

# **Vulnerability of young and old people: Is the transfer trend is sustainable in Senegal**

## **National Transfer Approach**

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### **SUMMARY**

Various economic programs implemented in Senegal have not yet sufficiently supported in real economic growth to meet the social demand. Indeed, the incidence of poverty remains high and hit mainly the rural population. The question one might ask is whether the inelasticity of economic policies against social demand is related to the lack of research tools or poor targeting.

This study makes an apology a methodology that links macroeconomic aggregates and demographics. It can account for all the problems of the economic analysis of the demographics of a country, integrating the concept of life cycle and demographic dividend.

The results highlight that the evolution of the first demographic dividend (growth rate of economic support ratio) in Senegal is negative since the 50s until 1998. But from 1998 the rate grow up and will continue until the year 2025. From 2026, this ratio will enter a phase of gradual decline.

The average lifecycle deficit (LCD) in Senegal for 2005 is positive between ages 0-35years and 60 years and over. Between 0 to 35 years, remittances are the main source of consumption followed by the reallocation of assets. Reallocation of assets is the main source of funding for the lifecycle deficit of the elderly (60 years and over).

### **I. Introduction**

The last decade was marked by a financial, banking and debt crisis in most developed countries. To solve this crisis, the implementation of several strategies including recapitalization and grants to poor developing countries have been initiated. The crisis spread to developing countries through Official Development Assistance (ODA) and remittances from emigrants.

Remittances of migrants play an important socio-economic role in developing countries. According to De Bruyn and Wets 2006, remittances have become the second largest source of external funding for developing countries after FDI and ODA. In south Sahara Africa, the remittances amounts increased from 2.3 billion US \$ in 1995 to 21.4 billion US \$ in 2008. In

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the WAEMU zone transfers received amounted to 2.5 billion US \$ in 2008, while ODA and FDI respectively amount to 5.2 billion US \$ and 1.7 billion US \$.

In recent years some work on the demographic dividend argued that the substantial decline in fertility is a necessary condition for profit (GRIBBLE and BREMNER, 2012). The realization of the fertility decline will result in significant investments in voluntary family planning, education especially for girls, health and gender equality.

The decline in fertility is an element of the demographic transition in addition to the change in mortality for the age structure of the population. Countries like Thailand have been able to put in a dynamic change in the structure of their population with a total fertility rate from 5.5 children per woman in 1970 to 2.2 in 1990 to 1.5 in 2010. This substantial reduction has allowed the country to move towards a pyramid-shaped bell reflecting a sharp decline in mortality and fertility extending the service life of the population of working age.

According to the work of Kamel KATEB in 2008, the Maghreb countries entering the second phase of the demographic transition and their dependency ratio will decline more. The opening of a demographic window will have a positive impact on the education system because the same budget for education will these families more ways to two children if they were five. With regard to marriage, he will have money to marry early because the nuclearization of households will strain budgets new facility couples who were once reduced by the coexistence of generations.

Among the works mentioned above, it should be noted that the report of the Economic Commission for Africa (ECA) in 2013 that the demographic dividend is a unique opportunity to experience rapid economic growth for many consecutive underdeveloped countries to change structure of the population. This change requires a sharp decline in fertility that gives a large population of working age and a reduction in the ratio of dependents (young and old). This situation increases the production and per capita savings and improves human capital. However, it should be noted that the operation of the demographic dividend is not automatic but the time factor.

The study by Jean Pierre Guengant on "Population, Development and Demographic Dividend" in Chad shows that population growth (3.5% per year) in this country could be one of the strongest in the region because of high fertility and low use of contraception. In relation to economic growth forecast to 5% per year against a population growth of 3.5% per year, it will take over 45 years to double per capita GDP in order to reduce poverty.

Furthermore, the report of the World Bank entitled "Remittances from migrants and Development: Lessons from Latin America" in 2009 pointed out that the positive effects of remittances include improved capacity savings, a reduction in poverty and improvements in health and education indicators. In the same vein, Pamela Cox, Vice President of Latin America and the Caribbean at the World Bank noted that "it is impossible to ignore the role of remittances in the region accounting for nearly 70% of FDI and almost eight times greater than ODA received in this area. These transfers help poor families to improve their economies and send their children to school".

In 2007, the African Development Bank (AfDB) has prepared a study on remittances from migrants. This study covering four countries including Mali and Senegal, has made a statement of comprehensive inventory of financial flows from the diaspora. The results showed that in 80% of cases, remittance recipients are families near the poverty line and 60% to 85% of the remittances are allocated to final consumption for beneficiary households. Moreover, the share of transfers made for real investment is important and varies between 20 and 65% of remittances from migrants aged over 35 years.

In 2010, migrants have transferred \$325 billion to their families in developing countries, an increase of 6% compared to 2009, according to official figures from the World Bank. This strong and sustained increase would not only reduce the budget constraints of households in developing countries like those on WAEMU zone but also generate positive effects on the economies of these countries receiving transfers and opportunities for productive investment.

The present paper aims to study the sustainability of remittances from Senegalese migrant workers in the long term. To this end, it will be structured around a synthesis of the results of the study on remittances from Senegalese emigrants, a benchmarking around some of african countries and a prospective study with respect to demographic dividend, the life cycle deficit and its financing. Finally, it will issue recommendations to advocate economic policies.

## **II- Litterature review**

Remittances are sending resources to a migrant's country of origin. According to De Bruyn and Wets (2006), remittances have become the second largest source of external funding for developing countries after foreign direct investment and prior to official development assistance. But estimates from the results of the survey on remittances from Senegalese emigrants in 2011 shows that the showing transfers amounted to about 936 billion FCFA, which is four times higher, respectively, the amount of Foreign Direct Investment (FDI) and nearly twice the amount of Official Development aid (ODA).

In addition to their volumes more important, remittances to developing countries have the characteristic of being relatively stable thus less volatile and more direct than other financial flows such as ODA and FDI (Akpo and Youssoufou, 2008). In addition, in the macroeconomic plan, Bouhga-Hagbe (2006) show that remittances play an increasingly important role in the balance of payments of many developing countries and can contribute significantly to contain vulnerabilities in their external position. Remittances of migrants are now a true force to be reckoned with in the global economy (Chami and al., 2008).

In some countries, remittances represent a substantial share of imports and GDP. Household surveys conducted in the recipient countries, which can take into account all types of transfers (formal and informal, monetary and in kind ...) confirm their importance for the recipient families (Rodriguez, 1996; Cox and al.; 1998; De Brière and al., 2002; Cox-Edwards and Ureta, 2003).

In addition, recent studies have shown that remittances from migrants are a useful and effective means of reducing poverty and income inequality (Baruah, 2006; Gupta and al, 2007; Chami and al, 2008; Diane and Diagne, 2009). They act directly on the income of beneficiaries by loosening their respective constraints. In the same dynamic, the Population

Division of the Department of Economic and Social Affairs of the United Nations shows that remittances by emigrants towards sub-Saharan Africa has become a major socio-economic role because if they can overcome the weaknesses of family resources, particularly to meet the costs of current consumption, indirectly contribute to the financing of facilities and basic infrastructure in the territory of origin.

Thus, several studies on the fallen of remittances have shown their positive effect both at macro and micro level. But it should be noted that these transfers are becoming increasingly feasible and faster thanks to the development of information technology and communication have made their dramatic entrance in all areas and in all sectors including the financial sector. It is in this vein that Fidha and Charki (2005) show that ICT plays a positive role in the context of the quality of the customer relationship.

Level of monetary transactions interurban, Naiditch (2009) shows that the advent of ICT has completely changed the traditional mode of money transfer in Africa, which remains a highly developed because of the financial dependence of many rural populations vis-à-vis those in urban areas, and sometimes vice versa.

According to Freund & Spatafora (2008), transaction costs vary depending on the country of origin and destination of migrants, and are related to the lack of financial development and exchange rate volatility. To make a choice between the different channels of transfer of funds, taking into account the emigrant service accessibility (proximity, ease of use, convenience, authorized amounts, discretion, ..), its safety, its speed, reliability, diversity of services offered, and cost (Freund & Spatafora, 2005). The information technology and communication are thus at the center of remittances due to their advantages of speed and diversity. You can even add some cost reduction. Thus, the secure transfer and accelerate the time to send money are goals common to all players.

### **III. Methodology**

#### **III-1 Data Sources**

The survey on remittances from Senegalese emigrants is a sample survey with a sample of 3400 households distributed throughout the territory. The sampling technique is a systematic sampling with probability proportional to size. Stratification was to pull within each environment department N District Census (DR). The size of the DR is the number of households in the DR.

The randomness is due to the fact that the drawing is done randomly using a computer drawing algorithms to automatically generate a random number. He draw for the DR is performed by the method of cumulative totals. This is a sub-sample of the Monitoring Survey Poverty in Senegal (ESPS). The frame is composed of DR are also from the General Census of Population and Housing 2002 (RGPH-2002). Note that DR is a well-defined geographical territory.

The database of survey on remittances from Senegalese emigrants is composed of 3400 households receiving funds. A questionnaire composed of several sections was used to collect the data. This questionnaire collects household and other information on the demographic and economic characteristics. The questionnaire also collects information on whether to use ICT and access to financial services.

The main parts of the questionnaire are: the geographical identification of the household and the list of household members and their socio demographic characteristics, housing conditions, assets and household expenses, the use of financial services by household members; migration and international transfers received from former household members; migration and international transfers received from people who have never been members of the household.

For this study, the work on the demographic dividend has been made by taking 2005 as the reference year. The data used to determine the deficit lifecycle basis are: National Accounts 2005, the social accounting matrix of 2005, ESPS1, TOFEs, and BDP 2005. Moreover, the projection assumptions on net transfers to address the issue of the sustainability in the medium and long term were made by the Department of Money and Credit (DMC) on official transfers for the period 2007-2010.

Finally, the results of the national survey conducted by the Department of Money and Credit (DMC) in 2012 as part of the study on remittances from Senegalese migrant workers based on a sample of 3400 households.

### **III-2. Financing of long-term growth in Senegal**

This will address the theoretical model and analysis of the demographic dividend, the deficit of the life cycle and its sources of financing, the net credit transfers and long-term economic policy actions.

#### **i) Theoretical Model**

In terms of the theoretical model, we derive it from Bloom, Canning and Malaney (1999). Indeed, it is this model that is used in various versions in the analyzes on the effects of population dynamics on economic growth (Bloom et al, 2000, Bloom et al, 2008; Bloom and Finlay, 2009). This is a standard neoclassical growth model taking into account the evolution of the life cycle in relation to behavior change in terms of labor supply. It is implicitly based on the observation that all the inhabitants of a country not involved in the production activity.

We suppose a Cobb-Douglas production function like above :

$$Y = AK^\alpha L^{1-\alpha} \quad (1)$$

Y is the output or product, A total factor of productivity, K capital, L labor and  $\alpha$  the elasticity of output to capital.

As in the case of endogenous growth models, we assume that capital accumulation is endogenous while total factor productivity converges to an equilibrium value. Under these assumptions, the equilibrium produced by worker is wrote as:

$$\left(\frac{Y}{L}\right)^* = A^* \left(\frac{K^*}{L}\right)^\alpha \quad (2)$$

It is further assumed that the equilibrium value of income per worker can be influenced by a set of variables that we denote X. These can influence A or capital per worker. These variables can include the extent of natural resources, geography, human capital, economic policy, etc..

Then with  $z = \log(Y/P)$  we have :

$$z^* = X\beta \quad (3)$$

With  $Z^*$  the equilibrium value of the output per worker, X is the matrix of variables affecting the equilibrium value of the total factor productivity and the value of capital per worker. The regression equation resulting from this model assumes that the actual level of income per worker adjusts slowly to its initial level as follows:

$$g_z = \lambda(z^* - z_0) \quad (4)$$

$g_z$  is the growth rate of the income per worker,

$z^* = \log\left(\frac{Y}{L}\right)^*$  the log of the equilibrium value of income per worker,

$z_0 = \log\left(\frac{Y}{L}\right)_0$  the log of the initial income per worker and  $\lambda$  is the convergence rate to the equilibrium.

This equation indicates that the growth rate of a country is proportional to the distance between the initial level and its equilibrium level. This property is a standard neoclassical growth models in which the income of each country continually approach a limit to be determined by the characteristics of the country. It is known as conditional convergence. By combining the equilibrium equation with the adjustment process we obtain:

$$g_z = \lambda(X\beta - z_0) + \varepsilon \quad (5)$$

$\varepsilon$  is an error term.

This model is expressed as output per worker because it is the workers who enter on the production process. But we can express it in per capita using the following transformation:

$$\frac{Y}{P} = \frac{Y}{L} \times \frac{L}{P} \quad (6)$$

Y is the income, P the population and L the labour force. By taking the logarithm of the above equation, we obtain:

$$\log\left(\frac{Y}{P}\right) = \log\left(\frac{Y}{L}\right) + \log\left(\frac{L}{P}\right) \quad (7)$$

By posing  $y = \log\left(\frac{Y}{P}\right)$  we obtain  $y = z + \log(L/P)$  or  $z = y - \log(L/P)$  (8)

In deriving the above equation we obtain that:

$$g_y = g_z + g_L - g_p \quad (9)$$

$g_y$  is the growth rate of per capita income,  $g_z$  the growth rate per worker,  $g_L$  the growth rate of labour force  $g_p$  the growth rate of the total population. Replacing the income growth rate per worker by its value from equation (5) in the previous equation we get:

$$g_y = \lambda X\beta - \lambda z_0 + g_L - g_p + \varepsilon \quad (10)$$

According to equation (8) we have

$$z_0 = y_0 - \log\left(\frac{L}{p}\right)_0 \quad (9)$$

Replacing this value in equation (10) we obtain the final model :

$$g_y = \lambda X\beta - \lambda y_0 + \lambda \log\left(\frac{L}{p}\right)_0 + g_L - g_p + \varepsilon$$

#### IV- RESULTS

This section focuses on some results including the total amount of transfers received in 2011 compared to FDI and ODA, the percentage of transfers through formal and informal channels, the share of transfers allocated to consumer spending and investment, the share of investment allocated to productive investment and distribution of transfers by place of residence of the migrant and expenditure level of education.

##### a) Volume of transfers in 2011

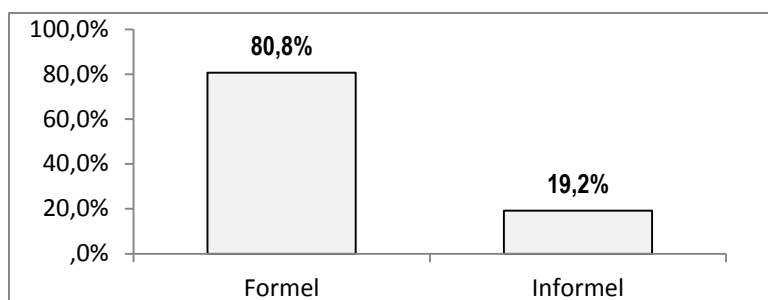
The national survey reveals that the transfers received from Senegalese emigrants is estimated globally to 936 billion CFA in 2011. This amount is more than four times the amount of FDI (220 billion CFA in 2011, according to figures from the DPEE) and about twice the volume of Official Development Assistance (ODA) (500 billion CFA francs in the same source). This situation was also observed in other countries including Morocco, Egypt and Cape Verde where remittances represent respectively six (6) times the IDE and four (4) times ODA almost five (5) both IDE and two (2) times the ODA and nine (9) and FDI (1) ODA (ADB, 2009).

These transferred funds come from the majority on emigrants from Diourbel (17%), Dakar (16%), Kaolack (15%), Thies (14%) and Matam (11%) which represent a share of 78% of total transfers received in Senegal. In contrast, the lowest share of remittances are recorded in emigrants from the Fatick (3%), Ziguinchor (4%) and Tambacounda (4%).

##### b) Money transfers channels

The results of the survey show that remittances from Senegal migrants use much more in the formal channel (80.8%) than the informal channel (19.2%) as shown in Figure 1. The formal channel is dominated by the use of the services like Western Union operators (64%) and Money Gram (12%) whereas on informal channel the funds pass through individual agents, friends and relatives. On average, the amount passing through the formal channel amounted to 815 000 F CFA per year against 290 000 F CFA in the informal channel.

**Graphique 1 : Money transfer channel**



**Source : Enquête sur les transferts des migrants au Sénégal 2011**

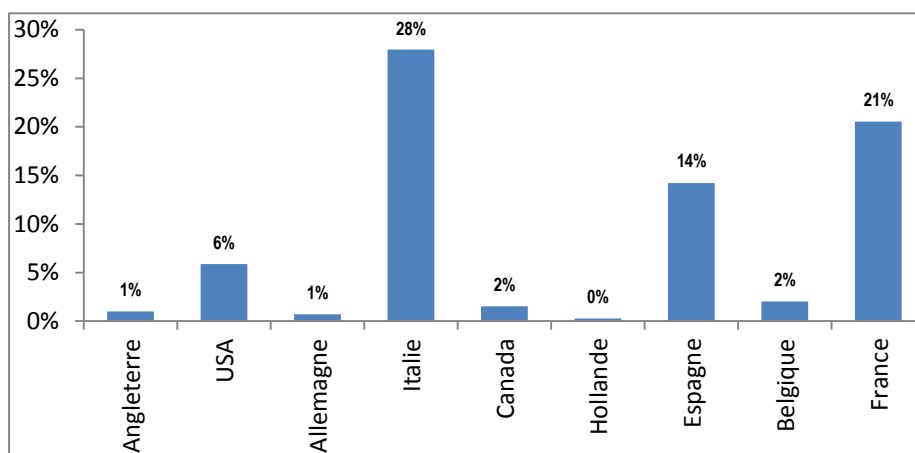
**c) Use of Transfers receiving by households**

The national survey found that remittance recipients spend 85.6% of amounts received in final consumption and 14.4% for investment. This supports the understanding that recipients of transfers allocate a large portion of the funds received from migrants for final consumption needs. About the amounts allocated to the investment, it appears that 64.5% of the 11,4% are use for productive investments.

**d) Distribution of transfers by emigrant country of residence**

According to place of residence of the migrant's remittances are mainly from Italy (28%), France (21%) and Spain (14%) or a combination of 63% of total shipments in Senegal (see Figure 2). The remaining proportions from Senegalese residing in the ECOWAS region (9.9%) and other African countries (14.2%).

**Figure 2 : transfer by emigrant residence**



**Source : Enquête sur les transferts des migrants au Sénégal 2011**

The analysis of the average annual amount of remittances shows that migrants residents from Belgium (979,000 CFA francs), England (894,000 CFA francs), Italy (779,000 CFA) and the U.S. (778 000 F CFA), who transfer more funds to households. Residents migrants from



Canada, Holland and France transfer on average between 630,000 and 690,000 CFA francs CFA and those of Spain and Germany less than 500 000 F CFA.

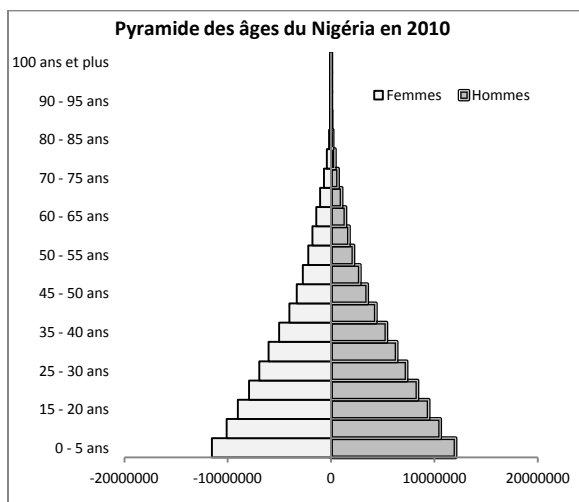
**e) Distribution of transfers by education level**

Analysis of the level of education shows that most of the funds (73%) are sent by emigrants who have a relatively low level of education (more than high school). However, it is clear that it is the immigrants with postgraduate level that send more money on average per year (1,556,000 CFA) that migrants without formal education level (612 000 F CFA).

**V. Benchmarking**

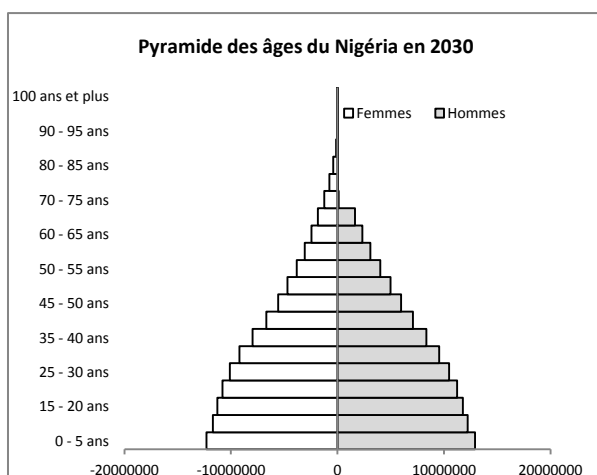
Benchmarking is performed by comparing four members of National Transfer Accounts countries (NTA), namely Nigeria, Kenya, Senegal and Brazil.

**Nigéria**



Libellés/Années	1980	1990	2011
Taux de natalité pour 1000 hbts	47	44	40
Taux de mortalité pour 1000 hbts	20	19	14
Taux de fécondité	7	6	5
Tau de dépendance			
Prévalence VIH			
IDH	-	-	0,46

Source : Perspectives Monde



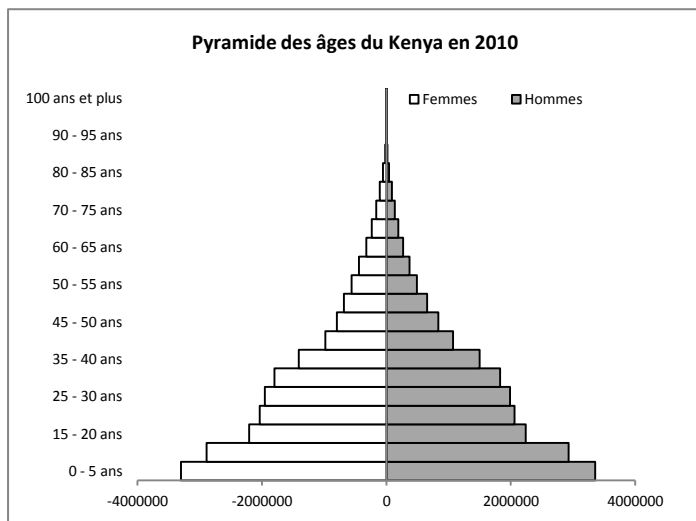
Source : Perspectives Monde

**Kenya**

Source : Perspectives Monde

The age of Nigeria in 2010 shows that the country has entered the demographic transition even if it seems to be shy. From 1980 to 2011, birth rates and mortality rates have declined by 47 to 40 births per 1,000 inhabitants and 20 to 14 deaths per 1,000 inhabitants.

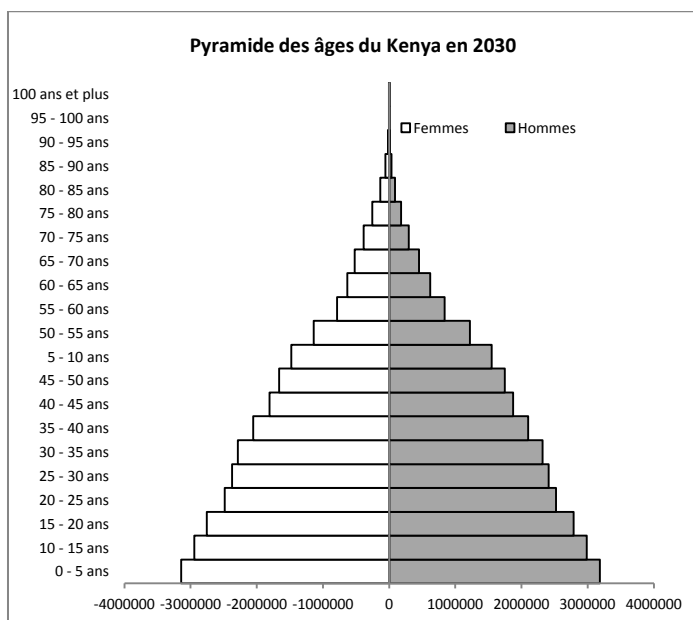
Projections for 2030 show that the downward trend will accelerate, which will give a pyramid tends to form a bell.



Source : Perspectives Monde

Regarding Kenya, the population pyramid of 2010 shows a start of the demographic transition with a certain shyness. If the birth rate has declined from 49 to 37 births per 1,000 people, the mortality rate is almost stationary.

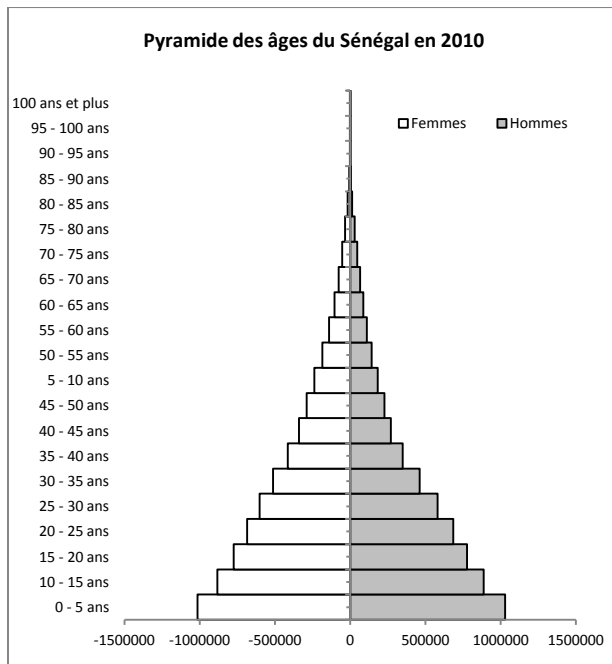
However, the projections for 2030 point to an acceleration of this demographic transition directing the age to form a bell.



Libellés/Années	1980	1990	2011
Taux de natalité pour 1000 hbts	49	42	37
Taux de mortalité pour 1000 hbts	11	10	10
Taux de fécondité	7	6	5
Tau de dépendance			
Prévalence VIH			
IDH	0,42	0,46	0,51

Source : Perspectives Monde

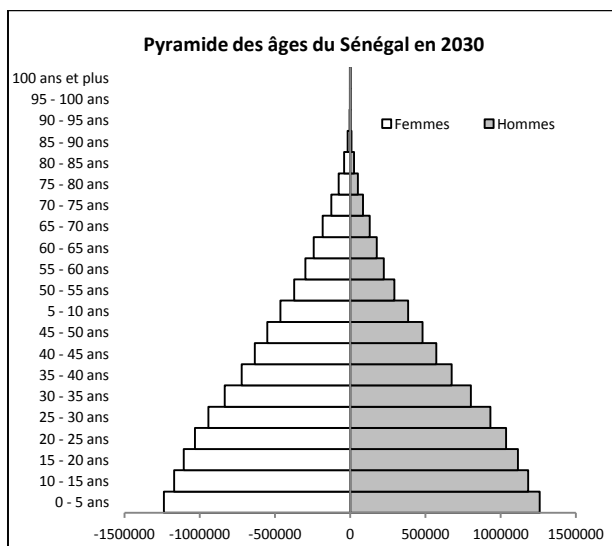
## Senegal



Source : Perspectives Monde

Year	1980	1990	2011
Taux de natalité pour 1000 hbts	48	44	37
Taux de mortalité pour 1000 hbts	18	13	9
Taux de fécondité	7	6	5
Taux de dépendance			
Prévalence VIH			
IDH	0,32	0,36	0,46

Source : Perspectives Monde

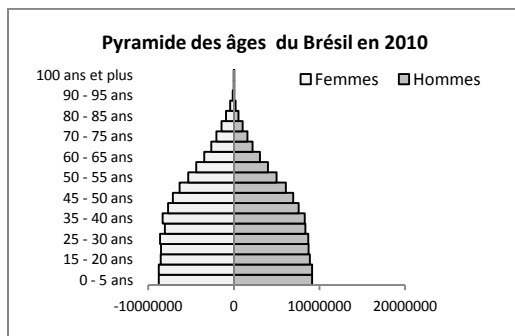


Source : Perspectives Monde

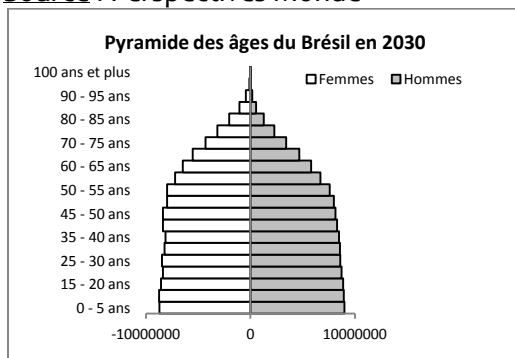
The pyramid age of Senegal in 2010 shows that the demographic transition began with the image of other countries. Birth rates and mortality rates have declined from respectively 48 to 37 births per 1,000 inhabitants and 18 to 9 deaths per 1,000 inhabitants.

Projections in 2030 show that this transition will grow but at a moderate pace to give a pyramid tending gradually to a bell.

## Brésil



Source : Perspectives Monde



Source : Perspectives Monde

Libellés/Années	1980	1990	2011
Taux de natalité pour 1000 hbts	32	28	15
Taux de mortalité pour 1000 hbts	9	7	6
Taux de fécondité	4	3	2
Tau de dépendance			
Prévalence VIH			
IDH	0,55	0,60	0,72

Source : Perspectives Monde

The population pyramid of Brazil in 2010 began to take the shape of a bell. In this country the demographic transition took a large. Birth rates and mortality rates have fallen sharply. From 1980 to 2011, they went from 32 to 15 births per 1,000 inhabitants and 9-6 deaths per 1000 inhabitants.

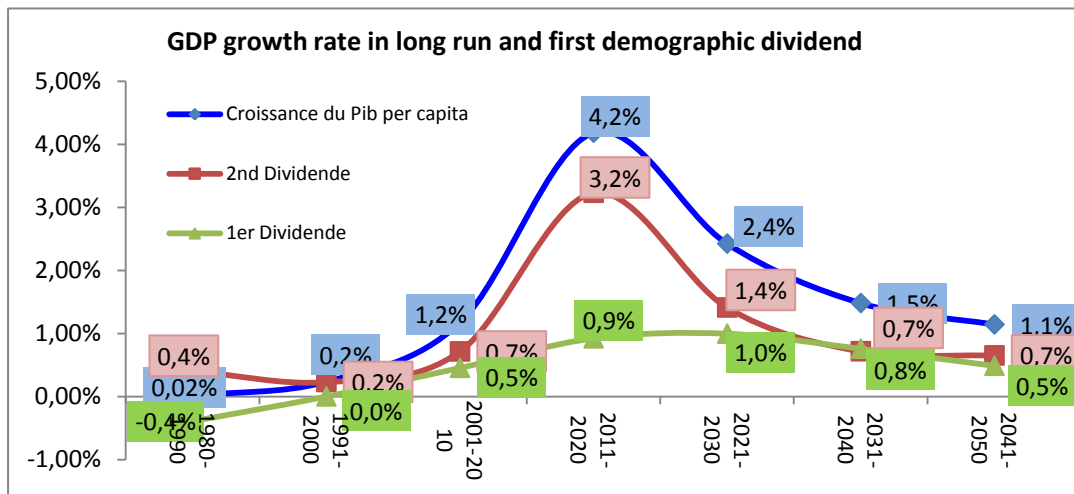
Projections for 2030 show that the level of demographic transition will be developed and will tend towards that of developed countries.

The comparison of these four countries shows that Nigeria, Kenya and Senegal have almost the same pace of demographic transition in terms of the evolution of their birth rate, mortality and fertility. The pace of the demographic transition is shy in those countries where the fertility rate remains high average 5 children per woman. However, the outlook reflected in the projections of the pyramids in 2030 show that this rate will ramp up but will not allow him to reach the level of emerging countries such as Brazil.

Regarding Brazil, the status of emerging countries is through its demographic transition in which the three countries mentioned above will tend on average in 2030 than Brazil in 2010. In Brazil the birth rate, mortality and fertility rates fell sharply in 2010. Projections made in 2030 for Brazil show that the demographic transition will expand more to move towards that of developed countries.

The demographic transition potentially generates a demographic dividend corresponding to an opportunity offered to countries to accelerate economic growth. However, this requires significant investments, particularly in education, health and employment for profit. For this purpose, it should be noted that investments in human capital remains low in Nigeria and Senegal (less than 0.5 in 2011 HDI) medium in Kenya (HDI = 0.5 in 2011) and significant Brazil (HDI= 0.72 in 2011). This is why Nigeria, Senegal and Kenya must increase investment in human capital in the image of Brazil to take advantage of expected demographic dividend.

## ii) demographic dividend analysis



Source : calcul des auteurs

The chart above shows that the contributions of the growth rate of productivity (second demographic dividend) and the growth rate in the dependency ratio (the first demographic dividend) in the formation of the growth rate of GDP per capita.

Over the period from 1980 to 1990, the growth rate of per capita averaged 0.02% due to the growth rate of productivity (0.4%) for the first demographic dividend is negative. From 1991 to 2000, the growth rate of GDP per capita (0.2%) equal to the second dividend reflecting that the first demographic dividend is null. This period marks the beginning of the phase of the demographic transition in Senegal marked by reduced fertility from 6.6 in 1992 to 5.7 children per woman in 97 (ANSD, 2012) as well as the reduction on maternal and infant mortality.

Furthermore, since 2000 the growth rate of GDP reach its maximum level (4.2%) in 2020. The similar trend was followed by the second demographic dividend which is fixed at its optimum (3.2%) in 2020. This shows that during this period the contribution of the second demographic dividend has dominated the composition of the per capita GDP growth rate, although the first demographic dividend has been a progression.

From 2020 to 2030, the per capita GDP growth rate and the second demographic dividend declined unlike the first dividend being at its optimum level (1%), reflecting that people of working age increase more than dependent (children and the elderly).

From 2030 to 2050, the first demographic dividend begins to decline while the per capita GDP growth rate and the second demographic dividend continue their downward trend marking a beginning of an ageing population and a reduction in productivity.

## iii) Finance the life cycle deficit in Senegal

L'équation fondamentale des comptes de transferts intergénérationnels (NTA) s'établit en égalisant l'ensemble des flux de revenus entrants avec l'ensemble des flux de revenus sortants pour un groupe d'âge donné. Cette équation est dérivée de l'identité comptable stipulant que pour une économie donnée, la somme des revenus du travail, du revenu du capital et des

transferts reçus est égale à la somme de la consommation, de l'épargne et des transferts versés. Les flux entrants sont composés du revenu du travail  $Y^l(a)$ , du revenu du patrimoine  $Y^a(a)$  et les transferts reçus  $T^+(a)$ . Les flux de revenus sortants sont composés de la consommation  $C(a)$ , de l'épargne  $S(a)$  et des transferts versés  $T^-(a)$  pour un groupe d'âge donné  $(a)$ .

The NTA fundamental equation stood by equalizing all income inflows with all income outflows for a given age group. This equation is derived from the accounting identity stating that for a given economy, the sum of labor income, capital income and transfers received is equal to the sum of consumption, savings and transfers paid.

Inflows consist of labor income  $Y^l(a)$ , asset income  $Y^a(a)$  and transfers received  $T^+(a)$ .

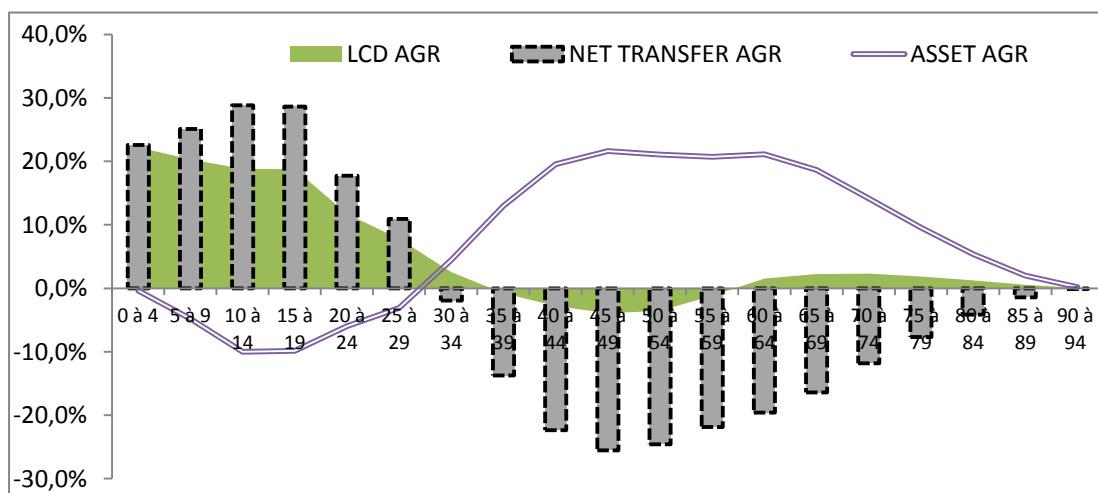
The outflows income consists of consumption  $C(a)$ , savings  $S(a)$  and transfer payments  $T^-(a)$  for a given age group  $(a)$ .

$$\underbrace{Y^l(a) + Y^a(a) + T^+(a)}_{\text{Flux entrants}} = \underbrace{C(a) + S(a) + T^-(a)}_{\text{Flux sortants}} \quad (1)$$

$$\underbrace{C(a) - Y^l(a)}_{\text{Life cycle deficit}} = \underbrace{Y^a(a) - S(a)}_{\text{Asset based Reallocation}} + \underbrace{T^+(a) - T^-(a)}_{\text{Nets Transfers}} \quad (2)$$

L'équation (2) met en évidence le déficit du cycle de vie à gauche et les sources de son financement à droite représentées par les transferts nets et la réaffectation de l'actif. Le graphique suivant sert d'illustration.

Figure : déficit du cycle de vie et ses sources de financement



Source : Author estimation from NTA data

In 2005, the life cycle of the age group 0 to 90 years is negative for a total of 1627.7 billion CFA. The gap is generate by the age 0-35 years and 60-90 year. The age group 35 to 60 shows a surplus (see chart above). The deficit is financed by net surplus transfers of 609.4 billion CFA. By proceeding with segmentation, it appears that the life cycle deficit of the age group 0-30year is funded by the net assets and the age group 60 to 90 years by net transfers.

These net transfers finance the life cycle deficit up to 37.4%, with 24.8% of net private transfers and 12.7% of net public transfers.

In 2010, the total lifecycle deficit stood at 2098 billion CFA for the age group of 0 to 90 years. This deficit is financed to the tune of 785 billion CFA by net transfers. Depending on the structure, it appears that the age group of 0-34 years and 60 years and over respectively were financed by net assets up to 621 billion CFA and net transfers up to 207 billion CFA. However, the age group 35 to 60 years has a lifecycle surplus about 254 billion CFA. 0 to 90 years, the need for net transfers to cover deficit financing lifecycle stood at 3553 billion CFA, or 74% of Gross Domestic Product (GDP).

In 2020, the life cycle deficit will set a total of 3670 billion CFA for the age group between 0 to 90 years. This deficit is funded by transfers totaling 1373 billion CFA. For age group 0-34 years and 60 and over, the deficit is financed respectively by the net assets for 1087 billion CFA and net transfers to 2245 billion CFA lifecycle deficit. Regarding the age group 0-90 years, the need for net transfers will be 6213 billion CFA, which represent 70% of GDP.

Au total, le déficit du cycle de vie s'établira à 5700 milliards de F CFA en 2030 et sera financé par les transferts nets à hauteur de 2134 milliards de F CFA. En effet, les groupes d'âge de 0 à 34 ans et de plus de 60 ans auront un cycle de vie déficitaire financé respectivement par les actifs nets à 1688 milliards de F CFA et 3488 milliards de F CFA. En revanche, le groupe d'âge de 35 à 60 réalisera un cycle de vie excédentaire à 691 milliards de F CFA. De 0 à 90 ans, les besoins en transferts nécessaires pour financer le déficit du cycle de vie sera de 9650 milliards de F CFA, soit 72 % du PIB.

In total, the lifecycle deficit will amount to 5700 billion CFA in 2030 and will be financed by net transfers up to 2134 billion CFA. Indeed, the age group 0-34 years and 60 and over have a life cycle deficit financed respectively by the net assets up to 1688 billion CFA and 3488 billions CFA. In contrast, the age 35-60 group will conduct a lifecycle surplus to 691 billion CFA francs. From 0 to 90 years the need for transfers needed to finance the life cycle deficit will be 9650 billion CFA, or 72% of GDP.

The same trend will continue for 2040 where the life cycle deficit will be 7731 billion CFA financed by net transfers up to 2898 billion CFA. The age group between 0 to 34 year and 60 year and over have a deficit in their life cycle that will finance the net assets respectively to 2290 billion CFA and net transfers to 473 billion CFA. However, the age group between 35 to 60 years will generate a surplus of its life cycle up to 938 billion CFA francs. In total, net transfers to finance the life cycle deficit will be 13.088 trillion CFA which represent 73% of GDP.

### **Sustainability of long term transfer**

The sustainability of long-term transfer was studied on the basis of three scenarios.

The first scenario is based on an assumption of an average annual growth of 6.7% transfers calculated for the period 2007-2010.

The second scenario is based on a growth assumption of net remittances of an average annual growth rate of 7.5%.

The third scenario is based on an assumption of growth in net remittances at an average annual growth rate of 9%.

Based on the average annual growth rates, the projections are implemented on the period 2011 to 2050.

**Tableau** : Projections of Senegalse emigrants net transfers (in billion of CFA)

<b>Year</b>	<b>Transfers effectuées</b>	<b>Transfers needed to finance the deficit of the life cycle</b>	<b>scenario 1 Hypothesis TCAM<sup>2</sup> = 1,067</b>	<b>scenario 2 Hypothesis TCAM :=1,075</b>	<b>scenario 3 Hypothesis TCAM = 1,09</b>
<b>2010</b>	<b>-2988</b>	<b>-3553</b>	<b>565</b>	<b>565</b>	<b>565</b>
<b>2020</b>	-5132	-6213	1080	1164	1338
<b>2030</b>	<b>-7585</b>	<b>-9650</b>	<b>2064</b>	<b>2400</b>	<b>3166</b>
<b>2040</b>	-9141	-13088	3946	4946	7496
<b>2050</b>	<b>-8980</b>	<b>-16525</b>	<b>7545</b>	<b>10194</b>	<b>17746</b>

Source : Author estimations

It is clear from this simulation table that if nothing is done with the current level of growth in transfers corresponding to the average annual growth rate of 6.7%, net remittances can not finance the life cycle deficit of 0-90 years over the period 2010-2050.

Even an increase in the average annual growth rate of net remittances from 6.7% to 7.5% will also not cover the needs transfers to finance the life cycle deficit.

Senegal need an average annual growth rate of 9% of net transfers to cover the needs of transfers and financing life-cycle deficit in 2050.

This allows us to say that the transfers are not sustainable in the long term as needed to meet the need for transfers in financing life-cycle growth rate is not in line with the difficulties of the current international context which augurs more in addition to insecurity among immigrants and reducing their chances of remittances to their countries of origin.

As a reminder, the fundamental equation accounts intergenerational transfers shows that the lifecycle deficit is financed through the reallocation of assets and net transfers. For this purpose make sustainable long-term transfers require action on the deficit of the life cycle and sources of funding in terms of economic policy recommendations.

## **Conclusion**

The economic policy recommendations will be generally directed to the advantage of the demographic dividend and a special way of controlling the life cycle deficit, the increase in net assets and the valuation of net transfers in financing productive investments.

### **- Profit of the demographic dividend**

<sup>2</sup> TCAM : Average annual growth rate



The Senegal has a first demographic dividend (growth rate of dependency ratio) increased until 2030 for which it necessary to establish a set of measures to benefit which include:

- The creation of a massive and sustained investment in education and health;
- The promotion of family planning and the prevention of early marriages;
- Job creation.

#### **- Master deficit lifecycle**

Life cycle deficit control happen, either by reducing consumption, either through an increase in labor income. To do this the following steps are necessary:

- Encouraging people to change eating habits by promoting local consumption and research results of the Institute of Food Technology (ITA) in this area;
- Encouraging local initiatives of agricultural production to increase availability and access to the population, especially the poor;
- The promotion of food security through projects youth and women in the agricultural sector and its derivatives activities;
- Strengthening the business environment to promote a dynamic private sector, strong and create jobs;
- The development and promotion of technical education courses through their implementation in line with the needs of the labor market and the establishment of credit lines for outgoing not inserted;
- The promotion of small enterprises based on the consolidation of the existing and development through coaching and support according to the identified needs.

#### **-Increase in net assets and valuation of net transfers**

The current rate of transfers is not sustainable. It is important to generate more jobs to increase the contribution of people who can finance life cycle deficit. Then, the following measures are necessary:

- Increased involvement of migrants in the financing of the economy by issuing diaspora bonds as provided in the Sovereign Fund Strategic Investments (FONSIS) and carried out by some countries including Ethiopia and India;
- The promotion of the culture of savings to ensure its increase;
- The orientation of migrant transfers in productive investment to the detriment of consumption which swallowed up 80% through information and awareness of the niches and existing investment opportunities in the country.

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