies.

Limitations of the Study

The study aims to test the relationships between urbanization and selected economic, demographic and political factors growth according to the development stage of the countries (developing or developed). In this context, the collection of data over a more extensive period and the same period for the two subsets of countries has created a limitation for the study.

The interest of the Study

The study has particular importance regarding the number of countries covered by the analysis, the time span considered and the usage of different panel data methods. The sample has been generated for seven developed and 29 developing countries. On the other hand, this thesis integrates a comparative analysis regarding (1) demography, (2) economic level, and (3) political aspects of urban growth and urbanization in both

developed and developing countries and consider the last changes in urbanization are happening in the 21st century. It is designed for scholars, agencies, and institutions responsible for urban policy and planning at global, national or local levels. It will help build more efficient and innovative urban policies and spark a regain of interest in dealing with different aspects of the urbanization challenges, especially in SSA. Some of the suggestions made in this thesis would hopefully inspire people and national governments to open new avenues for solving the urban problems that SSA faces today and better manage it in advanced economies

Method of study

To shed light on the type of urbanization happening in both developing and developed countries and how to deal with it, this study examines the role of some variables (economic, demographic, and political) in the process of urbanization occurring in the 21st century. In the analysis, data from the World Development Indicators and some United Nations specialized institutions, related to 29 SSA countries from 2008 to 2015 and the G7 countries from 1995 to 2014, are employed to test the hypothesis that some factors are more critical in driving urbanization and urban growth when countries are less developed or more developed. Results from panel data analysis, using Fixed Effects, Random Effects models and Pooled Ordinary Least Squares regressions, are used to test the hypothesized relationships.

CHAPTER 1: CONCEPTUAL FRAMEWORK

1.1. Urbanization (urban share) and urban growth

Although they are closely related concepts, urbanization, and urban growth display slight differences. Urbanization refers to expansion and the growth of towns and cities, often at the expense of rural areas. In other words, urbanization means the gradual increase in the proportion of people living in urban areas compared to that of the countryside. It fundamentally differs from the rural areas regarding population size and density, economic function, administrative or political boundaries (UNICEF, 2012).

Urbanization enables the growth of cities and towns through a massive shift of people from the countryside to urban areas or the reclassification of rural areas as cities and towns. This phenomenon, not merely modern, is rooted in the historical transformation of the social living conditions whereby urban culture rapidly supersedes predominantly rural culture (Pawan, 2016). Urbanization has been observed worldwide in the recent decades and brought about structural and spatial changes varying from one country to another. Interestingly, it is still expanding globally and much more rapidly, especially in developing and emerging countries; however, the process is much slower in developed nations.

Urbanization refers to an increase in the proportion of the population in cities in comparison with the proportion of people living in rural areas. The fundamental difference with urban growth is that the latter only refers to the increase (relative or absolute) in the size and population living in cities over a period without any consideration of the population growth in the countryside. Urban growth, expressed in a number, is the actual increase in the number of people living in cities.

1.2. Presentation of the selected countries

1.2.1. Presentation of Sub Saharan Africa (SSA)

Sub Saharan Africa refers to the area of the continent which lies south of the Sahara Desert. The region comprises 48 of 54 African states: 42 countries and six island nations namely Comoros, Cape Verde, Madagascar, Mauritius, São Tomé and

Príncipe, and Seychelles (New World Encyclopedia, 2015). SSA is home to a young and growing population which is expected to grow more than twice by 2050 (World Population Prospects, 2017). The majority of the countries median ages was pegged at less than 20 years in 2006, compared to over 30 years in Asia and Latin America, 36 in the United States, and over 40 in Europe and Japan (Velkoff & Kowal, 2007). A recent study undertaken in 2009 and 2014 by UNDESA (2014) argued that Africa's urbanization is faster than any other region except Asia. Still, the region is currently the least urbanized in the world and will remain so by 2025, with 61.73 % of the population residing in rural areas in 2016 and 55 % of people forecast to live in the countryside by 2025 (UNDESA, 2014).

Most of the countries in SSA region are still developing. They are facing political, socio-economic and historically rooted challenges such as colonialism, slavery, inter-ethnic conflicts, etc. However, some countries enjoy fast economic growth in the region. The islands nations have been wealthier than the continental nations except for Comoros that remain unstable poor (New Encyclopedia 2015). South Africa, Nigeria, Ethiopia and the small oil-rich states of Gabon and Equatorial Guinea, are equally among the wealthiest states in SSA, although they harbor extreme disparities in income and poverty (New Encyclopedia 2015). In recent times, the most impoverished countries have been the Horn of Africa and the countries engaged in or just emerging from civil wars including Democratic Republic of Congo, Sierra Leone, Burundi, and Somalia (New Encyclopedia, 2015).

Social development is also retarded in SSA. The United Nations Development Program (UNDP) has reported in 2017 that only two island countries Mauritius and Seychelles have succeeded in reaching the high Human Development Index (HDI). Rwanda, Sierra Leone, Ethiopia, Mozambique, Tanzania, Democratic Republic of Congo and Angola are among the top-ten most improving countries; eight other countries (Botswana, Cape Verde, Equatorial Guinea, Gabon, Ghana, Namibia, South Africa and Swaziland) are in the medium HDI category, and most of the other countries are among the 30 countries ranked at the bottom of the HDI scale.

Commodities remain the main export product in Africa. However, the sector has experienced an unprecedented boom of prices after the 2008 crash and thereafter. The

result was the shrink of prices to local laws at the start of 2016, and the decline in exports (oil, gold, and coffee) of many African countries (AfDB; 2017). Following these global and domestic shocks in 2016, the real output growth is estimated to have rebounded to 2.4 % in 2017, after slowing sharply to 1.3 % in 2016 and is expected to accelerate to 4.1 % overall by 2018 especially among non-resource–intensive economies (AfDB, 2017). The rise is attributable to a modest recovery in oil and agricultural production in Angola, Nigeria, and South Africa. It has been supported by the improving drought conditions in eastern and southern Africa, favorable global financing conditions, import substitution coupled with slowing inflation in some countries that helped to lift domestic demand (AfDB, 2017; World Bank, 2017).

Strong population growth puts pressure on per capita growth and unemployment in SSA (AfDB, 2018; ILO 2018). The unemployment rate has reached 7.2 % in 2017 and remains relatively low in comparison to the other developing regions but displays cross-country heterogeneity (ILO, 2018). Approximately one million were deemed to have been added to the number of the unemployed. In 2017 and informality ranges from 34 % in South Africa to 90% in Benin (ILO, forthcoming). Youth employment is very precarious and challenging with nearly 67 % of young workers in SSA living in poverty in 2017 (ILO, 2018).

1.2.2 Presentation of the Group of Seven (G7) Countries

The Group of Seven or G7 is an informal group that includes the world's dominant economies namely the United States, Japan, Germany, France, the United Kingdom, Italy and Canada. G5 and G6 are the precursors of the G7. The G7 became G8 when Russia joined the group. However, Russia was expelled from the ranks of G8 over the 2014 crisis in Crimea, because of the annexation of Crimea to Russia. Crimea had been occupied for more than two weeks by Russian soldiers; then the peninsula had voted 96.6% of its attachment to Russia, a vote immediately rejected by the Ukrainian authorities in Kiev and the international community (Le Monde, 2014).

G7 further expands to G20, but to date, G7 remains and is a distinct structure or body from G20. The whole process was led by the desire of the member countries to solve the global crisis of their era. The G5 brings together the finance ministers of the United States, Germany, France, United Kingdom and Japan. The first informal G5

meetings organized in the early 1970s were held in a specific context, marked by the crisis of the international monetary system following the decision of Richard Nixon, in 1971, to abandon convertibility in gold from the dollar and put an end to the system of Bretton Woods (Andersson, 2011).

The G5 meetings became official at the level of heads of state and led to the creation of the Group of 6 (G6) with the addition of Italy, then the G7, in 1976, with the entry of–Canada. Most importantly, the intention is to have side meetings for the good governance of the world, market economy and the international financial system. They aim at providing a forum for dialogue and decision-making outside the more restrictive and visible framework of the UN, to discuss their interests and competitions inherent in the system, which divide powers participating to the group (Andersson, 2011).

The G7 Finance brings together the finance minister drawn based on the fact of the powerfulness of their administration marked the G7 summits and their role as instigators of the economic, financial and social policies to be prescribed by the IMF, the World Bank, the GATT then the WTO, the OECD or the European Union. After Russia had joined the club in 1998, the G8 attributes itself a role illegitimately "world government" in so far as it is constituted out of an international approach and against multilateralism, reserving access to powers that co-opt each other (Andersson 2011). The G8 has also been considered to show the discreet attitude towards issues to do with development, unemployment health and questions to deal with social issues. (Andersson, 2011).

For Western powers, the fact that emerging countries are not represented in the G8 undermines the capacity of the G8 to deal adequately with some issues regarding the evolution of the international economic and financial system and this necessitated the creation of the G20 as a forum for discussion between industrialized countries and emerging countries (Andersson, 2011). In 1999, the G8 led to the creation of an "economic forum" with a set of emerging countries, because of the growing importance they occupy in international trade. The G20 thus marked the need, to manage the antagonisms between center and periphery and to reinforce the "international financial architecture," to integrate new world or regional powers (Andersson, 2011). The G20 includes besides the eight member countries of the G8,

the president of the European Union, as well as South Africa, Saudi Arabia, Argentina, Brazil, China, South Korea, India, Indonesia, Mexico, Turkey, as well as Australia.

Although the G7 represents only 11% of the global population, it is responsible for a third of the world's economic output when adjusted for purchasing power, thus reflecting its importance for the global economy (Federal Statistical Office 2015). However, all the countries are affected by the population aging process that is projected to cause the region population to drop by 9% until 2050 (Federal Statistical Office 2015). Almost 21% of the population in Italy and Germany and 25 % in Japan is aged 65 or above. The trend in these three countries results from the fertility rate patterns that it is significantly below the replacement level of 2.1 and further below the global average of 2.5 children per woman (German Federal Statistical Office, 2015).

Despite the financial crises of 2008, most G7 countries (except Italy whose GDP measure in 2014 was more or less unchanged at -1.2% compared to the year 2000) succeeded to increase their economic output in real terms dating back 2000 thus North American countries achieving the most significant increase in GDP (Federal Statistical Office 2015). The G7 countries are also crucial global trading partners: nearly 35% of all goods and services imported have a G7 destination, and one-third of all exports worldwide come from one of the G7 states (German Federal Statistical Office, 2015). Germany was ranked third worldwide behind China and the United States as a leading export nation. The country is significantly dependent on international trade than the other six G7 countries because its total trade in exports and imports accounted for 89% of its GDP. However, the United States and Japan are particularly more oriented towards domestic trade than Germany (German Federal Statistical Office, 2015).

1.3. Literature review
1.3.1 Summary of the determinants of urbanization in the literature

There is a wide range of potential motives behind urbanization (personal, familial, search for safety, etc.). Many people have also been pushed or pulled to cities due to population pressure, rural poverty, discrimination, diversification of household income

purposes, marriage or dating reasons, or even for excitement and adventure motives (Mazumdar, 1987; Becker & Morrison, 1995; Barrios et al., 2006). Low levels of international trade, as well as constraints to the expansion of international including high tariffs, high costs of internal trade, propel urbanization (Ades & Glaeser, 1995). Moreover, urbanization has the potential to continue to fuel itself. For example, developed regions tend to continue urbanizing even if it is at a slower pace; these regions that are already urbanized and very developed seem to have difficulties to radically de-urbanize as many development factors are continuing to fuel their urban growth and attract international migrants. For example, many advanced countries are still having a high urban growth rate of 70% after many years of industrialization that is expected to reach 80% by 2050 (UNDESA, 2014).

We consider the modernization theory, migration theory, urban bias theory, economic dependency theory to explain the determinants of urbanization.

Migration theory

Kasarda & Crenshaw (1991) defined three significant determinants of urban growth namely: natural increase of urban population that is the surplus of birth over deaths; boundary redefinition through annexation of surrounding areas or reclassification of rural areas as urban centers; and migration, both intra-national and international. The literature focused more on migration specifically rural to urban migration rather than international migration. Bloom et al. (2008) and Preston (1979) have for example empirically shown that migration accounts for approximately 50% of overall urban population growth on average in their studies of developing countries. Tacoli et al. (2015) report that nearly half of the urban population growth was attributable to migration between 2000 to 2010. According to the authors of the report, governments are taking action in many countries to limit or lower rural to urban migration to harness urbanization. UNDESA (2013) in samples taken in about 185 countries concludes that 52% of the governments of these countries took migration policies at heart in 2013 and this ratio gradually rose to around 80% between 1996 and 2013. Low and middle-income African and Asian nations that are currently undergoing an unprecedented urban transition have recorded even higher proportion of urban policies (Tacoli et al., 2015).

The primary cause of urbanization in Asia and most developing countries have been singled out to be migration, and current projections show that the trend is likely to continue growing. However, this trend seems to be an absent only in SSA, the fastest urbanizing region globally. Nearly one-third of urban population growth is attributable to migration movements in the region. (Tacoli et al., 2015). According to Fox (2012), the importance of demographic factors in the process of urbanization has been overemphasized, thus regrettably inclined to neglect the demographical or natural processes shaping the urban population trends in the specific case of Africa. This brings about the idea that other factors can substantially accelerate the urban growth independently of migration factors, namely demographic factors (Tacoli et al., 2015; Preston 1979). For Tacoli et al. (2015), the circular migration between cities and the countryside overestimate the migration flows in the accountability in the process of urbanization.

1.3.1.1 Push and Pull factors of migration

Pull factors of migration are the factors that make the cities attractive. For example, the jobs opportunities, health and education facilities, excitement, high per capita income and wages opportunities offered in cities. These factors are closely related to the process of modernization of the cities as well described in the modernization theory.

Modernization theory

There is a vast strand of literature that views urbanization as an integral part of economic development (Lewis, 1954; Harris & Todaro, 1970). It has become a common trend for many nations to experience large-scale migration to cities in their development process before they become a modern industrial society. The evidence that urbanization is paramount to economic take off is supported by the empirical works of Annez & Buckley (2008) which see urbanization as a reliable indicator of productivity growth. In their sample, using simple bivariate regressions, they show that few nations have managed to reach income levels of $10,000 per capita before reaching about 60% urbanization. That is why urban areas development contributes to massive investment in factories, schools building, improvements in infrastructure access, public goods, etc. that foster economic prosperity in developing countries (UNCHS, 2001; UNEP, 2002).

As a country develops, industrialization expands. Therefore, the economy progressively goes through a process of structural transformation from an agrarian economy to an industrial one, which is crucial for growth and development to occur (Gollin et al., 2002). Firms take advantage of these changes and agglomeration economies to concentrate their activities in the cities especially when they experience increasing productivity (Arthur, 1990). Similarly, as described in the development models of migration and urbanization, higher productivity of the urban sector generates more job opportunities with higher wages (Royuela & Castells-Quintana, 2014). The expansion of labor demand causes the people to massively move from the countryside to cities to take up the jobs in the cities. Rural inhabitants are therefore pulled to urban areas to take advantage of high industrial wages, larger markets and improved amenities (Royuela & Castells-Quintana, 2014). This means that people increasingly migrate from the countryside to the cities as long as the urban wages exceed their current rural wages. That is why the rural-urban wage gap is perceived as the leading driver of migration and hence urbanization in developing countries (Bloom et al., 2008; Fox, 2017).

However, the reality is that urban population growth has started to outpace the growth of formal employment in urban areas in many developing countries. Until around 1950 specifically in Africa, the process has led to the expansion of the informal sector (Fox, 2012; Fox 2017). Because of urban unemployment and underemployment situations that prevail in cities, many migrants' expectations are deceived and end up accepting temporary jobs in the informal sector while waiting for higher paying and permanent employment in the formal sector, that many of them are finally unable to get (Rauch, 1993). Consequently, the urban population increases and causes the rural population to decrease proportionately. In the long run, cities have experienced rapid population growth at the expense of economic prowess as these have offered the migrants less economic capabilities they expected and hence their life has become unsustainable.

Push factors of migration

Migration can be triggered by push factors that constitute the undesirable or difficult of living conditions in rural areas. This drives many people away from rural locations in the countryside to the cities. It includes the socio-economic issues such as famine, poverty, unemployment, political instability, conflicts and wars (Bloom et al., 2008; Kugelman, 2013), the natural disasters or climate changes effects (UNEP, 2000; Barrios

et al., 2006; He et al., 2011) and so many other situations that make people feel insecure and deprived in the rural areas.

Political factors

For instance, political instability within countries has led to considerable refugee flows to cities in developing countries (for example Kinshasa in the Democratic Republic of the Congo) (Bloom et al., 2008). Conflicts, land degradation and exhaustion of natural resources are instead a common phenomenon in urbanization explanation especially in Africa (UNEP, 2000). The rapid growth of primate cities in developing countries is also alleged to have resulted from institutions (da Mata et al., 2007) or political influence such as patterns of government expenditure and employment (Fox, 2012; Fox, 2017) and colonial legacy (Preston 1987). This situation naturally draws a massive influx of population from other areas to cities. For instance, Alan Gilbert (1976) notes that most government employees reside in large capital cities and are often paid above prevailing market rates, and consequently often enjoy infrastructural investments. In Latin America, city distortions result from trade relationships and natural resource exploitation by colonial powers, this is the reason why large cities in this region are concentrated in coastal areas (Hardoy, 1977). In the case of Indonesia, administrative bureaucracy in Jakarta and the centralization tendency remained concentrated in Jakarta and became even pronounced under the local rule as Dutch had set the example for that (Hugo, 1978).

Natural disasters

Natural disasters are on the rise in some areas of the world and have heavily driven urbanization in many countries over the past years. People are forced to relocate to cities for safety when calamities occur. The after effects of these disasters have often been so disastrous because the vulnerable or susceptible areas to the disasters and catastrophes are still occupied by many people. For example, people relocate and prefer to live in seacoast areas and other regions close to the mouths of the great rivers, frequently affected by floods, for their natural resources and trading opportunities (Naveed et al., 2017). This increases the population of these regions and makes them potential urban areas; these regions shelter an increasing number of urban communities (Raleigh et al., 2008). They are exposed to constant and regular episodes of catastrophes

due in part to climate change effects. Many of them decide to resist to the harsh conditions (given the advantages of the region) during the floods no matter the situation (by disposing all their liquid assets for example) till they cannot cope with it anymore and then choose to migrate to cities (Rayhan & Grote, 2007) for a secure and better life. As such these disasters affect people's social and economic status.

Earthquakes and landslides have similarly contributed to the expansion of urbanization (Shen et al. 2005; Bloom et al., 2008) in regions with vulnerable location and topography. Millions of people are said to have been affected by the earthquake in the world in 2009 (Johnson, 2010), ravaging and destroying homes, hospitals, schools and other social infrastructures with disastrous consequences. As a result, afflicted populations flock to towns for safety and greater access to opportunities and facilities.

The rapid fluctuation in climate conditions in many parts of the world also generates environmental changes and unfavorable weather conditions that push people to cities. People are evacuated to cities by droughts that cause crop failure and scarcity of food (Rayhan & Grote, 2007). Poor people living in informal settlements with poor quality housing and infrastructure are generally in high danger places and have fewer resources to survive and overcome the damages caused by the disasters (Johnson, 2010). They migrate to cities when they experience land pressure or natural disasters that worsens their poverty (Barrios et al., 2006; da Mata et al., 2007).

1.3.1.2 International Migration

Besides the internal movement of people from the countryside to the cities, international migration can also foster urbanization. Scholars have alleged that urbanization has become a significant challenge worldwide mainly driven by rural to urban migration. However, they often overlooked international migration's contribution to the urbanization processes (Royuela & Castells-Quintan, 2014). A recent analysis by Royuela & Castells-Quintan in 2014 using a large panel of 200 countries from 1960 to 2010 reveals a positive link between migration and urbanization, particularly in small and medium-sized cities. In developing countries, they found that emigration hurts urbanization. Their results support that international migration is an essential driver of urbanization. Its analysis gives a complementary analysis of the traditional rural-urban migration in the urbanization.

1.3.1.3 Urban bias theory

Government policies also influence urbanization directly or indirectly. That is why urban bias theorists deny that urbanization is a natural process and see it as a result of gross injustice. According to Lipton (1977) and Njoh (2003), governments prioritize specific type of urban projects and policies that end up taking over agricultural projects that could have aid peasant rural farmers and their families (Bradshaw, 1987), thus favoring the expansion and development of cities at the expense of the countryside. Consequently, this situation creates enormous disparities between urban and rural areas concerning consumption, wages, productivity and standard of living that cause many people to migrate to urban areas. Unfortunately, many migrants contribute to underdevelopment in the cities either by joining the informal labor market or turning to crime, prostitution, theft, etc. (Bradshaw, 1987). The additional resources that could be used for programs conducive to economic and social development or agriculture to increase rural incomes and thereby slow down migration must include an allocation for city services and social control (Timberlake & Kentor, 1983; Linn, 1982). The urban bias theory asserts that the investment in agriculture is more productive than any other investment and such an investment is vital to provide farmers with appropriate and additional resources (machinery, roads, dams, barns, and sheds, all of which) to improve the productivity and welfare and as fallout, which eventually will improve national economic growth (Lipton 1977).

1.3.1.4 Economic dependency theory

Many scholars have examined the impact of trade and Foreign Direct Investment (FDI) on urbanization immigrant. Some authors see international capital flows as beneficial for the urbanization process and believes that the emergence of cities can be supported and promoted by globalization (Kasarda & Crenshaw, 1991; Hein, 1992; Yue, 1993). Others, drawing to the dependency theory (Harvey, 1975; Roberts, 1976) believe that urbanization in the developing countries is mainly attributable to the third world role in the capital accumulation process of the industrial nations and is likely to perpetuate in the context of globalization (Timberlake & Kentor, 1983; Portes & Johns, 1986; Fuchs & Pemia, 1987). Modernization theorists also contend that urban growth is a byproduct of development as developing countries industrialize (Hoselitz, 1960). This is believed

to be so as cities facilitate capital absorption (Mattos, 1982; Sivalingam, 1993) and broader access to the domestic market (Sit, 2011).

By putting forward a dynamic of exploitation in which the development in 'metropolitan' states undermine the development in the 'satellite' states, the economic dependence theory shows evidence that foreign investments enhance urbanization through the expansion of the service and informal sectors thus forcing people to flock to cities. This rural-to-urban migration exposes them to the persistent and severe unemployment rate (Njoh, 2003) or informal jobs by dispossessing rural peasants of their land. Bradshaw (1987) differentiates between the effects of two types of external capital: foreign investment in large-scale agricultural production and foreign investment in capital-intensive manufacturing.

External capital in agriculture tends to reduce the amount of land available to farmers thus, forcing them to migrate to cities (Ledogar, 1975; Walton, 1977). This shift of peasants towards cities enlarges the potential pool of urban workers. However, as employment opportunities become limited in cities, that struggle to absorb the increasing number of rural migrants, many of them are left with low-paying jobs. Consequently, the informal sector increase (Timberlake & Kentor, 1983).

In contrast to the authors that view the informal sector as beneficial to economic growth (Hackenberg, 1980), dependency and world-system theorists posit that informal labor is detrimental to development in developing countries (Portes & Walton, 1981; Portes, 1985; Timberlake & Lunday, 1985). The sector has mostly developed in developing countries and has been responsible for a significant share of production in many sectors of the economy (Fox, 2013). It presents ease of entry, reduced bureaucratic paperwork, requires little or no need for formal training of employees and only limited need for start-up capital that explain it rapid expansion (Fox, 2013). Moreover, many multinationals increase their profits at the expense of under-developing countries with the subsidy provided by the informal labor workers (Portes, 1985; Bradshaw, 1987). Thereby, rural-urban migration creates distortions on the urban labor market and impedes development: the formal sector competitiveness becomes weak, unskilled rural workers are exploited and have informal low paid employment.

Countries with a high concentration of agricultural exports and absence of crops diversification are specifically at risk since the farmers are more vulnerable to low international prices for their products and experience unfavorable climatic conditions which affect agricultural production indirectly and retards economic development. As a result, downward migration increase at the expense of the agricultural sector.

As for the foreign investment in manufacturing, it promotes industrial production and productivity even though it does not increase urban employment considerably. However, it does expand large-scale industrial production in peripheral nations (Sit, 2001). Many cities in Asia and Africa have succeeded to increase their level of industrialization mainly because of external capital. The increased industrial activity establishes a superior quality of life in cities relative to that found in the countryside and attracts rural inhabitants to the cities and supposed opportunity offered by the city and constitutes a climate conducive to downwards migration (Sit, 2001).

1.3.1.5. Demographic factors

A growing body of research argued that urban natural increase is, in fact, an important or the primary driver of urban growth in developing countries where rapid growth is most problematic, and particularly in Africa (Preston, 1979; Kasarda & Crenshaw, 1991; Jedwab et al., 2014; Tacoli et al., 2015). Around two-thirds of urban growth has resulted from natural increase (Preston, 1979) and natural increase accounts for a more significant share of urban growth than migration (Fox, 2017). For Fox (2017), towns and cities in those countries would continue to proliferate from within even if there were no migration. This challenges and questions the traditional assumption that posits that migration increases demographic pressure in Africa (Fox, 2017).

Put simply, the rate of the natural increase represents the difference between the birth rate and the death rate in a population. It is generally strongly related to fertility and mortality rates. Developing countries generally exhibit higher rates of natural increase whereas the industrialized countries display the lowest values.

Demographic patterns influence the growth of the total population, and of course, urban growth, although with varying levels of intensity depending on the country. However, its contribution to the growing urban population and thus urbanization has been less

investigated in the literature (Fox, 2012; Fox, 2017). That is why one of the objectives of this thesis is to shed light on the impact of the natural increase on urbanization.

Other factors involved in rural to urban migration are migrants' gender and age, because employment opportunities may greatly vary with people's gender. Also, young people are more likely to move to cities for a better life, compared to older adults and children. This may affect the population distribution in both the rural and the urban areas, and generate a predominantly female society in rural areas and young and male in towns. Consequently, it perpetuates youth unemployment or poverty, especially in developing countries cities.

1.3.2. Urbanization and Urban growth in Sub Saharan Africa (SSA)

1.3.2.1. Toward a historical explanation of urbanization SSA

Historical evidence indicates the presence of urbanization in SSA for over the past 2000 years (Fox, 2012). However, early urban settlements in the region remain mostly ephemeral, relatively few, small and dispersed compared to other regions of the world (Fox, 2012). The absence of a surplus in agricultural production necessary to sustain human life in cities coupled with the emergence of epidemic diseases that decimate the region's population in the urban areas were the primary constraints to early urban growth in SSA (Fox, 2012). The region's urban transition truly begins around the middle of the 20th century, and urban populations in SSA have continued increasing after that.

Before the 19th century, large urban settlements were scarce due to the precarious hygiene and sanitary conditions in cities as well as the non-desirable climatic and ecological conditions. This brought about infectious and parasitic diseases in urban areas. As a result, many countries in SSA have consistently experienced some of the highest mortality rates in the world, therefore negative rates of natural increase that turn cities into dangerous places to live in (Lowry, 1990; Iliffe, 2007; Dyson, 2011; Fox, 2012). On the other hand, Africa's natural endowments such as climate, soils, and topography represented a considerable impediment to a surplus increase in agriculture (Diamond, 1997; Bloom & Sachs, 1999). The lack of adequate transport infrastructure that aggravated the transportation costs, coupled with the existence of significant geographical barriers to trade contributed to less specialization in trade and

made every effort to fill the food deficit through trade, difficult (Bloom & Sachs, 1999). This perpetuated famine-related mortality in urban areas and caused people to prefer staying in rural areas with easy access to food, rather than facing the hardships of living in cities.

The food shortage and the decline of mortality rates in the pre-colonial period was soon reversed owing to the colonial government's substantial investments in agriculture, infrastructure and health until after the World War I (Fox, 2012). These efforts have translated into the increase in primary commodities production, the introduction of new agricultural technologies and cultigens and the promotion of viable transport infrastructures. As a result, food surplus increased and mortality rates significantly declined (Fox, 2012). However, despite these substantial improvements, colonial powers' controls on mobility in African cities (Iliffe, 2007), poor urban housing conditions, and limited jobs opportunities in cities have restricted urbanization (Fox, 2012).

After the World War II, colonial public expenditures in Africa have substantially increased in limited sectors of industry, education and health services, and infrastructure (Iliffe, 2007; Fox, 2012). For instance, treatments for childhood diseases (polio, diarrhea, malnutrition, etc.) and new vaccination methods were developed. Consequently, famine, mortality rates associated with epidemic diseases as well as child mortality were rapidly alleviated. Moreover, emergency aid was henceforth accessible in remote areas through the improved transportation system (Iliffe, 2007; Fox, 2012). These improvements coupled with the gradual abatement of colonial rules on mobility in African cities as well as the increasing demand for urban labor promoted rapid urban growth. Nevertheless, higher inflation rates, surging rates of unemployment, and poor housing conditions have emerged in response to the massive movements of folk towards cities. (Cooper, 2002; Iliffe, 2007).

Thus, the independence era witnessed an exceptionally high rate of urbanization and urban growth between 1960 and 1975 (Fox, 2012; Fox, 2017). As the political, demographic, and economic factors of the late colonial period proved extremely favorable, urban growth continued to increase. In the newly independent nations, former colonial residence restrictions on mobility in African cities were entirely removed. Urban jobs opportunities for autochthones in civil service administrations

and cities and investments in urban public works continued to increase too (Iliffe, 2007). This generated an increasing need for people in cities and a massive surge in rural-to-urban migration in many African countries. However, the informal sector concomitantly spread and was responsible for a significant share of production in many sectors of the economy. Equally, sustained mortality was accompanied by consistent high fertility rates. At the same time, commodity exports also increased and largely strengthened economic growth in many countries, but massive public and private investments were still mostly supported by foreign investors (Fox, 2012).

The post-colonial apparent economic performance had rapidly vanished after a few years, causing the urban wages and urban employment opportunities to decline (Potts, 1995; Becker & Morrison, 1995). The growth rates of urban population primarily stimulated by the decline in mortality and a steady food surplus continued to increase. Imports and foreign aid (rather than productivity growth) generally remained high in Africa and had supported the urban growth trends (Fox, 2012). The most historical and notable exception include Zambia in 1970 which experienced malnutrition, rising mortality rates that generated in de-urbanization (Fox, 2012). This example showed that in most of the cases, the urban population continued to grow as the natural increase in the population increased but an increase in mortality automatically curbed urbanization.

In summary, Africa's urban transition has historically been driven by sustained mortality decline and availability of food surplus in cities. Whether before, during or even after the colonial era, these factors remained the motives behind the massive shift of population to cities in SSA. Any factor that promoted mortality decline and ensures the availability of food in SSA's cities is it economic or not (technological and institutional transfer and diffusion, government expenditures, foreign aid, etc.) is likely to always contribute to urban population growth in SSA. However, economic growth appears not to represent a necessary condition for urbanization in the region. That is why urbanization without growth is not mysterious in Africa: urbanization did not start with economic growth and can increase independently of that; though it can catch up with it as the factors driving sustain mortality decline and the availability of food in cities are strongly correlated with economic growth. However, the main point

remains how to make the rampant urbanization contributive to economic growth in SSA.

1.3.2.2. Empirical evidence on urbanization in SSA

Conventionally, urbanization has been considered a result of industrialization and economic growth, thus a byproduct of development (Fox, 2012; Fox, 2017; Namasaka & Kamaru, 2017). This suggestion stems from the historical experience of Europe during the 19th century and the recent urbanization trends in China where urbanization and industrialization have occurred concomitantly (Fox, 2012; Fox, 2017; Namasaka & Kamaru, 2017). The shift from an agrarian economy to industrial society is supposed to generate new employment opportunities, better living conditions and structural changes that encourage people to migrate to cities and fuel urban growth. However, extrapolating these results to all cases of urbanization by merely attributing urbanization and urban growth to structural economic and industrial change is misleading as it ignores the specific features of urbanization experiences in SSA (Fox, 2017; Namasaka & Kamaru, 2017). In fact, neither green revolution nor industrial revolution has yet occurred in SSA over the last century while the region is urbanizing very fast almost to the same level as Asia (Gollin et al., 2013). SSA is also recording instances of urbanization without sustain growth (Fay & Opal, 2000; Barrios et al., 2010; Gollin et al., 2013). At the same time, their peers of South East Asia, which equally recorded rampant urbanization are displaying better economic performance (Ellis & Roberts, 2015).

For example, food yields have remained quite low in SSA over the past decades (Evenson & Gollin, 2003; Gollin et al., 2013) and even lower compared to Asian counterparts. In 2010, cereal and starchy roots yields in SSA, were respectively, 2.8 times and 2.1 times lower than in Asia (Gollin et al., 2013). Crops irrigation also remained challenging in SSA as only 3% of the land is irrigated, compared to more than 20% globally FAO (2009). Nearly half (40%) of the population in SSA reside in landlocked countries against only 7.5 % in other developing countries. Moreover, transportation costs in SSA can be as high as 77 % of the value of exports (FAO, 2009). Interestingly, employment share in agriculture remained above 50 % of the total employment between 1991 and 2017 (WDI, 2017). Agriculture displays patterns of positive shocks that easily generate an increase in the demand for non-traded and

non-agricultural goods, thus expanding consumption based cities in SSA (Gollin et al., 2013).

Agriculture's share in GDP has declined in Africa over the past two-decades but not replaced by the expansion of industrial activities (Brooks et al., 2014). There has been no industrial revolution in Africa as its manufacturing and service sectors remain relatively small and unproductive. In 2017, Asian employment shares in the industry were comparatively as high as double of that of Africa. This was similarly observed in the service sector. Employment shares in industry and services were 11.01 and 34.13 % for Africa, as compared to 23.17% and 50.27% respectively for East Asia and Pacific (World Bank, 2018). Also, African labor productivity was paged at 1.9 and 2.3 times lower in industry and services, respectively (World Bank, 2013) as compared to Asia. Agriculture and services have significantly driven growth especially in resource-poor countries (Africa's Pulse Brochure 2013, p. 14). Consequently, informal work in the non-agricultural sector rose (nearly 78% in 2004) in Africa at the detriment of the formal sector that has progressively declined and failed to absorb urban labor (Becker, 2004).

Another reason for which urban transition is occurring with a retard in economic growth stems from the fact that SSA economies heavily rely on their export revenues in natural resources to support and sustain their economic growth (Potts, 2012; Jedwab et al., 2014). Surprisingly, western cities expand with increasing industrial productivity. Commodity production rents in SSA, fundamentally based on agricultural and natural resource exports, have consistently increased the demand for non-tradable urban goods and services (Gollin et al., 2013). That is why it is argued that the consumption of non-traded good and service is heavily driving the growth of cities. Moreover, purchasing power and currency exchange rates appreciate as natural resources provide more revenues to many people (Jedwab, 2011; Gollin et al., 2013).

Jedwab (2011) evokes the examples of Ghana and Côte d'Ivoire whose cities grew by solely relying on spending from cocoa production. This usually generates low-productivity and informal or service-sector jobs. For instance, while oil and diamond sector accounts for over 50 % and 36 % of GDP in 2013 in Angola and Botswana, respectively, they employ 10,000 people and 13,000 respectively. However, despite the little employment provided by the mining sector, Angola's urbanization rate

increase by nearly 45 % from 1960 to 2010 and Botswana experienced a similar increase in urban growth (Gollin et al., 2013). The informal employment is increasing in many parts of Africa, and few workers in the sector have managed to land into formal jobs (Annez & Buckley, 2008). Annez & Buckley (2008) also indicate that urban informal employment is more productive than agricultural labor in Africa. For example, the difference in the gap between informal labor in Ghanaian cities and agricultural employment was 2:1 in 2009 (World Bank, 2009).

In an attempt to make some clarifications about the effect of growth on urbanization, Fay and Opal (2000) found that urbanization levels are positively correlated with the levels of income in SSA. However, the authors contend that the changes in income fail to explain the changes in urbanization. According to Henderson et al. (2012), this absence of correlation may be attributable to substantial error in the measurement of GDP in developing countries. According to Namasaka & Kamaru (2017), there are good reasons to think of a correlation between urbanization and growth or development but this not to be confounded with a causality link. Still, this correlation seems weak in SSA. Urban population has increased nearly below 16 % in Africa and Asia between 1960 and 2000; however, the income per capita has risen only by 50% in Africa but by 340% in Asia (Bloom et al., 2008). Besides, urbanization in SSA has continued even during the periods of negative growth, carried mainly by the previous level of urbanization (Fox, 2012).

Many authors argue that natural increase of urban population is the missing factor in the explanations of the causes of urbanization (Preston, 1979; Bloom and al., 2008; Namasaka & Kamaru, 2017; Fox, 2017). In his analysis, Dyson (2011) considers the demographic explanations of urbanization by emphasizing the demographic dynamics and transition. For this author, the progressive transformation of rural society into an industrial one is mainly attributable to the combination of demographic factors such as mortality, fertility, and migration. Moreover, Preston (1979) also recognized that the overall rate of national population has continued to grow in most of the SSA countries and represents the dominant cause of urbanization and urban growth in SSA.

For example, the decline in mortality rate ahead of the decline in fertility rate in urban areas increases the rate of urban natural increase that can, in turn, generate population pressure. Thus, urban areas expand as long as mortality rates decline. In agreement

with this view, Fox (2012; 2017) relates to the historical facts in SSA to explain how mortality decline has shaped urbanization in the region and is continuing to do so today. Fox (2012) denotes that the institutional and various technological changes (intended to reduce epidemics and infectious diseases constrained mortality) have caused a massive population flight towards cities. This dynamic continues as many of the SSA countries remain dependent on foreign assistance and were still benefiting from the western countries expertise for the decline in mortality rates and food supplies. Mostly, the rapid decline in mortality accompanied with increasing fertility rate gave rise to an unprecedented increase in population that propels urban growth rates in the region (Namasaka & Kamaru, 2017). The situation looks more critical when we figure out that SSA, home to a very young population, is projected to double in overall population by 2050 (UNDESA, 2014).

Some authors have related African urbanization to governments and political institutions as they can easily influence economic growth in Africa. The literature presents the effects of the institutions that have existed in the pre-colonial period as potential threats to their modern counterparts in the long run. This perpetuates weak institutions in Africa and a dictatorship, thus, compromising democracy in many countries (Acemoglu & Robinson, 2010). As such, leaders can influence and manipulate rural and spatial clustering as well as migrants' votes (Raleigh, 2014). Further, these political actions exacerbate the spatial inequalities and urban poverty across states (Raleigh, 2014).

Firebaugh (1979) and Barrios et al. (2006) respectively evoke the adverse rural conditions and climate change as extremely important in explaining urbanization in SSA. In the region, civil conflicts (UNEP, 2000; UNEP, 2002; Bloom et al., 2008), changing political regimes (Satterthwaite, 2007), as well as ethnic tensions (Fay and Opal, 2000) has induced significant population flows toward the cities in search of safety. As a matter of fact, due to civil strife in 1980 about 4.5 million people were displaced from rural areas to urban in Mozambique (Chenje, 2000) while Sierra Leone hosts the worldwide third largest settlement predominantly composed of displaced persons (UNCHS, 2001). Natural disasters (droughts and floods) in Ethiopia, Angola, and Mauritania have pushed many people to cities (UN, 2007). The exhaustion of natural resources and land degradation (UNEP, 2000), as well as political instability,

has led many rural inhabitants to flow to cities in Kinshasa, the Democratic Republic of the Congo (Bloom et al., 2008). People also leave rural areas because of declining agricultural productivity, lack of employment opportunities and lack of access to basic physical and social infrastructures. However, the expectation of higher and better conditions usually vanishes as urban poverty grows. For example, in Moroni, the capital city of volcanic Comoros, approximately 45 % of urban households are obliged to look for supplement revenues to survive in cities (by growing crops or raise livestock in urban environments) (UNDP, 1996).

However, Potts (2009) emphasizes that urbanization has started declining in many SSA countries because of urban poverty, livelihood insecurity and the lack of economic opportunities for migrants. As a result, rural migrants that struggle and are unable to survive usually go back to the countryside. This view is confirmed by the recent inter-census period results that reveal that some SSA countries begin to urbanize very slowly especially when considering large and medium-sized towns in Benin, Mozambique, Senegal, Zimbabwe, Mauritania, Burkina Faso and Niger (Potts, 2009). Therefore, the availability of economic opportunities in cities and towns is critical for the expansion of urban areas.

1.3.3. Urbanization and urban growth in the developed countries

1.3.3.1. Historical background of urbanization in developed countries

In today's advanced economies, the proportion of the urban population has remained unchanged for many decades before the 19th century (Fox, 2012). The steady rate of urbanization is attributable to the occurrence of disease burdens and the insufficiency of food supplies in cities (Fox, 2012). Indeed, the agricultural productivity was low, and its increase was driven primarily by bringing more land under cultivation rather than by rising yields. Transportation costs remained very high and constrained the exchange in agricultural goods and the potential for regional specialization, thus making trade inefficient (Bairoch, 1988; Fox, 2012). For example, at urbanization's peak in 200 CE when Rome's population size far exceeded the city's total production capacity, 75 to 95 % of the city's wheat supplies was imported from distant territories to satisfy the city's energy requirements (Fox, 2012). This was an extremely costly mean of food surplus acquisition that contributed to Rome's population decrease to a

size more in line with its productive capacity -from almost one million to just 50,000 inhabitants- (Bairoch, 1988; Reader, 2004). This provides a useful illustration of how physical geography shaped urbanization in the preindustrial era by affecting access to food supplies.

Later during the 19th century, Europe undertook urbanization at its fastest rate with a mostly rural society becoming a developed and urbanized society. At that time, over 90% of the population has shifted from agricultural activities (Fox, 2012). Between 1800 and 1900, the proportion of Europeans living in cities grew from around 10 to 30 %, and by the turn of the millennium, approximately 70 % of the Europeans lived in urban areas (Bairoch & Goertz, 1986; UN, 2010). This urban transition was mainly attributable to the advent of technologies and institutions that mitigate the urban constraints in the pre-modern and facilitated disease control and food supplies (Fox 2012). For example, agricultural innovations (nitrogen fertilizer, crop rotation, and mechanization) have increased the productivity (Bairoch, 1988; Cameron, 1997; Maddison, 2007). The implementation of cheaper sources of energy (railroads, steamships, and eventually automobiles) has emerged and sharply reduces transportation costs (Bairoch, 1988; Crafts & Venables, 2003). Improvements in hygiene and health care led to a dramatic decline in mortality rates (Szreter, 1997; Bloom & Sachs, 1999; Livi-Bacci, 2007). Political-institutional changes reinforced and sustained the growth of cities (Szreter, 1997; Cameron, 1997; Maddison, 2007). These changes collectively led to a permanent shift from an economy characterized by a stagnant per capita income and high mortality, to a modern growth regime with secular rises in factor productivity and life expectancy in Europe (Galor & Weil, 1999). Consequently, urban population growth increased directly through the raising of the rate of urban natural increase or indirectly by the flows of rural-to-urban migration.

Besides this urbanization trend, an uncommon phenomenon has been observed in the first half of the 19th century: three former commercial powers namely the Netherlands, Portugal, and Denmark, experienced a dramatic decrease in their level of urbanization (Bairoch & Goertz, 1985). In the particular case of Denmark, given its essential per capita gross national product, it had a lower level of urbanization than the other countries. The country's delay in urbanization was mainly attributable to the fact that

its economic development was based on the export of raw agricultural products until 1860-1870. It was only after that period that agricultural output increased substantially; and furthermore, in 1890, the development of some industries began (Bairoch & Goertz, 1985).

1.3.3.2. Empirical studies on urbanization in developed countries

Scholarly works on the causes of urbanization in today's developed countries during the 21st century are almost rare. A comprehensive study by Bairoch & Goertz (1985) related to the determinants of urbanization in the 19th century is used in this part for empirical purposes. Bairoch & Goertz (1985) have shown that the level of exports and its agricultural productivity previous history of a country together with the level of exports and agricultural productivity has been a significant driver of urbanization in Europe and some selected advanced countries from the early to middle of the nineteenth century. The authors contend that economic factors roughly accounted for 70 to 80% of the growth in explaining the level of urbanization, and the beginning of the urbanization process corresponded approximately to a period of economic take-off in these countries.

Of the economic factors they enumerated, industrialization, international trade (entry in exports), per capita Gross National Product and agricultural productivity as the essential promoters of urbanization. They also found that the United Kingdom alone had globally increased the level of urbanization in Europe from 10.4% to 12.6% during the 19th century. This situation caused massive imports of foodstuffs, cereals from other countries due to the nascent industrial revolution that occurred around 1830. In another study Bairoch (1985) corroborates the importance of industrial revolution in urbanization by arguing that industrial employment shares in total employment have increased from 35-45% to 50-55% during the 19th century in European cities. Moreover, countries with concentrated industries were also more likely to display a higher level of urbanization than countries with dispersed industrialization (Bairoch & Goertz, 1985). That is why countries that concentrated their industry in a few places had higher levels of urbanization than those that have their industry dispersed throughout the country. Our main authors also found that international trade has attracted people to the cities independently from industrialization.

However, it is worth noting that urbanization was proven to be enhanced either by industrialization or increasing agricultural productivity depending on country-specific factors. For example, in their analysis, Bairoch & Goertz (1985) showed that urbanization was pulled more by industrialization in Europe. Conversely, the levels of urbanization were lifted up by the increase in agricultural productivity in the non-European developed countries. Furthermore, if history is any guide, urbanization is likely to be irreversible and tend to fuel itself constraining de-urbanization as cities attract many people regarding lifestyle, and new opportunities. In this regard, Bairoch & Goertz (1985) showed that the level of urbanization in 1800 at the beginning of urbanization is quite crucial in determining the level of urbanization of society. They also find that countries with high levels of urbanization remain over-urbanized for their economic and demographic position.

International migration was another primary determinant of urbanization identified by Bairoch & Goertz (1985) in today's advanced economies, two centuries ago. Migrations have been described as a factor accelerating urbanization in receiving countries and a restraining factor in the home countries of migrants. According to Gallaway & Vedder (1971), massive population growth has generated substantial immigration from Europe to overseas (36 to 39 million Europeans from 1865 to 1914). Moreover, the new immigrants who arrived after 1890, largely from southern and eastern Europe, were more inclined to settle in cities than the immigrants who preceded them. During the same period, Bairoch & Goertz (1985) denote that overseas urbanization increased at the expense of urbanization in Europe. Because of this rapid urbanization in the overseas developed countries, after 1880, Europe lost its place as the most urbanized developed. Also, Bairoch & Goertz (1985) find that neither the central government nor the population density is strongly associated with the level of urbanization.

In a nutshell, the developed countries have recorded three main periods in the process of urbanization: pre-industrial, industrial and post-industrial. The trends of urbanization in these countries is quite similar to the one observed in current developing countries. However, the main differences lie in the fact that today's advanced economies are the one who discovered the remedies to the main impediments to urban growth (mortality and availability of food) and transfer them in

their colonies (today's developing countries). Also, during their urban transition, the advent of new technologies and industrialization has consistently been accompanied by sustained economic growth, thus prompting many authors to consider urbanization as a byproduct of economic development (Fox, 2012).

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CHAPTER 2: RESEARCH METHODOLOGY

We investigate the primary determinants of urbanization and urban growth in SSA and G7 countries using the traditional measures of statistical and panel econometric tools allowing to obtain robust and consistent estimates. Specifically, this paper studies the relations between urbanization/urban growth and political, demographic and economic variables using the World Bank and the UN specialized institutions databases. Specifically, we consider the following equations:

$Urbshare_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 G_{it} + v_i + u_{it}$

$Urbgrowth_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 G_{it} + v_i + u_{it}$

- $Urbshare_{it}$ represents the urban share variable of country i in year t
- $Urbgrowth_{it}$ stands for the urban growth variable of country i in year t
- X_{it} is a set of explanatory variables including economic variables (Human Development Index HDI, per-capita income, Foreign Direct Investment FDI, Agriculture and Manufacturing productivity), demographic factors (fertility, life expectancy, international migration) and political factors (political stability, government effectiveness index).
- G_{it} is a vector of year dummies.
- The error term is decomposed into time-invariant component v_i and time variant component u_{it}.

2.1. Data and Proxy Measures

Our choice of variables closely follows the widely accepted measures of urbanization/urban growth, economic, demographical and political factors. Many indicators of urbanization have been proposed in the literature. In this study, we will consider two of them as dependent variables: urban share and urban growth.

Urban share represents the proportion of the total population living in urban settlements over time which is expressed in a percentage or ratio of the total population. This variable is considered a typical indicator of the overall importance of urban residents in the total population as a whole. Alternatively, urban growth refers to the increase (the relative or absolute) in the size and population living in towns and

cities over a period which is expressed in a number. So, urban share refers to an increase in the proportion of cities in comparison with the overall population in the country, whereas growth is the actual increase in the number of people in cities. Our set of independent variables includes political, demographical and economic factors for both subsets of countries as displayed in Table 1.

Table 1
Expected signs in the SSA countries

Variables	Meaning	Expected sign	
Independent variables		Urban growth	Urban share
Unemployment		-	-
HDI	measures the average achievement in three basic dimensions of human development in a given country: a long and healthy life, knowledge and a decent standard of living.	+	+
FDI	accounts for the inflow of capital that can propel industrialization in the area	No effect	No effect
Agriculture, value added	a measure of agricultural productivity	-	-
Fertility	the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children by age-specific fertility rates of the specified year	+	+
Political stability	accounts for the absence of conflicts and violence in a given country	-	-
Government effectiveness	Proxy for government actions and policies in a given country.	+	+

Source: By the author using WDI and WGI databases

Table 2
Expected signs in the G7 countries

Variables	Meaning	Expected sign	
Independent variables		Urban growth	Urban share
Life expectancy		+	+
Unemployment	the share of the workforce that is currently without work but available for and seeking employment	+	+
Fertility	the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children by age-specific fertility rates of the specified year	No effect	No effect
Political stability	account for the absence of conflicts and violence in a given country	No effect	No effect-
Government effectiveness	proxy for government actions and policies in a given country.	+	+
Inflows of foreign population	is used in this study as an indicator of international migration flows in a given country.	+	Inflows of the foreign population
Per capita income	measures the average income per person in a given country in a specified year.	No effect	No effect
Manufacturing, value added	effect of the expansion of the manufacturing sector	+	+

Source: By the author using WDI and WGI databases

Economic factors

All the variables are retrieved from The World Development Indicators of the World Bank, except the Human Development Index (HDI), which is retrieved from the United Nations Development Program database.

The World Bank (2017) defines the **agriculture value added per worker** (data are in constant 2010 U.S. dollars), as a measure of agricultural productivity. Value added in agriculture measures the output of the agricultural sector less the value of intermediate inputs. This variable is used to account for the effect of the agricultural productivity on urbanization. We assumed that a decline in agriculture promotes urbanization while an increase of the sector's productivity will constrain urbanization as supported

by Lipton (1977). This assumption is supported by the World Bank (2013) that show that employment in agriculture represents more than 50 % of the total employment in SSA.

According to The World Bank (2017), **manufacturing value added** (data are in constant % of GDP) refers to the net output of the industrial sector after adding up all outputs and subtracting intermediate inputs. This variable is employed to examine the effect of the expansion of the manufacturing sector on urbanization. We hypothesized that it promotes urbanization in G7 countries as industrialization is widely considered as a driver of urbanization in developed countries (Fox, 2012; Fox, 2017). Alternatively, we use the Foreign Direct Investment (FDI) to account for the same effect in SSA.

Foreign Direct Investment net inflows, FDI (data are in % of GDP) are the net inflows of investment made by a firm or individual in one country into business interests located in another country. As the industry is still at its infancy compared to agriculture (occupying more than the half of employment as argued by the World Bank (2013) in SSA, we use this variable to account for the inflow of capital that can propel industrialization in the area. As no industrial revolution has occurred in the area yet, we expect an insignificant coefficient from this variable.

Per capita income measures the average income per person in a given country in a specified year. Many authors have alleged the importance of income in developed countries' urbanization during the 19th and 20th century (Henderson et al., 2013; Fay & Opal, 2000). However, we expect an insignificant effect of the same variable in the rich countries for the 21st century as their income remains higher but somewhat constant during the last decades.

The World Bank (2017) refers to total **unemployment** (data are in % of total labor force) as the share of the workforce that is currently without work but available for and seeking employment. We use this variable to investigate the trend of de-urbanization noticed by Potts (2009) in SSA due to the lack of economic opportunities and massive unemployment. We expect the variable to be negatively correlated with urban growth and urban share in SSA but positively correlated in G7 suggesting that only severe cases of unemployment can pull people to cities in developed nations.

The Human Development Index (HDI) developed by the UNDP is defined by the institution as a composite index measuring the average achievement in three basic dimensions of human development in a given country: a long and healthy life, knowledge and a decent standard of living. This variable is used as a proxy of development. Bradshaw & Noonan (1997) argues that the disparities of opportunities and income between urban and rural areas have translated into a higher standard of living for urban residents and attracted many rural inhabitants to cities. We expect higher values of HDI to increase urbanization in SSA countries.

Demographic variables

These data are retrieved from the WDI database of the World Bank, except the Inflows of foreign population variable, which is from the Migration database of the Organization for Economic Co-operation and Development.

As argued by the World Bank (2017), **life expectancy at birth** (data are in years) is the number of years that a newborn infant could expect to live if the patterns of infant mortality rates at the time of birth remain the same throughout the infant's life. Concerning the historical evidence that decline in mortality has been a great promoter of urbanization in today's advanced economies during the 19th and 20th centuries, as Fox (2012; 2017) argues, we contend that life expectancy at birth will have similar increasing effects in the G7 countries.

Fertility rate (data are in births per woman) represents "the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children by age-specific fertility rates of the specified year" (World Bank, 2017). We expect this factor to be very significant and positively linked with urbanization in SSA as Preston (1979) contends that fertility represents a significant determinant of the overall population in the region. Given the low fertility rates in developed countries, we expect this variable to be insignificant in the explanation of urbanization.

Inflows of foreign population are used in this study as an indicator of international migration flows in a given country. According to Royuela & Castells-Quintana (2014), in addition to the traditional internal migrations, international migration remains an increasingly important factor in the explanation of urbanization. Therefore,

we assumed that this factor exerts a positive impact on urbanization in the G7 countries.

Political variables

These variables are derived from the World Governance Indicators database of the World Bank. The factors **Government Effectiveness** and **Political Stability and Absence of Violence/Terrorism** that we employed have been defined by Kaufmann et al. (2010) as follows:

> *"Government Effectiveness captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. The estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e., ranging from approximately -2.5 to 2.5."*

We use this factor as a proxy for government actions and policies in a given country. Drawıng to the urban bias theorists, governments policies has biased the development of cities at the expense of rural areas, especially in SSA. This has translated into increased levels of urbanization in the area. We hypothesize that such effect does not exist in G7 as their institutions and policies are more advanced than in developing countries.

We use political stability to account for the absence of conflicts and violence in a given country. Civil conflicts (UNEP, 2000; Bloom et al., 2008), violent conflicts (Glaeser & Shapiro, 2002; Dincecco & Onorato, 2013), ethnic tensions (Fay & Opal, 2000) or persecution by feudal lords (Pirenne, 1936) have displaced many people from rural areas to cities, which are considered safe havens. We assumed a significant and positive relationship that runs from conflict exposure to urbanization in both sets of countries. As defined by Kaufmann et al. (2010),

> *"Political Stability and Absence of Violence/Terrorism measures perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism. The estimate gives* the country's score on the aggregate indicator, in units of a standard normal distribution, i.e., *ranging from approximately -2.5 to 2.5."*

The following tables present a summary of the variables used for the estimations of each set of country and the expected signs. Due to data availability constraints

(missing, not accurate data in some countries), the time span is 2008-2015 in the selected 29 countries of SSA (Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Cote d'Ivoire, Ethiopia, Gabon, Gambia, Ghana, Kenya, Liberia, Malawi, Mali, Mauritania, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Tanzania, Togo, Uganda, Zambia, and Zimbabwe). In the G7 countries (Canada, Italy, France, Germany, Japan, United Kingdom, and the United States of America), the data employed to cover the period 2000-2014.

2.2. Estimation Methods

Panel data and its advantages

Panel data also called longitudinal data is a particular type of data, where each entity (corporations, individuals, countries, etc.) is observed across two or more periods of time. This kind of data configuration has been proven to control the effect of individual heterogeneity (variables constant over time) or the effects of the variables that are not observed (for which no data are available) (Baltagi, 2008). That is, it allows us to identify the effects of the omitted variables, without being indeed included or observed in the model (Hsiao, 1985; Reyna, 2007; Anna et al., 2014). The panel data eliminates the effect of those omitted time-invariant variables by studying the variations of the dependent variable over time. Ben-Porath (1973) goes further by positing that it allows to study the dynamics: it shows how a variable varies over time, unlike the cross-section data that only allows estimating the variations of a variable in a unit of time. Anna et al. (2014) have explained that the panel data displays less collinearity among the variables, thus produce more efficient and precise parameters as they contain more information and more variability. However, difficulties in the sample design and data collection coupled with the limited dimension of time series can sometimes limit the use and the performance of panel data. Similarly, the occurrence of distortion in the measurement errors, and the occurrence of no answers nor dissensions are among others drawbacks encountered in using panel data, as evidenced by Anna et al. (2014).

The Linear Regression Panel Model

In this part, we consider a linear regression panel model is studying the relationship between a continuous dependent or outcome variable and a set of independent/predictors variables within an entity (person, country, company, school, etc.) over a specified period of time. In the model, each entity is characterized by its individual factors that may or not influence the explanatory variables. The model can be written as follows:

- μt is an intercept term that can take a different value for each period.
- x represents the matrix of independent variables (fertility, per capita income, etc.) whose values can vary across time and entity. They are called time-varying variables.
- Alternatively, z stands for the independent variables (race, gender, etc.) whose values do not change across time. They are called time-invariant or stable variables.
- β and γ are the coefficients matrices for the x and z respectively.
- α_i and ε_{it} are both error terms. ε_{it} is different for each individual at each point in time whereas α_i only varies across individuals but not across time. That is, α_i represents the effects of all the stable variables that have not been included in the model (mostly because of difficulties to measures them or data constraints). For example, if data from 4 time periods were collected for three different cases or entities, then the four records for Case 1 would all have the same value for α_1, the four records for case 2 would all have the same value for α_2, etc. However, ε_{it} is free to be different for every case at every time period.

$$y_{it} = \mu_t + \beta x_{it}k + \gamma z_i + \alpha_i k + \varepsilon_{it}$$

Fixed Effects and Random Effects models are the two main techniques traditionally used to estimate this type of data. In fixed effects models, the parameters α_i are deterministic constants whereas the parameters α_i are considered realizations of a random variable of expectation and finite variance in random effects models (Torres-Reyna, 2007).

Type of panel model to estimate: The assumptions we make about the time-invariant error term α_i and the nature of the omitted variables help determine the appropriate model to estimate. In fact, the classic model of regression assumes that error terms should be uncorrelated with the explanatory variables in the model. But, this assumption might be violated if relevant variables have been omitted from the model.

If there are no omitted variables or if it is supposed that the omitted variables are uncorrelated with the explanatory variables that are in the model, then we can estimate what is known as a random effects model. It produces unbiased estimates of the coefficients with the smallest standard errors by using all the data available. Unlike the fixed effects model, in the random effect model, the variation across entities is assumed to be random and uncorrelated with the predictor or independent variables included in the model. It has the advantage to include time-invariant variables, but the omitted variables are likely to produce some bias in the estimates. In a case where the omitted variables are correlated with the variables in the model, a fixed effects model is probably the best. It controls for time-invariant variables that have not been measured but that affect the dependent variable. For example, it could control for the effect of the race if information on race was not available in the dataset. This model may control for omitted variables bias where subjects serve as their own that are absorbed by the intercept. In the words of Williams (2015),

> *"The idea is that whatever effects the omitted variables have on the subject at one time, they will also have the same effect at a later time; hence their effects will be constant, or "fixed." However, for this to be true, the omitted variables must have time-invariant values with time-invariant effects. "*

Time-invariant effects refer to the variable that has the same effect across time. However, one side effect of the features of fixed-effects models is that the effects of time-invariant variables (measured or unmeasured) that can be controlled for, cannot be estimated. That is, we cannot estimate the γs matrix for the model, and time-invariant sluggish, or slowly-changing causes of the dependent variables cannot, therefore, be investigated. Random effects models could estimate the effects of those time-invariant variables, but the estimates may be biased because we are not controlling for omitted variables.

In a case where these assumptions are violated, Williams (2015) suggested that the variables in question should be explicitly measured and include in the models. For time-varying effects, the interaction of the time-varying variable with time can be included in the model. Similarly, precise measurements of stable variables should be included in the models if they are thought to interact with other variables.

Other features of fixed or random effect model include the variability within subjects. A fixed effects model may be weak if subjects change a little, or not at all, across time because there needs to be within-subject variability in the variables for the model to consider the subjects as their own controls. Little variability within subjects may also generate too large standard errors. In such cases, random effects models will often have a smaller standard but provide biased coefficients.

The estimator within B is commonly used to estimate the parameters of the fixed effects model as it takes into account the individual effects but deletes them from the model in the estimation process using for each individual the information resulting from temporal variations. Besides the within estimator, the Least Square Dummy Variables (LSDV) can be used considering the intercept term as equivalent to introducing a separate dummy variable for each group. It assumes the independence of the observation, and we cannot include group-level covariates among the predictors, as they would be collinear with the dummies. The within and LSVD estimators produce the same numeric value. Random effects models can be estimated via Generalized Least Squares (GLS).

The Estimation Process and the Discrimination between the types of panel data

We employ the diagnostic tests to discriminate between the appropriate model: Fixed Effects, the Random Effects model or Ordinary Least Squares.

Statistically, fixed effects models always give consistent results, but they may not be the most efficient model to run (Anna et al., 2014). Random effects will provide a more efficient estimator with better p-values and may be used if statistically justifiable. The Hausman specification H-test (1978) is generally used to discriminate between fixed effects and random effects models. It checks the random effects model (a more efficient model) against a less efficient but consistent model (fixed effects model) to make sure that the random effects model is also consistent (Anna et al.,

2014). The Hausman H-test tests probe the null hypothesis that the coefficients estimated by the efficient random effects estimator are the same as the ones estimated by the consistent fixed effects estimator. It primarily tests whether the unique errors (u_I) are correlated with the regressors, the null hypothesis is that they are not.

H_0: E ($\alpha \backslash$ X) = 0 (the coefficients estimated by the efficient random effects estimator are the same as the ones estimated by the consistent fixed effects estimator)
H_1: E ($\alpha \backslash$ X) $\neq$ 0

If the null hypothesis is accepted, then random effects should be considered. Alternatively, the fixed effects model is the best.

Table 3
Hausman H-test Random Effects Fixed Effects

	Random Effects	Fixed Effects
$H_0: Cov\left(x_{it}, \delta_i\right) = 0$	Consistent and Efficient	Consistent and Inefficient
$H_1: Cov\left(x_{it}, \delta_i\right) \neq 0$	Inconsistent	Consistent

Source: Anna et al. (2014)

Random Effects model versus Pooled Ordinary Least Squares (POLS)

If the Hausman test results suggest the use of a random-effects model, the LM test helps to decide if the POLS should be used instead of random effects. The null hypothesis is that there is no variation among units (states in this example – i.e., no panel effect). If rejected, we use the POLS estimation.

Fixed effects model and time fixed effects

If the results of the Hausman test indicate the use of a fixed effects model, it is essential to see if time fixed effects are needed when running a fixed effects model. To do this, we first need to create a series of time dummy variables and then execute the test. If Prob > F = <.05 then the null hypothesis that all year coefficients are jointly equal to zero is rejected. If so, the time fixed-effects are needed.

CHAPTER 3: DATA ANALYSIS AND DISCUSSION

3.2. General trends in the data

3.2.1. In G7 countries
3.2.1.1 Urban share and Urban Growth

From 2000 to 2014, the urban share had a steady increasing trend in the G7 countries, except Japan that recorded a steep increase in urban share varying between 80 and 93%. Most of the countries have displayed a ratio of urban share averaging 78%, except for Italy and Germany. Italy had shown an urban share of less than 70% over time (67.22 %), and in Germany, it was between 70 and 75% from 2000 to 2014.
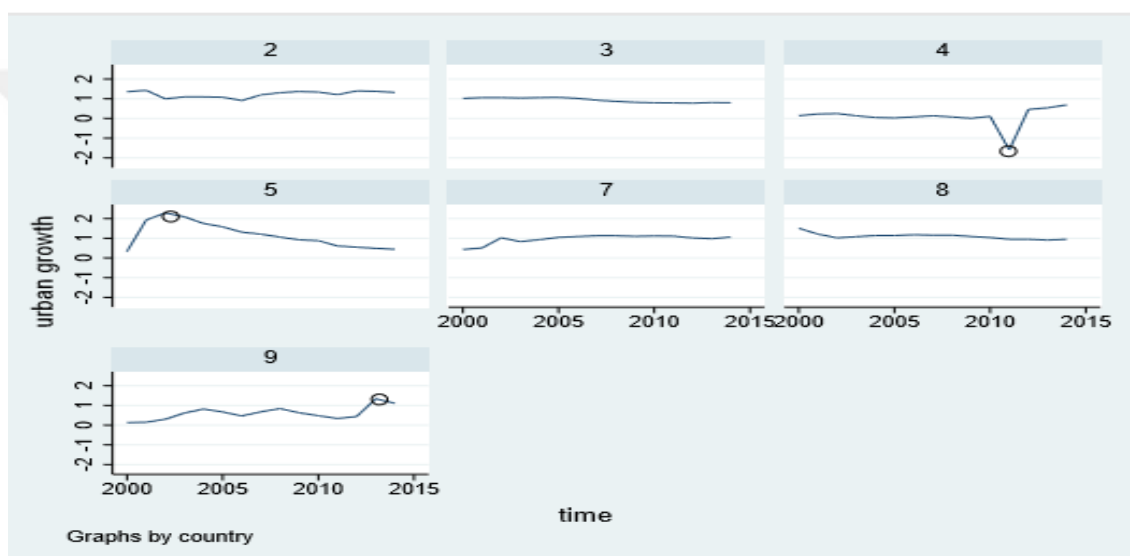
Graph 1. Urban growth in G7
Source: By the author using WDI and WGI databases
Legend: 2: Canada 3: France 4: Germany 5: Japan 7: United Kingdom 8: United States of America 9: Italy

The results are entirely different when it comes to urban growth. Japan had started recording a huge and persistent decline in urban growth after the year 2003, year in which the urban share was maximum in G7 over the period 2000 and 2014 (2.28% of urban growth). The urban growth has remained more or less constant around 1% in Canada, the United States, France and the United Kingdom with slight fluctuations. Italy has experienced an increasing trend in urban growth sometimes nuanced by slight low values and varying between 0 and one that remained increasing. In Germany before 2012, urbanization had the lowest pace (urban growth very closed to 0). A drastic decline in urban growth occurred in 2012, after which the urban growth resumed and started taking values closer to 1% thereafter.

Graph 2. Urban share in G7
Source: By the authors using WDI and WGI databases
Legend: 2: Canada 3: France 4: Germany 5: Japan 7: United Kingdom 8: United States of America 9: Italy

Conclusively, urban share continues to increase very slowly everywhere in the G7 countries and more rapidly in Japan. Japan, the G7 country with the higher share of the urban population, is experiencing a drastic shrink in urban growth. Italy, the least urbanized country in the group, displays a steadily increasing trend in urban growth although sometimes nuanced by slight low values. Germany is the second least urbanized country in the group that has displayed the smallest values of urban growth. In the other G7 countries urban share is oscillating around 78%, and urban growth is averaging 0.87%.

3.2.1.1 Per Capita Income, Unemployment, and Manufacturing

Per capita income characteristically continues to rise in the seven countries displaying values between 25385.1 euros in Italy and 50080 Canadian dollars in Canada. However, between 2008 and 2009, the per capita income has uniformly decreased in the seven countries simultaneously. This may be attributable to the financial crisis of 2008. Italy had displayed shallow values of per capita in the group, representing nearly the half of that of each of the six other countries.

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Graph 3. Per Capita Income, Unemployment and Manufacturing
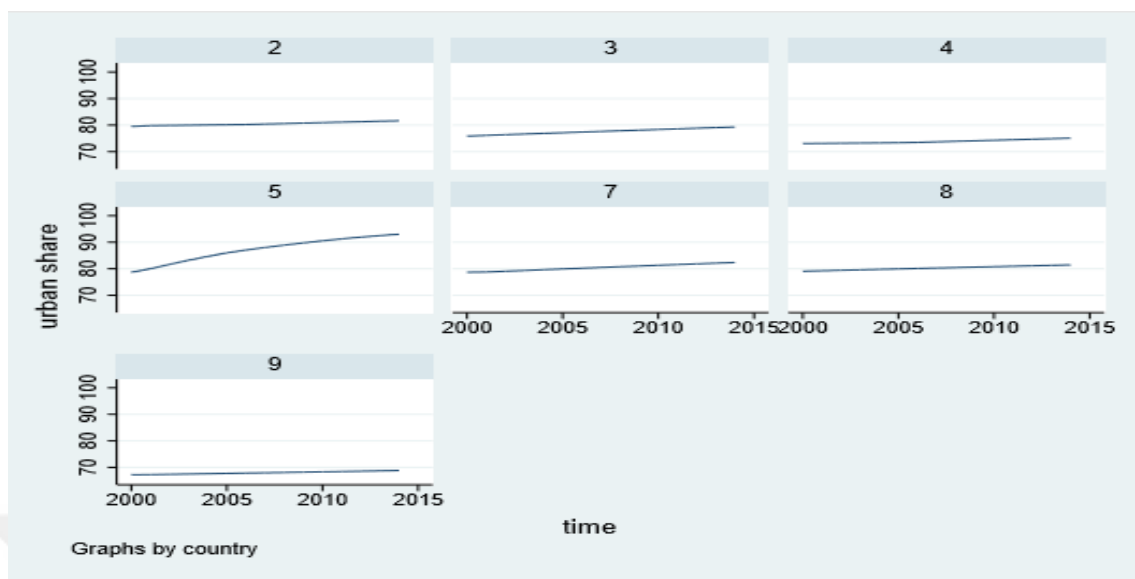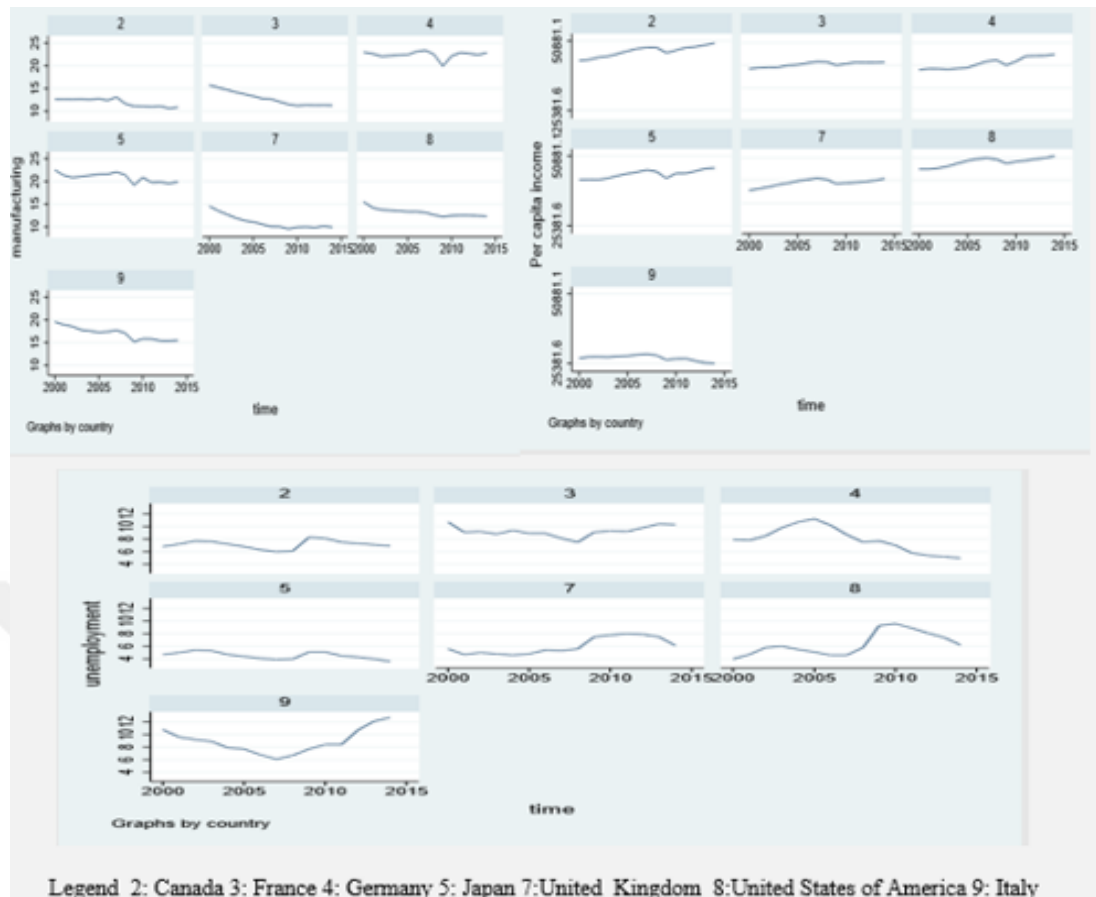
Source: By the author using WDI and WGI databases

Legend: 2: Canada 3: France 4: Germany 5: Japan 7: United Kingdom 8: United States of America 9: Italy

Unemployment had averaged 7.16 in the G7 countries from 2000 to 2014, with 3.6 and 12.7 as minimum and maximum recorded in Japan and Italy, respectively. France has recorded consecutively decreasing and increasing unemployment rates year after year. The same situation has been observed in the United Kingdom with the difference that unemployment has consistently risen from 2009 to 2013 before starting to decrease in 2014. Italy has consistently experienced decreasing rates of unemployment between 2000 and 2007. However, from 2007onwards, instances of higher unemployment are recorded and had later slowed down a bit in 2011 before starting to gradually increase until 2014. Canada and Japan displayed similar trends in unemployment: the countries had higher unemployment rates 2000 and 2003 that sharply declined in the following five years, before a characteristically sudden increase between 2008 and 2009; by 2010 unemployment rates started decreasing. The United States and Germany experienced up and down movements in unemployment before 2009, the year after which unemployment started decreasing

consistently. Overall, Japan remained the country with lower unemployment over the period 2000 to 2014.

Manufacturing output in the percentage of national income (%GDP) had varied between 15.61 and 23.44% in the G7 countries with Germany and Japan having the highest manufacturing output. Between 2008 and 2009, manufacturing output had suddenly decreased in all the countries except in Canada. France, the United States, and the United Kingdom had similar trends: manufacturing GDP started decreasing between 2000 and 2009 when a slight shock occurred in 2009. By 2010, manufacturing value added resumed and later remained constant for the following years. Italy, German, and Japan had also presented similar characteristics as countries with the higher value added in manufacturing: manufacturing output first declined in 2003, then has started increasing and reached the pic from 2007 to 2008. However, the year 2009 witnessed a sharp decrease in manufacturing output; resilience from that shock led to the improvement in output by 2011, the year after which manufacturing output has remained constant. The meager output in manufacturing has been recorded in the United Kingdom, the United States, France, and Canada (orderly from the lowest value). In Canada, the output remained constant and low till 2008 when a slight increase happened. Manufacturing decreased in the following years in Canada and remained constant over the time.

3.2.1.2. Fertility, Life expectancy, Migration

Graph 4. International Migration
Source: By the author using WDI and WGI databases
Legend: 2: Canada 3: France 4: Germany 5: Japan 7: United Kingdom 8: United States of America 9: Italy

45
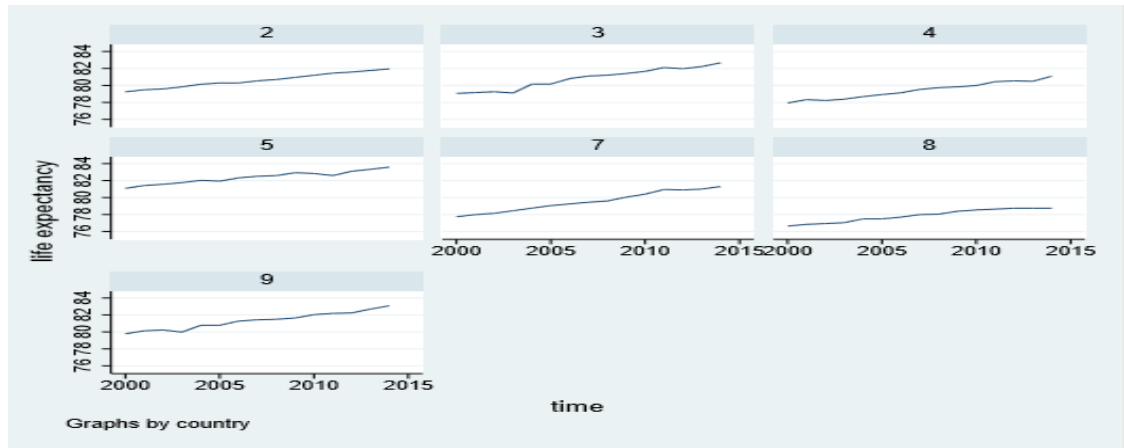
Graph 5. Life expectancy in G7

Graph 6. Fertility rates in G7
Source: By the author using WDI and WGI databases
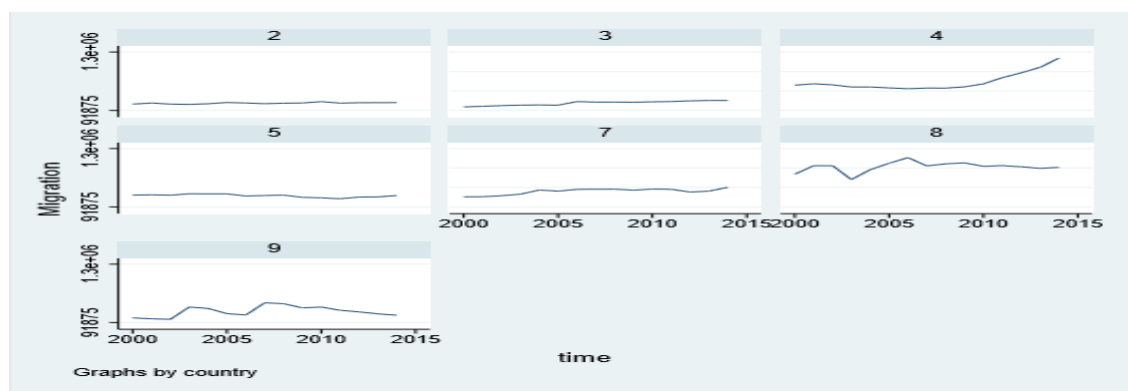**Legend**: 2: Canada 3: France 4: Germany 5: Japan 7: United Kingdom 8: United States of America 9: Italy

Among the G7 countries, France has displayed the highest fertility rates (around 2), Germany, Japan, and Italy the lowest (between 1 and 2). Canada remains around 1.5 births per woman; the United Kingdom has an increasing slope varying between 1.5 and 2; in the United States, the fertility rate was estimated to be above two before 2008, but later this value has decreased in the same year and further paged below 1.5. In summary, fertility has remained constant and very low amongst the G7 countries.

International migration flows have remained constant in Canada, Japan, France and the United Kingdom and reached 200000 migrants per year. The flows that have followed an exponential trend in Germany have fluctuated too much in Italy and the United States because they have welcomed significant flows of migrants.

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Life expectancy is on the rise in all the G7 countries. The United States has the lower value whereas Canada, Japan, and Italy, the highest. Germany and the United Kingdom had displayed moderate values. The average life expectancy value is at least 80 years in all the countries except the United States.
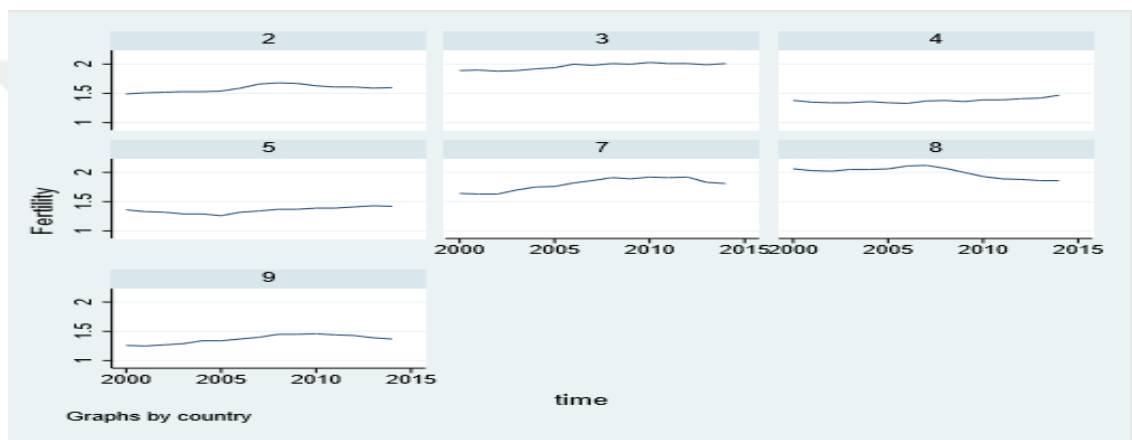
3.2.1.3 Political stability

Graph 7. Political Stability in G7
Source: By the author using WDI and WGI databases
Legend: 2: Canada 3: France 4: Germany 5: Japan 7: United Kingdom 8: United States of America 9: Italy

Japan and Canada have a more or less constant political stability index averaging 1/2.5. France and Italy present almost the same trend: their political stability had deteriorated and fell to 0.5 between 2002 and 2004 before going up the following year and remained constant around 0.5 thereafter. Germany had the same problems of political instability between 2003 and 2004 but recovered from it by 2005 and managed to maintain an index around 1 for the following years. The United Kingdom and the United States had similar experiences of political instability: from 2002 to 2005, the instability had risen and started stabilizing around 0.5 after a relapse in 2007 and 2009 in the United Kingdom and the United States respectively. In summary, none of the G7 countries have made prowess in political stability although there were all politically stable in the year 2000. From 2000 to 2014, they have scored between 0.31 and 1.32 for the political stability index (the index values typically range from -2.5 to 2.5).

3.2.2. In Sub Saharan Africa (SSA)

3.2.2.1 Urban Growth in SSA

1-Benin 2-Botswana 3-Burkina Faso 4-Burundi 5-Cameroon 6-CentralAfrican Rep 7-Chad 8-Cote d'Ivoire 9-Ethiopia 10-Gabon 11-Gambia 12-Ghana 13-Kenya 14-Liberia 15-Malawi 16-Mali 17-Mauritania 18-Namibia 19-Niger 20-Nigeria 21-Rwanda 22-Senegal 23-Sierra Leone 24-South Africa 25-Tanzania 26-Togo 27-Uganda 28-Zambia 29-Zimbabwe

Graph 8. Urban Growth in SSA

Source: By the author using WDI and WGI databases

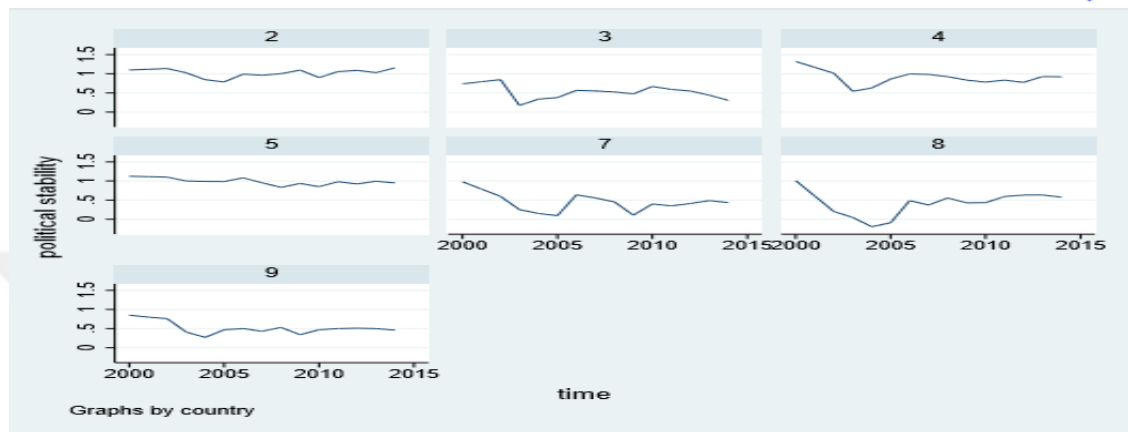**Legend**: 2: Canada 3: France 4: Germany 5: Japan 7: United Kingdom 8: United States of America 9: Italy

SSA countries have displayed unusually high levels of urban growth that started to decrease since 2012 or remained constant in all the countries, except for four countries (Zimbabwe, Niger, Namibia, and the Central African Republic). This statistic questions the general idea that urban growth is rising everywhere in SSA and show that urban growth is accelerating only in a few countries, but the general trend has been a slowing as argued by Potts (2009). Burkina Faso, Burundi, Mali, Rwanda, Tanzania, and Uganda have the maximum urban growth (nearly reaching 6% or more annually), but this pace of urbanization had started to decrease over time. The lowest levels of urban growth are noticed in Zimbabwe, Central African Republic, Botswana,

and South Africa (around 2%); these rates are still increasing in Zimbabwe and the Central African Republic but constant in the two other countries. Togo, Zambia, Sierra Leone, and Senegal have displayed a range of urban growth ranging between 2 and 4% whereas Nigeria, Niger and Namibia, Ethiopia, Malawi, Kenya, and Mauritania are all in 4 to 5% category of urban growth although all these countries are having different allures of urbanization. For example, urban growth is decreasing in Nigeria, still increasing in Niger and Namibia, constant over time in Ethiopia, Malawi, Kenya, and Mauritania. Liberia's urban growth had sharply decreased from almost 5 to 3, and remain stable from the year 2014; Chad, Cote d'Ivoire, Gambia, Ghana, Benin, Cameroon have experienced moderate growth of urbanization (4% per year) during the same period.

In summary, urban growth is averaging 4% from 2008 to 2015 in SSA countries with a maximum value of 7.12 in Rwanda. There is evidence of a decline in urbanization in all of the countries except for Niger and Namibia with lower urban growth.

3.2.2.2 Urban share

1-Benin 2-Botswana 3-Burkina Faso 4-Burundi 5-Cameroon 6-CentralAfrican Rep 7-Chad 8-Cote d'Ivoire 9-Ethiopia 10-Gabon 11-Gambia 12-Ghana 13-Kenya 14-Liberia 15-Malawi 16-Mali 17-Mauritania 18-Namibia 19-Niger 20-Nigeria 21-Rwanda 22-Senegal 23-Sierra Leone 24-South Africa 25-Tanzania 26-Togo 27-Uganda28-Zambia 29 Zimbabwe
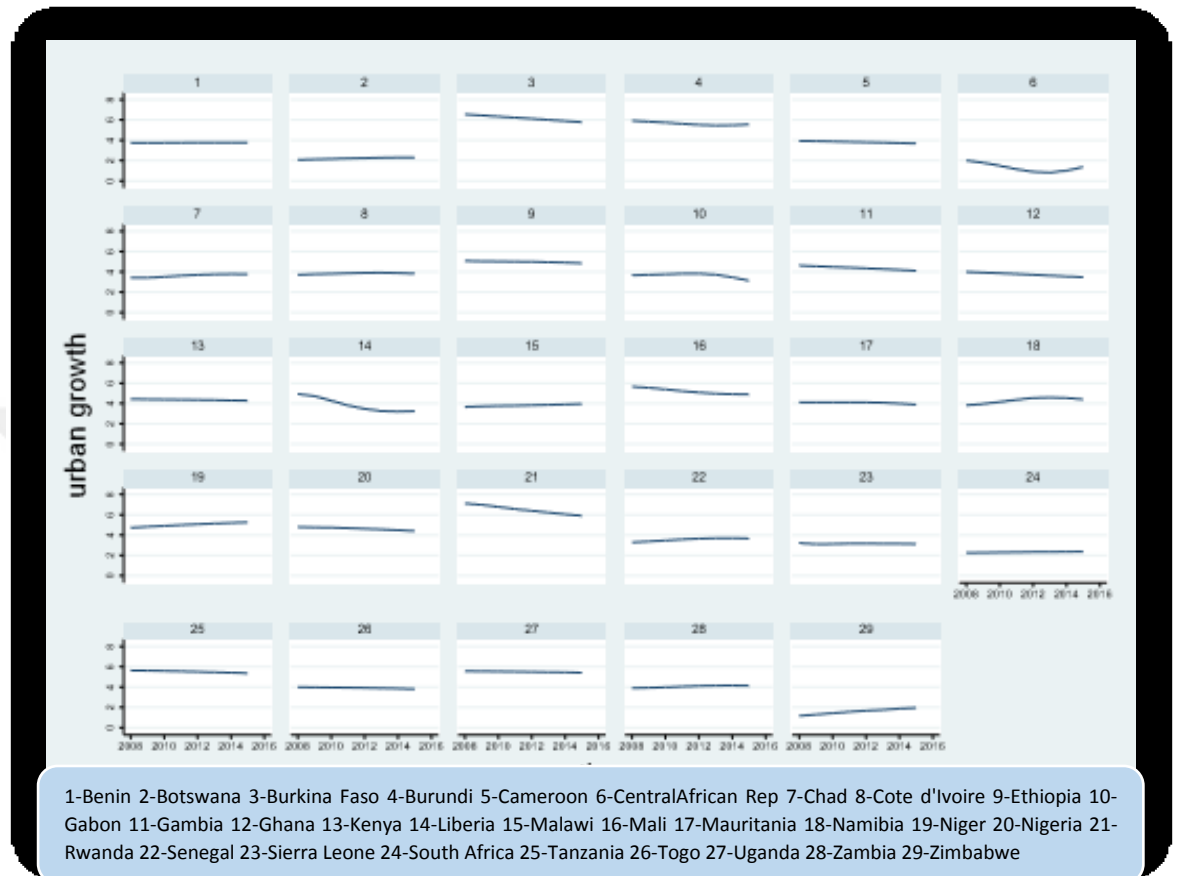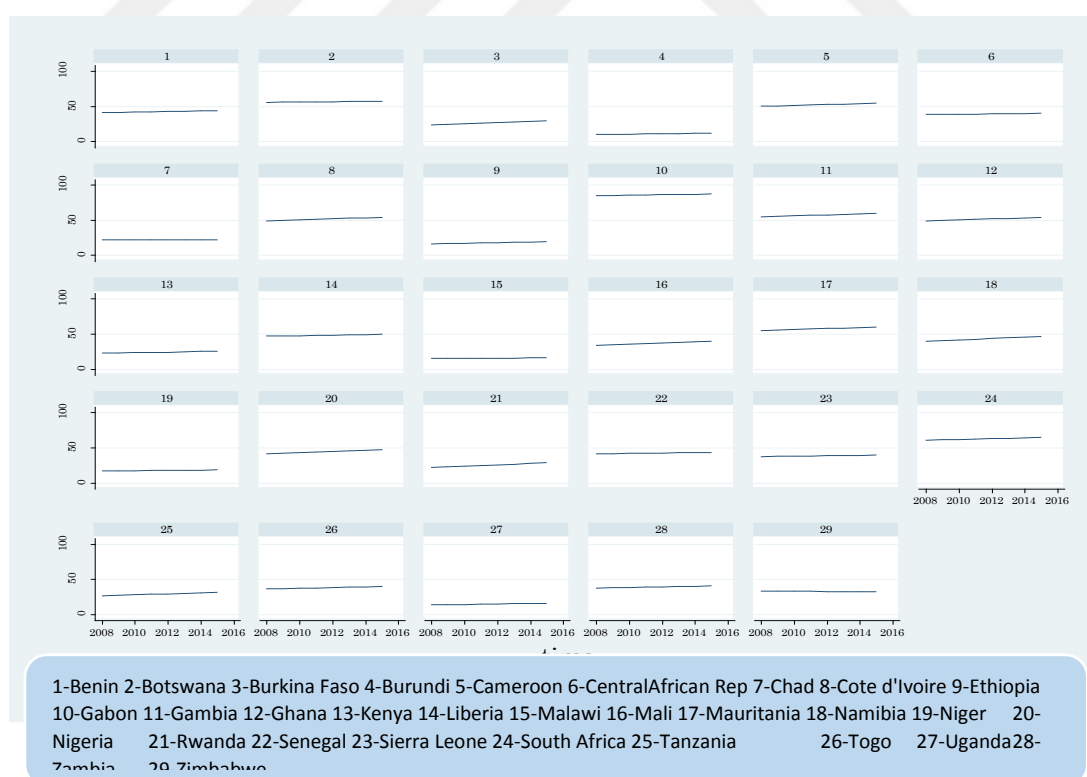
Graph 9. Urban share in SSA
Source: By the author using WDI and WGI databases
Legend: 2: Canada 3: France 4: Germany 5: Japan 7: United Kingdom 8: United States of America 9: Italy

Urban share is averaging 30% in almost every country in SSA. More than half of the group (Benin, Botswana, Cameroon, Central African Rep, Cote d'Ivoire, Gambia, Ghana, Liberia, Mauritania, Namibia, Mali, Nigeria, Senegal, Sierra Leone, South Africa, Togo, Zambia, and Zimbabwe) is displaying an urban share slightly less, equal or slightly more than 30%. The lowest urban share is recorded in Burundi (nearly 5%) followed by Uganda and Malawi at 10%; Ethiopia, Chad, Kenya, Rwanda, Burkina Faso at 15%. The highest values are displayed by Gabon (between 80 and 90% of the urban population within the total population). Urban share is growing or remaining constant in the area, except Zimbabwe. We also notice that most of the countries rapidly growing in urbanization have the lowest value of the urban share. The countries with an urban growth between 4 and 5 have the highest values of urban share (around 30 %).

3.2.2.3 Unemployment rates

Graph 10. Unemployment rates in SSA
Source: By the author using WDI and WGI databases
Legend: 2: Canada 3: France 4: Germany 5: Japan 7: United Kingdom 8: United States of America 9: Italy

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Unemployment is moderate and less than 5 % in Benin, Rwanda Tanzania Sierra Leone Burkina Faso, Burundi, and Niger. It has remained constant near 5% in Cameroon, Ghana Liberia, Uganda, Zimbabwe, and Ethiopia; averaging 20% in Botswana and Gabon. Kenya, Malawi, Mali, Mauritania, Nigeria, Senegal, Togo, Zambia, Central African Republic, Chad, and Cote d'Ivoire have fluctuated moderately around 10 % of unemployment. The highest values have been recorded in South Africa (25%), Namibia (more than 30%), and the Gambia that hold stable around 30%. In summary, unemployment is very high in SSA and averaging 8% in SSA and amount more 25 % in South Africa, and Gambia and 37.6 at maximum in Namibia. It had a constant tendency in the majority of the countries.

3.2.2.4 Agricultural value added per worker

Graph 11. Agricultural value added per worker in SSA
Source: By the author using WDI and WGI databases
Legend: 2: Canada 3: France 4: Germany 5: Japan 7: United Kingdom 8: United States of America 9: Italy

Higher and sharply increasing productivity in agricultural output reaching almost 10000 dollars has been observed in Nigeria and South Africa. The other countries are all left behind: the productivity in dollars is slightly less or equal to 1000 in 10 countries (Benin, Botswana, Cameroon, Central African Rep, Ghana, Kenya, Mali, Mauritania, and Sierra Leone), almost equal to 2000 in Chad and Cote d'Ivoire. Namibia and Gabon performed better and recorded an agriculture value added per worker averaging 4000 dollars with an increasing tendency in the latter and decreasing in the former. In the remaining 14 countries (Burkina Faso, Burundi, Ethiopia, Gambia, Liberia, Malawi, Niger, Rwanda, Senegal, Tanzania, Togo, Uganda, Zambia, and Zimbabwe) productivity is less than 500 dollars.

3.2.2.5 Human Development Index (HDI)

1-Benin 2-Botswana 3-Burkina Faso 4-Burundi 5-Cameroon 6-CentralAfrican Rep 7-Chad 8-Cote d'Ivoire 9-Ethiopia 10-Gabon 11-Gambia 12-Ghana 13-Kenya 14-Liberia 15-Malawi 16-Mali 17-Mauritania 18-Namibia 19-Niger 20-Nigeria 21-Rwanda 22-Senegal 23-Sierra Leone 24-South Africa 25-Tanzania 26-Togo 27-Uganda 28-Zambia 29-Zimbabwe

Graph 12. HDI in SSA

Source: By the author using WDI and WGI databases

Legend: 2: Canada 3: France 4: Germany 5: Japan 7: United Kingdom 8: United States of America 9: Italy

HDI is still low in SSA ranging from 0.31 to 0.7 and 0.48 as the average during the period 2008 to 2015. However, all the SSA countries are making notable efforts to

improve their HDI score. The highest value of HDI in the region, 0.7, has been achieved by Botswana and Gabon. In the same line, South Africa and Namibia are also making remarkable progress fluctuating from 0.6 to almost 0.7. Meager records of HDI are observed in Niger, Central African Republic, Burundi, Chad, Burkina Faso, and Sierra Leone (Niger displaying the lowest value). Benin, Tanzania, Togo, Uganda, Zimbabwe, Rwanda, Senegal, Liberia, Malawi, Mali Mauritania, Gambia, Cote d'Ivoire, Ethiopia, and Cameroon have escaped the lowest category and displayed HDI scores between 0.4 and 0.5. Zambia, Kenya, Nigeria, and Ghana are improving and performing very well between 0.5 and 0.6.

3.2.2.6 Foreign Direct Investment (FDI)

1-Benin 2-Botswana 3-Burkina Faso 4-Burundi 5-Cameroon 6-CentralAfrican Rep 7-Chad 8-Cote d'Ivoire 9-Ethiopia 10-Gabon 11-Gambia 12-Ghana 13-Kenya 14-Liberia 15-Malawi 16-Mali 17-Mauritania 18-Namibia 19-Niger 20-Nigeria 21-Rwanda 22-Senegal 23-Sierra Leone 24-South Africa 25-Tanzania 26-Togo27-Uganda   28-Zambia 29-Zimbabwe
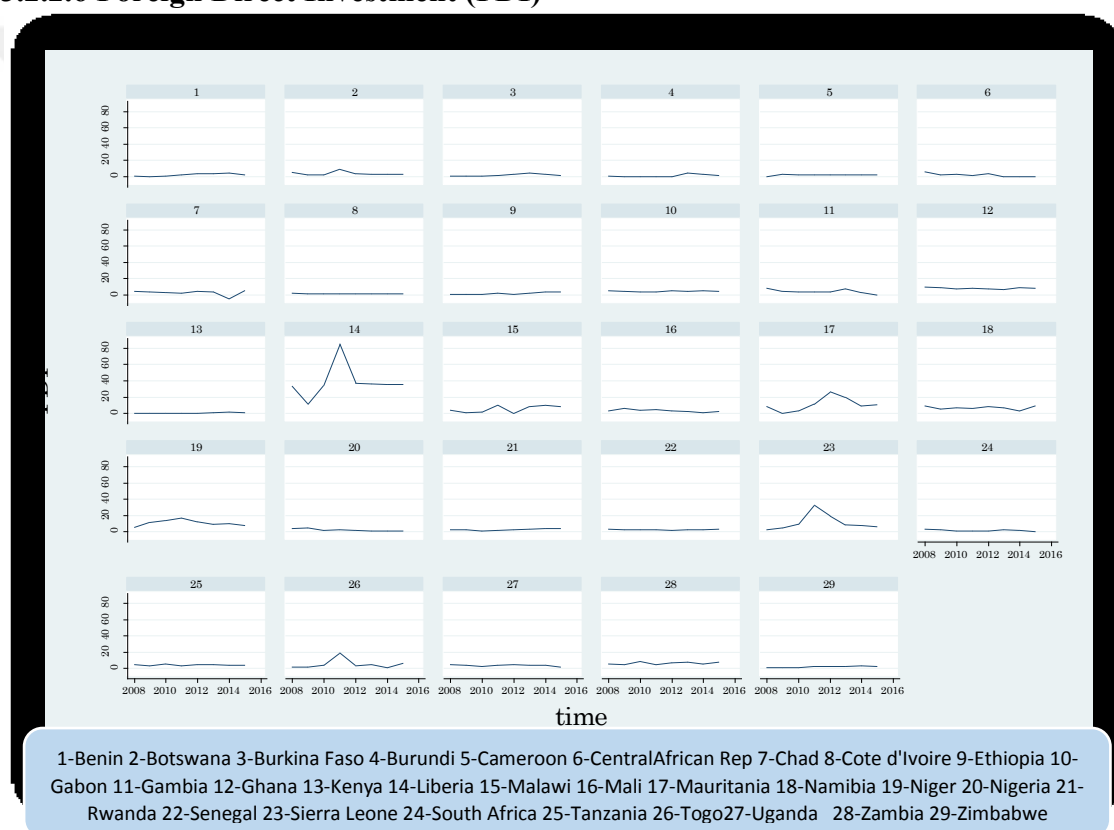
Graph 13. FDI in SSA
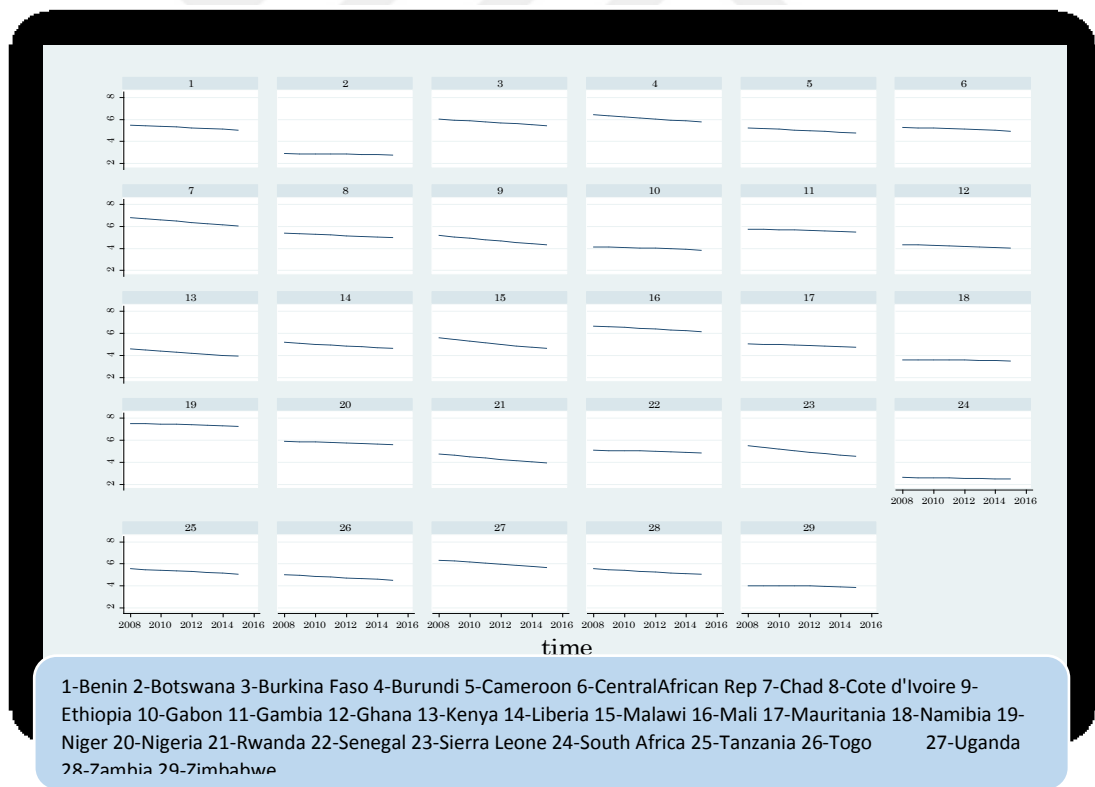**Source:** By the author using WDI and WGI databases
Legend: 2: Canada 3: France 4: Germany 5: Japan 7: United Kingdom 8: United States of America 9: Italy

FDI (% of GDP) remained constant and less or equal to 10 % in most of the countries (Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Rep, Chad, Cote d'Ivoire, Ethiopia, Gabon, Gambia, Ghana, Kenya, Mali, Namibia, Nigeria,

Rwanda, Senegal, South Africa, Tanzania, Uganda, Zambia, and Zimbabwe). However, between 2010 and 2012, Niger, Liberia, Malawi, Mauritania, Sierra Leone, and Togo have experienced a steep increase in their FDI share. The subsequent years have witnessed a decline in FDI, then a stabilization around lower values.

3.2.2.7 Fertility

Fertility rates are surprisingly decreasing in all the SSA countries with an average of 4 births per woman. Chad and Niger had displayed the higher rates paging between 6 and slightly more than 7. Botswana and South Africa had experienced the lowest rates of fertility averaging two births per women (the equivalent of the higher rates in G7 countries). Other countries have fertility fluctuating between 4 and 6; some countries have remained at least 4, and many of them reached six births per woman. One of the primary reasons for this decline is the advancement in the modernization of delivery of health services and family planning methods in the region.

1-Benin 2-Botswana 3-Burkina Faso 4-Burundi 5-Cameroon 6-CentralAfrican Rep 7-Chad 8-Cote d'Ivoire 9-Ethiopia 10-Gabon 11-Gambia 12-Ghana 13-Kenya 14-Liberia 15-Malawi 16-Mali 17-Mauritania 18-Namibia 19-Niger 20-Nigeria 21-Rwanda 22-Senegal 23-Sierra Leone 24-South Africa 25-Tanzania 26-Togo   27-Uganda 28-Zambia 29-Zimbabwe

Graph 14. Fertility in SSA

Source: By the author using WDI and WGI databases
Legend: 2: Canada 3: France 4: Germany 5: Japan 7: United Kingdom 8: United States of America 9: Italy

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3.2.2.8 Government effectiveness

Botswana and South Africa are visibly the only countries displaying better government effectiveness (government effectiveness index of around 0.5). The index had presented an increasing and decreasing tendency respectively in the two countries. Directly below this category, some countries such as Ghana, Gabon, Mali, Rwanda, and Namibia are fluctuating around a score between 0 and 0.25. In the category of government effectiveness index under -1, we found Togo, Zimbabwe, Cote d'Ivoire and Liberia. All these countries are improving except Liberia. Values of government effectiveness index ranging from -1 to 0, are observed in Burundi, Cameroon, Mauritania, Nigeria, Sierra Leone, Benin, Burkina Faso, Niger, Tanzania, Uganda, Zambia, Senegal, Gambia, Ethiopia, Malawi, and Kenya. Government effectiveness is most critical in the Central African Republic and Chad (index between -2 and -1). Most importantly, the situation is worsening year after year in the Central African Republic but remained more or less constant in Chad.
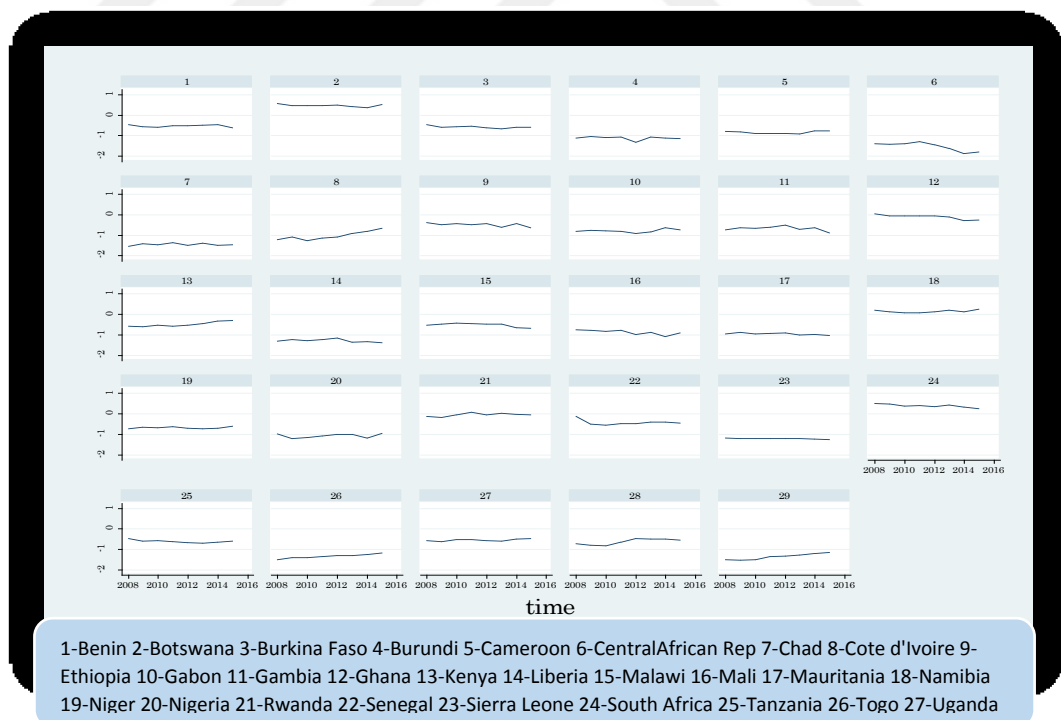

Graph 15. Government effectiveness in SSA
Source: By the author using WDI and WGI databases
Legend: 2: Canada 3: France 4: Germany 5: Japan 7: United Kingdom 8: United States of America 9: Italy

In a nutshell, government effectiveness is critical in SSA. Considering the government effectiveness index whose values generally lie between -2.5 and 2.5, only seven countries out of the 29 selected had managed to remain between 0 and 0.57 between 2008 and 2015, though some of them have started displaying a decreasing tendency. The rest of the countries are showing severe symptoms of weak governments. Central African Republic and Chad are experiencing the worse situation in the region.

3.2.2.9 Political stability

Graph 16. Political stability
Source: By the author using WDI and WGI databases
Legend: 2: Canada 3: France 4: Germany 5: Japan 7: United Kingdom 8: United States of America 9: Italy

The political stability index generally ranges from -2.5 to 2.5 and accounts for the absence of violence and terrorism. Nigeria had the worst political situation in SSA (political stability index paged at -2) seconded by Central African Republic whose index has declined from 0 to -2.5 between 2012-2014, but whose stability resumed after 2014 and continued improving. Mali's political situation is worsening too and

had varied from 0 to -2, making the area very unstable. Similarly, in Burkina Faso, the political situation had declined from 0 to -3 on a scale of -2.5 to 2.5. Chad and Cote d'Ivoire had substantially improved and displayed political stability index values ranging from -2 to -1. Kenya, Liberia, Niger, Uganda, Zimbabwe, Mauritania, Ethiopia, and Cameroon have also presented serious challenges in stability (political stability index averaging -1). The value of political stability index is constant, and almost less than 0 in Tanzania, Togo, Rwanda, Senegal, Sierra Leone, South Africa, Malawi, Zambia, Benin, and Gabon have recorded good political stability (index above 0) that is, however, deteriorating over the years. At the same time, Gambia and Ghana have managed to remain stable around a political stability index value of 0. The most stable (political stability index around 1) countries include Namibia, that is surprisingly decreasing, and Botswana that has politically remained constant over time.

Overall, political stability remained very challenging in SSA. Only seven countries of the 29 selected SSA countries had a better political situation. The remaining countries are facing severe political issues with Nigeria and Central African Republic at the tip-top of the iceberg.

3.3 Estimation results
3.3.1 Urban growth and Urban share in Sub Saharan Africa (SSA)

Table 4
Estimation of Urban growth in SSA

VARIABLES	Pooled Ordinary Least Squares
Unemployment	-0.0654*** (0.0225)
HDI	0.954***(0.173)
FDI	0.00534 (0.0183)
Agriculture, value added (% of GDP)	-0.0177 (0.0191)
Government effectiveness	0.402*** (0.0525)
Fertility	1.724*** (0.142)
Political stability and absence of terror	-0.0232 (0.0321)
Constant -0.171 (0.266)	R-squared 0.560

Source: By the author

Table 4 and 5 summarized the results showing the relationship between urbanization/urban growth and selected economic, demographic and political factors. Economic variables are represented by Human Development Index (HDI), value added in agriculture, and Foreign Direct Investment (FDI); the fertility rates variable is used as a demographical factor; political variables refer to the political stability and the absence of terror index, and the government effectiveness index. As HDI already includes a component for per capita income and mortality, we did not include those variables in the model to avoid autocorrelation problems. The option *robust* of the software STATA has been employed to ensure the robustness of the different models. After successive estimations, the best models are the one presented here. As displayed in the tables, the correlation coefficient for the urban share is very strong (0.779) while its equivalent for urban growth, although moderate, could not be described as negligible (0.560).

Table 5
Estimation of Urban share in SSA

Variables	Fixed Effects (with time effects)
Unemployment	0.0241 (0.0174)
HDI	-0.265 (0.189)
FDI	0.00265 (0.00269)
Agriculture, value added (% of GDP)	0.0346 (0.0281)
Government effectiveness	0.0155 (0.0190)
Fertility	0.603 (1.177)
Fertility squared	-0.338 (0.345)
Political stability and absence of terror	-0.0278*** (0.00934)
_Itime_2009	0.0114** (0.00515)
_Itime_2010	0.0240*** (0.00865)
_Itime_2011	0.0346*** (0.0123)
_Itime_2012	0.0468*** (0.0166)
_Itime_2013	0.0578*** (0.0208)
_Itime_2014	0.0661** (0.0246)
_Itime_2015	0.0736** (0.0285)
Constant 2.939** (1.107)	R-squared 0.779

Source: By the author

3.3.1.1 Urban growth in Sub Saharan Africa (SSA)

The results show that HDI, unemployment rates, government effectiveness, and fertility are the primary drivers of urban growth in SSA. HDI, government effectiveness, and fertility favor rapid urban growth while the increasing levels of unemployment slow the pace of urbanization in SSA. Curiously, FDI, agricultural productivity, and political stability fail to explain the changes in urban growth in the region.

A unit increase of HDI causes urban growth to appreciate by 0.954%. More importantly, the coefficient value is statistically significant and robust at the 0.01 level (two-tailed), suggesting that this finding not be the result of a chance occurrence. This means that the improvement in the educational sector, per capita income and standard of living (that represent the main components of the HDI), has pulled many people to cities and accelerated the pace of urbanization. This contends with the idea that cities play a significant role as industrial centers with high productivity and are places to generate income where one can have access to better opportunities (UNEP, 2002). That is why urban areas development usually contributes to massive investment in factories, schools building, improvements in infrastructure access, public goods, etc. that foster economic prosperity in developing countries (UNCHS, 2001)

In fact, the disparities of opportunities and income between urban and rural areas usually translate into a higher standard of living for urban residents and attract anyone in search of a better life (Bradshaw and Noonan, 1997). Many people are ready to move to the economic centers regardless of the risks and difficulties they could encounter there. Considerations from Naveed et al. (2017) shed light on how people can deliberately relocate and prefer to live in seacoast areas and other regions close to the mouths of the great rivers, frequently affected by floods, only for their natural resources and trading opportunities. Even afflicted by natural disasters they resist by disposing of all their liquid assets for subsistence till they cannot cope with the situation anymore before they decide to migrate to cities for better and secured livelihood (Rayhan & Grote, 2007). This shows that people can attach too much price to the opportunities in cities above all else.

Therefore, to enjoy cities' facilities and amenities and to overcome the persistent poverty prevailing in rural areas many people flock to cities. As development proceeds, the higher productivity of the urban sector generates more job opportunities with higher wages (Royuela & Castells-Quintana, 2014). The expanding labor demand increases the need for labor to relocate to centers and necessitates the movement of people from rural to urban areas to take up the available jobs. Rural inhabitants are therefore pulled to urban areas and concentrate there to take advantage of higher high industrial wages, larger markets and improved amenities (Royuela & Castells-Quintana, 2014). Cities are always seen as lands of opportunities that are better equipped regarding sanitary and economic facilities. Ngugi Wa Thiong'o (1982) quoted in Gugler, 1996, p. 211) has portrayed this situation by writing:

> *"I thought I should go to the capital of Kenya to look for work. Why? Because when money is borrowed from foreign lands, it goes to build Nairobi and the other big towns. As far as we peasants are concerned, all our labor goes to fatten Nairobi and the big towns".*

The positive impact of HDI on urban growth can also be interpreted as the effect of the decline in mortality rates on urbanization. Relating to mortality, the situation in SSA is similar to the one related by Fox (2012; 2017). After noticing that mortality, coupled with poor hygienic and sanitary conditions, was representing a hindrance to migration for many years during the colonial period, Fox (2012; 2017) suggests that the improvements in health and hygienic methods have undoubtedly propelled urbanization in SSA thereafter. Interestingly, our results confirm that trend and show that an increase in the decline of the mortality rate translates into an increase of population growth over the long run, thus accelerating the pace of urbanization in SSA. Therefore, the unlimited urban growth in some parts of SSA may be attributable to improvements in the decline of the mortality rate, thanks to the efforts being made to reduce mortality.

However, as many people find themselves in towns in search of a better life, they end up facing harsh conditions where cities are unfortunately not likely to sustain the basic needs of all the migrants. As such, the great ideas and hope the migrants had about cities rapidly vanished and high unemployment or uncertainty of employment contributed to the widespread of slums, urban poverty, and other social problems.

Moreover, it has also been noticed that the urban growth rates in West Africa have exceeded the capacities of municipalities to provide adequate housing and services (water, sanitation, communications and transport infrastructures, health services and education, etc.) in many countries. For instance, approximately 12% of Nouakchott the capital city of Mauritania, is made up of slums (UNEP, 2002).

This undeniably leads to another significant finding of our study: the deceleration of urban growth due to the lack of employment opportunities. The outcome from our study was that one-point rise had decreased urban growth typically by 0.6% within SSA from 2008 to 2014. This result is corroborated by the evidence of slowing in urbanization recorded in many parts of SSA due to the increasing income inequality and youth unemployment during the last decades (Potts, 2009). Considering the most recent inter-census period in SSA, Potts (2009) confirms that many countries in the area are now stagnating or urbanizing very slowly, especially as regard to large and medium-sized towns in Benin, Mozambique, Senegal, Zimbabwe, Mauritania, Burkina Faso, and Niger. The author finds that these trends mostly stem from the declining economic opportunities in many urban areas, reflecting the crises in urban poverty and livelihood insecurity. As employment opportunities become limited in cities that struggle to absorb the increasing number of rural migrants, many of migrants are left with low-paying jobs; consequently, urban employment tends to expand the service and informal sectors that constrain economic development (Timberlake & Kentor, 1983; Bradshaw, 1985). After a certain period of endurance without improvement in living conditions, cities appear as deadly places to live, thus causing urban growth to decrease progressively. As the excellent opportunities available in towns were the primary motives behind people's movement to cities in SSA when these opportunities are limited or nonexistent, many of them change their mind according to the following African proverb:

« When you do not know where you are going, look where you are from »

The proverb means that when we do not have a bright idea of the future in the actual circumstances, we must always refer and identify ourselves to our starting point because the latter is known, and we can never get lost because our starting point is still known. Even if we decided to take a steep path before and realized that we could

not complete it to the end, we can always go back to the starting point and start everything from scratch, by learning from our past mistakes.

Another vital accelerator of urbanization in SSA is the fertility levels that displays the higher effect on urban growth. An increase of fertility by one unit has appeared to propel the urban growth by 1.724% within eight years. These results show that the natural processes are a critical component of urban growth as supported by Preston (1979), Fox (2017) and Dyson (2011). In a context of declining mortality, reflected by higher values of HDI, and the increasing levels of fertility, population growth accelerates in both rural and urban areas and contributes to the expansion of urbanizati on. Empirically, Preston (1977) agrees that urban natural increase significantly contrib utes to the urban growth and that urban growth rate is determined by overall populatio n growth.

Government effectiveness also influences urbanization in SSA. An increase of one unit of government effectiveness index has resulted in an increase of urban growth by 0.4%. This finding confirms the urban bias theory that considers urbanization as a result of gross injustice (Njoh, 2003). The theory stipulates that governments, motivated by the pressure from industrialists, capitalists, and urban workers, tend to prioritize specific type of urban projects and policies at the expense of agricultural projects that could have increased rural incomes and thereby slow town-ward migration (Linn, 1982; Timberlake & Kentor, 1983; Bradshaw, 1987). This situation creates enormous disparities between urban and rural areas concerning consumption, wages, productivity and standard of living and causes many people to migrate to urban areas, where they are sometimes unable to adapt (Bradshaw, 1987). Therefore, as long as government policies promote the development of cities and accelerating urbanization, the agricultural sector is prone to decline and is progressively deprived of its labor. That is why Lipton (1977) suggests that governments can help alleviate this situation by increasing incentives in agriculture that generate more revenue for rural peasants. All it takes is the government effectiveness and willingness.

3.3.1.2 Urban share in Sub Saharan Africa (SSA)

The political stability and the absence of terror appear as the primary determinants of urban share in SSA. The factor has an adverse significant and robust effect on the expansion and distribution of the population living in cities. An increase of political

stability by one point has decreased urban share by 0.03%. This allows us to say that a large part of the increase in urbanization that we notice is attributable to conflicts, violence, terrorism and political instability. In the process of estimation of the model, fertility rates have first appeared as inhibitor of urban share but the inclusion of the squared of fertility to check the potential existence of a U-shaped relationship between fertility and urban share reveals that the first relation (between fertility and urban share) was an illusion as neither fertility rates nor its squared is significant.

The significance of the factors related to political stability corroborates the idea that conflicts have displaced many people from hazardous and unsafe (rural) areas to find safety in cities. Cities have played the role of safe havens from civil conflicts (UNEP, 2000; Bloom et al., 2008), violent conflicts (Glaeser & Shapiro, 2002; Dincecco & Onorato, 2013), ethnic tensions (Fay & Opal, 2000) or persecution by feudal lords (Pirenne, 1936). Dincecco & Onorato (2013) found, in the case of pre-modern Europe, a significant and positive relationship that runs from conflict exposure to urban growth. The authors have argued that military conflicts have played a vital role in the rise of European urban population growth. According to the authors, cities appear as escaping places for rural inhabitants under the threat of conflict or violence. However, larger cities can be more attractive targets for attackers (Glaeser & Shapiro, 2002) similarly to today's terrorism experience. In such cases, when cities do not possess the military might to protect their wealth, great destruction in cities is likely to occur (Dincecco & Onorato, 2013). However, in this study, such an effect has not been confirmed. Instead, SSA cities are safe harbors as argued by Glaeser & Shapiro (2002).

3.3.2 Urban growth and Urban share in the Group of Seven Countries (G7)

Table 6 and table 7 examined the effects of selected demographic, political and economic variables on the urban population share and the urban growth in the G7 countries. We find a positive effect of the life expectancy on the urban population share. Specifically, international migration flows, and higher values of valued added in the manufacturing sector (Squared Manufacturing) are the primary determinants of urban growth. The other factors: unemployment, political stability, fertility, agriculture productivity, and manufacturing productivity are all insignificant in explaining growth or urban population share.

Table 6
Estimation of Urban share in G7 countries

Variables	Fixed Effects Model
Life expectancy	1.792* (0.771)
Unemployment	-0.0330 (0.0261)
Fertility	0.0571 (0.0395)
Political stability	-0.00717 (0.0111)
Migration	-0.0525 (0.0364)
Manufacturing	0.550 (0.328)
Squared Manufacturing	-0.115 (0.0630)
Income per capita	-0.0506 (0.0617)
Constant -2.672 (2.819)	R-squared 0.627
Time FE	No

Source: By the authors
** $p<0.01$, ** $p<0.05$, * $p<0.1$ Robust standard errors in parentheses

Table 7
Estimation of Urban growth in G7 countries

Variables	Fixed Effects Model
Per capita income	3.691 (2.361)
Manufacturing	-17.08 (8.798)
Squared Manufacturing	3.796* (1.825)
Unemployment	0.162 (0.247)
Life expectancy	-10.85 (7.262)
Fertility	0.0430 (1.335)
Political stability	0.0565 (0.205)
Migration	1.394* (0.693)
Constant	8.212 (24.13)
R-squared	0.366
Time FE	No

Source: By the authors.
*** $p<0.01$, ** $p<0.05$, * $p<0.1$ Robust standard errors in parentheses

We find that international migration flow is essential in the explanation of the speed of urbanization in G7 countries. An immigrant is an international migrant who enters a given country from a place outside the country (The Johns Hopkins University & Kenneth Hill, 2008). As the UNDESA (2017) reported that (1) nearly two-thirds of all these migrants reside in Europe and Asia; (2) Europe, Asia, and North America are considered as the top three destinations of international immigrants, it can be inferred that most of the international migrants live in the G7 countries.

Although the G7 countries only represent 11% of the worldwide population, they are all affected by the population aging process that is projected to cause the region population to drop by 9% by 2050 (German Federal Statistical Office, 2015). As typically evident, almost 21% of the population in Italy and Germany, as well as 25% in Japan, is aged 65 or above. The trend in these three countries is believed to result from the fertility rate patterns that is significantly below the replacement level of 2.1 and further below the global average of 2.5 children per woman (German Federal Statistical Office, 2015). Also, the median age for the majority of the countries is higher in G7 countries: 36 years in the United States and over 40 years in Europe and Japan compared to less than 20 years in Africa and over 30 years in Asia and Latin America in 2006 (Velkoff & Kowal, 2007). In this context, net international migration appears as a palliative solution to population decline in Europe and other advanced countries. That is why international migration remains an increasingly important factor accompanying traditional internal migrations in explaining urbanization (Royuela & Castells-Quintana, 2014). Using a panel of 200 countries over the period 1960–2010, the authors describe the effects of international migrations on urbanization. Their results highlight international migration as a relevant factor in the urbanization process. They found a positive association between immigration and urbanization, particularly in small and medium-sized cities, and an inverse relationship between emigration and urbanization in developing countries.

3.3.2.1 Urban growth and Productivity in Manufacturing

Many scholars have linked urbanization to urban growth (Bloom et al., 2008; Fay and Opal, 2000). However, this thesis is a value added to the literature in the sense that it indicates that it is somewhat urban growth, not urbanization that is driven by the productivity in the manufacturing sector. The results highlight that it is only very high values of productivity in the manufacturing sector (here represented by the squared of the productivity) that are conducive to rampant urban growth. In other words, an increase in one unit of a higher rate of productivity in manufacturing is capable of driving urban growth up to 3.79%. In fact, we first include only the productivity in manufacturing variable in the model, but the results were quite strange, the coefficient was significant with a negative sign. This suggests that the productivity in manufacturing can lessen urban growth in G7 countries. However, to go deeper into

this relationship and its implications, we add the squared of the productivity in the model to investigate the existence of a U-shaped relationship between the productivity in manufacturing and urban growth. Surprisingly in the new model (that we finally retain), the coefficient for the squared of the productivity is significant at the expense of the coefficient representing productivity in manufacturing. This suggests that productivity in manufacturing can propel urban growth only with very high value; the small or constant value of productivity will likely be insignificant or induce constant growth of urban growth in the G7 economies. Therefore, such results confirm and expand the previous works in two ways: the first industrialization as a driver of urban growth; second, the slowing in urbanization in many parts of Europe and the developed countries in general. Regarding the first aspect, many authors, relying on the history of urbanization, view the advancements in technologies that occurred concomitantly with the industrialization as the main engine of the expansion of urbanization from the 19th to the 20th century in today's most developed countries (Fox, 2012; Fox, 2017). One possible channel through which this productivity can operate is the labor sector. Higher productivity of the urban sector generates more job opportunities with higher wages (Royuela & Castells-Quintana, 2014). Rural inhabitants are therefore pulled to urban areas and concentrate there on taking advantage of higher high industrial wages, broader markets, and improved amenities (Royuela & Castells-Quintana, 2014). Also, cities' expansion and industrialization are accompanied with subsequent changes in infrastructures and facilities and improvement in the standard of living that attract many people to cities as they want to experience a better quality of life.

The second point concerns the general idea that urbanization is still higher in other countries, except for Asia and Africa, which remained the least urbanized regions worldwide, however, displaying growing urbanization rates. UNDESA (2014) have reported that many regions in the world, except for Africa and Asia, have relatively high levels of urbanization (at least 75% today) but are urbanizing at a slower pace (less than 0.4% annually approximately in 2014). The report argues that the pace of urbanization tends to be curbed as countries record high levels of urbanization. If this assertion holds true, as suggested by our results, it means that a very high increase in productivity is not happening in G7 countries. The countries are displaying a constant increase in the productivity of the manufacturing sector. The result is that the urban

growth is slowing down or remaining constant in response to an increase in the productivity of the manufacturing sector. As portrayed by the graph 17 and graph 18, the productivity of the manufacturing sector remains almost constant in all the seven countries with a higher value in Germany and lower values in Italy. At the same time, urban growth remains constant in all the countries with more fluctuations of up and down in Germany. However, Germany, the most productive country did not present an extraordinary or higher value of urban growth compared to the others countries. Interestingly, Italy, the least productive country in the group, displays similar urban growth to the rest of G7 countries. These results highlight the fact that even the more productive country (Germany) did not reach the very high level of productivity that can propel its urban growth. This is the reason why Germany is still displaying similar urban growth rates with the less productive countries of the G7.
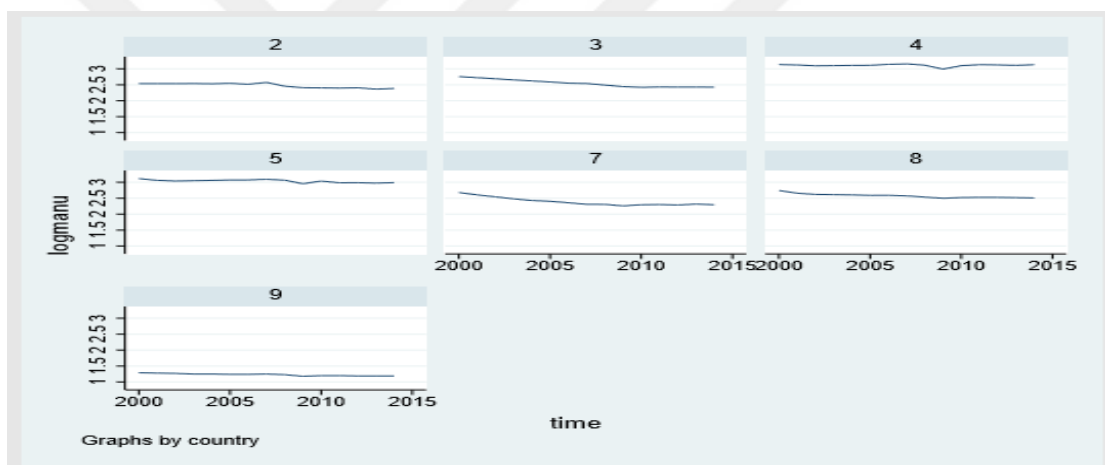
Graph 17. Manufacturing, value added in G7 countries
Source: By the author using WDI and WGI databases
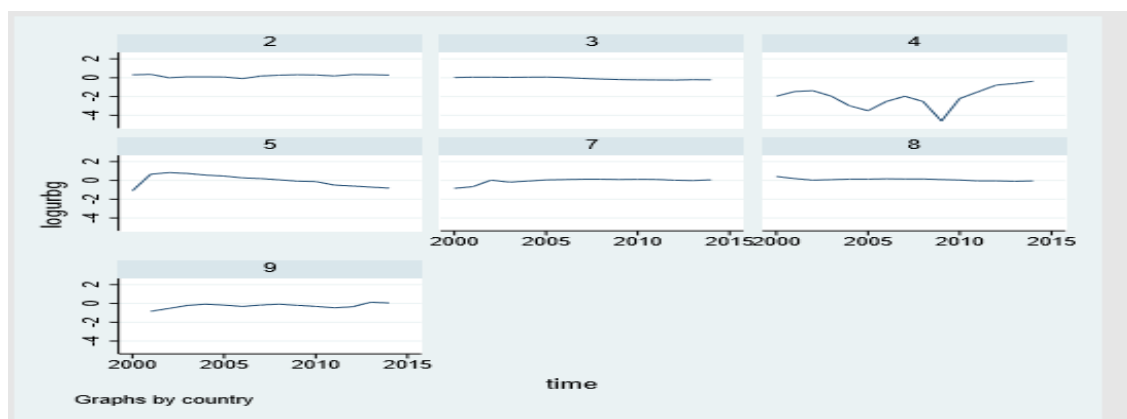
Graph 18. Urban growth in G7 countries
Source: By the author using WDI and WGI databases

3.3.2.2 Urban share and life expectancy in G7 countries

Our results show that the increase in life expectancy has enhanced the share of city population between 2001 and 2014 in the G7 countries. At the same time, the improvement in one unit in the living conditions especially the life expectancy in the advanced countries favors the expansion of urbanization by 1.79%. Healthcare facilities, advanced medical technologies and research, and better living conditions available in urban centers are possibly the primary driver of this improvement in life expectancy.

One possible explanation for the relationship between life expectancy and urban share can be found in the literature related to mortality-urbanization nexus. In fact, Fox (2012; 2017) has argued that higher mortality rate was a hindrance to the rise of urbanization in the pre-modern Europe. However, the advent of technologies and industrialization contributed to a rapid decline in mortality. Consequently, urbanization started increasing during that period. Drawing to that fact, and considering that decline in mortality in just one step in achieving a high life expectancy, the relationship between the decline in mortality and urban growth is just applicable by extrapolation to the relationship between life expectancy and urban growth. Moreover, Acemoglu & Johnson (2007) have shown that increasing life expectancy is positively correlated with population and the number of births in a cross-section of countries. As such, it can determine the overall population growth and the pace of urbanization. UNDESA (2014) confirms this view by asserting that most of Asia and Europe have their overall population stagnant or declining due to the low-fertility. In such cases, life expectancy is one of the main factors that will continue ensuring the growth of the population and therefore the urban growth. Our results corroborate that idea by finding that an increase in one year of life expectancy adds 1.79% to urban growth.

CONCLUSION

The forces that shape urbanization in developing countries today and the historical patterns of urbanization observed in today's developed economies significantly differ. That is why appropriate national urban policies need to be implemented by taking into account each country's specific features. Yet, in general, the overall causes and engines of urbanization in the 21st century have remained less investigated and understood. Their understanding has lacked in the elaboration of sound urban planning. Most importantly, there is no distinct, clear-cut about these drivers when it comes to urban growth and urban share.

In this perspective, this thesis determines the factors that explain urbanization and urban growth when countries are developing (SSA countries) or already developed (G7 countries) in the 21st century and compare them. We consider a variety of economic, demographic and political factors important in explaining the level of urbanization and urban growth. By adopting the panel data analysis, and using Fixed Effects and Pooled Ordinary Least Squares regressions, data of 29 SSA countries from 2008 to 2015 and the Group of Seven countries from 1995 to 2014, we investigated the hypothesized relationships.

We found that political stability contributes to the decline in urban share in Sub Saharan Africa when life expectancy has been the only main determinant of urban share in G7 countries. Regarding the accelerators of urban growth, the findings reliably demonstrate that the speed of urbanization has remained low or more or less constant as productivity in manufacturing remains constant in the G7 countries. However, its pace has been sustained by the international migration flows. In SSA, the situation is quite different with fertility, HDI, and government policies have perpetuated the pace of urbanization, which later seems to have been entirely brought to rest due to increased unemployment trends.

In G7 countries the findings reveal an underground problem: developed countries are likely obliged to rely on foreigners' migration flows to boost their population growth. Given that, we encourage the improvement of life expectancy in this area but most importantly the development of mechanisms that can reverse the population aging situation to make urbanization healthier. As it is mainly dependent on foreigners'

flows, laws and rules to protect and delimitate the rights and facilitate the integration of migrants in their foreign countries should be clearly defined to ease their stay and curb the tendency of population aging in developed countries. A nation only constituted of old people is a potential threat to economic growth. It is socially unbalanced and likely to end soon.

Regarding SSA, we suggest that the countries in the region make significant progress on political stability in the coming years and support it by good quality institutions. This will alleviate the harm caused to people located in dangerous areas and create an overall peaceful environment that will stimulate investment and sustained growth. Therefore, the displacement of people to cities for safety will be limited, which, in turn, would reduce distress to cities with their limited ability to cater to the basic needs of the new migrants.

We also advocate for fairer government policies in SSA and more particular attention to the agricultural sector to boost the rural economy. Development practitioners and governments should take into account existing disparities between the rural and urban areas to formulate policies and strategies towards realizing more equitable growth. Otherwise rural areas will continue to trail behind as far as development is concerned, whereas urban areas will be growing up. Thus, urbanization will remain unhealthy, thus potentially failing to promote economic growth. African countries should definitely define and take up sustainable sounds methods and practices in agriculture that take into account the climate hazards and the environmental sustainability. This would prevent poverty, starvation, etc. and promote long-run economic growth and help farmers to achieve economies of scale in agriculture. Consequently, this will surely save the sector from the negative externalities of urbanization.

Africa's youth need to acquire new and better skills for jobs opportunities and entrepreneurship to curb the increasing unemployment and then urbanization. Entrepreneurship skills need to be instilled in African youth from an early age so that they go beyond the technical knowledge acquired in schools or training centers. National educational policies should be tailored according to that. Moreover, African youth need to acquire new and better skills for jobs opportunities.

We encourage the use of planning methods in SSA to moderate fertility and allow for easy control of urbanization. This would keep the growing young workforce of the region healthy, as the youth labor force participation rate is globally the highest in Sub-Saharan Africa (ILO, 2016).

This thesis, related to the determinants of urbanization and urban growth contribute to the literature by examining the mains drivers of urbanization and urban growth according to countries' stage of development. The literature on urbanization can be expanded by examining the mechanisms and channels through which channels of demographic factors in developing countries and international migration in developed countries contribute to urbanization. The impact of selected microeconomic, cultural factors, economic structures can be included for further analysis.

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