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EXPLAINING STRUCTURAL TRANSFORMATION IN ECOWAS MEMBER STATES

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ABSTRACT

The present paper aims to contribute in improving the understanding of structural transformation in ECOWAS member states and what it takes to make true transformation happen in these countries. The paper used data covering years 1970 to 2013 to analyze the path of transformation followed by selected developed countries (France, United Kingdom and Japan) and emerging economies. For the emerging economies a difference is made between the BRICS (Brazil, China and India) and non-BRICKS (Indonesia, Korea and Malaysia) countries. The paper then looks at the path followed by ECOWAS member states to see if there are similarities. The paper finds that the path of transformation followed by developed and emerging economies are almost similar whereas that followed by ECOWAS member states are for the majority different.

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INTRODUCTION

Development theory stipulates that for countries to develop, they have to structurally transform going from an agrarian economy to a modern one. This structural transformation was to take place in stages (Kuznets, 1966). Indeed, the Agrarian economy characterized by subsistence agriculture and low productivity, was to improve through increased productivity, utilization of modern technology to increase yield per acre, utilization of high-yield crop seeds and other modern inputs for weeds and insect control (Nurkse, 1953; Schultz, 1953 and Rostow 1960). In so doing and as yield per acre increases, less and less labor force as well as capital will be needed in the agricultural sector. Hence, these production factors, we shall say resources are transferred to the industrial sector. The debate on conditions for labor to reallocate from agriculture to manufacture gained prominence at a point in time and it is beyond the scope of this paper. Through the process of reallocating production factors to other sector, the contribution of Agriculture to national wealth (Gross Domestic Product, GDP) will decrease as it paves the way for industrialization by also taking advantage of all the opportunities proffered on the value chain of agricultural produce. This is the first phase of the structural transformation of a country that takes a serious bet toward growth and development. But structural transformation does not end there. The next phase is to move to a higher level. This means going from industrialization to improved and innovated services. Industrialization is a process by which a country makes the voluntary decision to put in place structures / infrastructures that will enable it transform and add value to its resources and/or commodities and even invent new products. Industrialization comes with technology and increased productive capabilities "à la Hausmann", which in turn lead to diversification and mass production. With mass production and complex production at hand a country moves to an even higher level of the structural transformation process that has to do with services provision. This is the third phase of structural transformation in a country's development process. In this phase, the goods produced need to be accessed by economic agents whether individuals or companies. The third phase ensures that adequate, credible and useful information flows in and out of all sectors of the economy to ensure that decisions are made based on full information enabling countries to be on top of growth and development challenges. This also entails that communication infrastructures as well as institutions (regulatory bodies and legislations) are in place to guarantee and safeguard the above mentioned flow of information. Overall, structural transformation refers to the reallocation of economic activity, across sectors (Agriculture,

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Industry and Services), that accompanies the process of modern economic growth. It is therefore an alteration in the relative importance of economic sectors. This structural transformation is not to be confused with economic transformation which has to do with a dynamic process through which a country's economy, society and institutions modernize and move to more developed levels. As Syrquin (1988) puts, it has do to with the interrelated process of structural change that goes with economic development. The process of structural transformation as described above has inspired many theoretical as well as empirical works in the field of development economics. This has regain interest recently given the misfortune of some countries especially African countries to move up the ladder of development compared to East Asian countries that were at almost similar stage of development in the early sixties (see N'Zue, 2011; Monga, 2012; Aryeetey and Moyo, 2012 and Page, 2012).

Because African countries appears to have been trapped into the first phase of the structural transformation, several scholars including MacMillan and Rodrik (2011), Hausmann *et al.* (2008) have recommended that these countries diversify away from agricultural and other traditional products if they are to pull out of poverty and get richer. They suggested that African countries embrace industrialization head on by mimicking developed countries (Lin, 2011 and Lin and Monga, 2011) to exploit what they called the latecomer's advantage. Lin and Monga even go further to suggest a six-steps Growth Identification and Facilitation framework (GIF) that can enable poor countries to shift gears (see Monga, 2012). The above recommendation made to African countries is not only debatable, it is mostly worrisome if it is followed in the letter and the spirit. Indeed, diversification does not happen through the action of a magic stick as in a fairy tale. It takes time, resources and capabilities to diversify. In most African countries, the so called agriculture and traditional sectors employ over 60% of their population which has limited productive capabilities. What happens to this fringe of the population if and when the country has to "diversify" away from Agriculture and traditional products? What needs to be done is rather to increase the productive capabilities of the population in the agricultural sector.

The real question will then be, how do we increase the productive capabilities of that fringe of the population? Assuming that we succeed in so doing, new opportunities will be created and if other infrastructures and institutions are in place and work efficiently, transfer of factors from less to more productive sectors will occur. Thus structural transformation would have occurred. Indeed, the process of structural transformation may not be as easy as it could appear to many. It is not through a magic stick. It has to be well thought through. The present paper aims to contribute in improving the understanding of structural transformation and what it takes to make it happen in ECOWAS member States. More specifically, the paper will briefly present the paths followed by selected developed and emerging economies and compare these paths to what the ECOWAS member States have followed. The rest of the paper is organized as follows: section II will briefly present the paths followed by selected developed and emerging economies in their transformation processes; section III will show the pattern followed by ECOWAS members states; Section IV will discuss the need for rethinking the transformation processes in ECOWAS Member States; Section V concludes the papers.

Brief on data and method of analysis

What we would like to do in this section is, following Bah 2008 and N'Zué 2013, we used a graphical representation complemented by polynomial function analysis to capture the relationship between GDP we would say output, share across sectors (Agriculture, Industry and Services) and per capita income for all the countries of interest. The degree of the polynomial function was determined by its goodness of fit (R-squared). Which means, we started from a simple linear polynomial function and increased its degree by an increment of one while computing the R-squared for each polynomial. we continue the process until the change in R-squared was less than 0.015.The period we are considering for the analysis goes from 1970 to 2013. The time frame is constrained by data availability especially for ECOWAS member States. The data used is from the World Development Indicators online database (WDI 2014).

Pattern of structural transformation in selected developed and emerging economies

In this section, we look at the path of transformation across Agriculture, Industry and Services that each of the selected developed and emerging economies followed to be where they are. It is clear that even among these developed and emerging economies there are differences. They are not all at the same level of development. That is, we ought to see for instance for countries that were already in the "club" of developed economies how they managed to remain there and for those that were not in that "club" at the beginning how they managed to enter the "club".

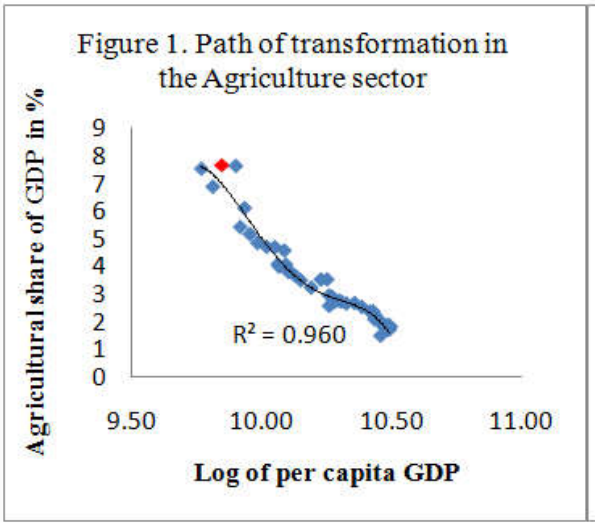
Developed economies

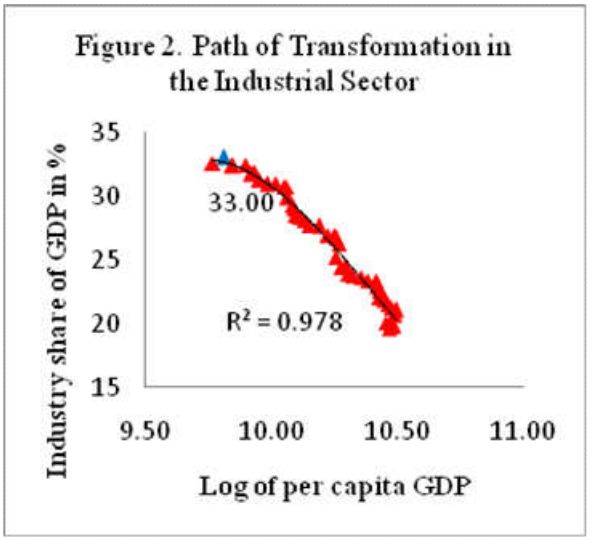
To analyze the structural transformation path of developed economies we selected three countries from various areas of the world: France and United Kingdom for Europe, and Japan for Asia.

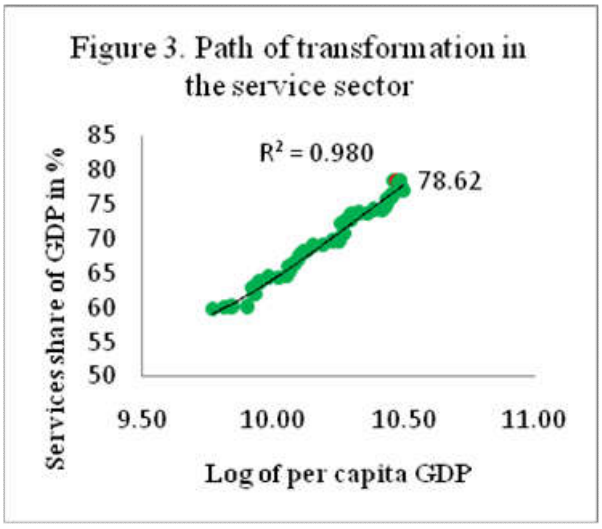
France

France is a developed country and ranks 8theconomic power by the IMF. France is therefore a member of the "Club". The question therefore for France is to what extent it has managed to remain in the "Club"? To answer the question, we look first at the relationship between Agriculture share of output and per capita GDP. We observe a clear downward slopping trend with a good polynomial fit (R-squared of 0.96). That is, to grow richer (increase in per capita GDP) the contribution of Agriculture to wealth decreases. Over the period of analysis, the highest contribution of Agriculture to GDP stood at 7.68% with a GDP per capita at US$ 18,872.61. Second, we looked at the relationship between Industry share of output and per capita GDP (Figure 2). Here, we also observe a downward sloping trend with a good polynomial fit of 0.97. The contribution of industry to output is higher than that observed in Agriculture. Indeed, the highest contribution stood at 33% with a per capita GDP at US$ 18,210.33. Third, we considered the relationship between Services share of output and per capita GDP (Figure 3). Unlike the past two sectors, we observe in this case an upward sloping trend with also a good polynomial fit of 0.98. We can also observe that the contribution of the service sector to output is even higher than that of the Industry sector. The highest contribution of this

sector stood at 78.62% with a per capita GDP of US$ 35,215.62. [Figures1, 2 and 3 here]



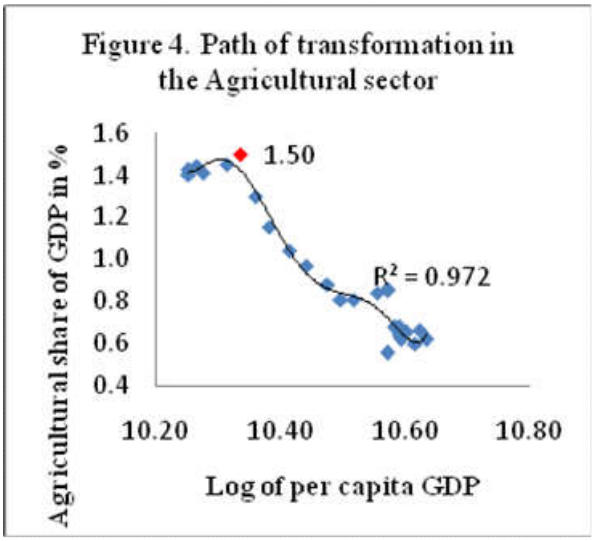


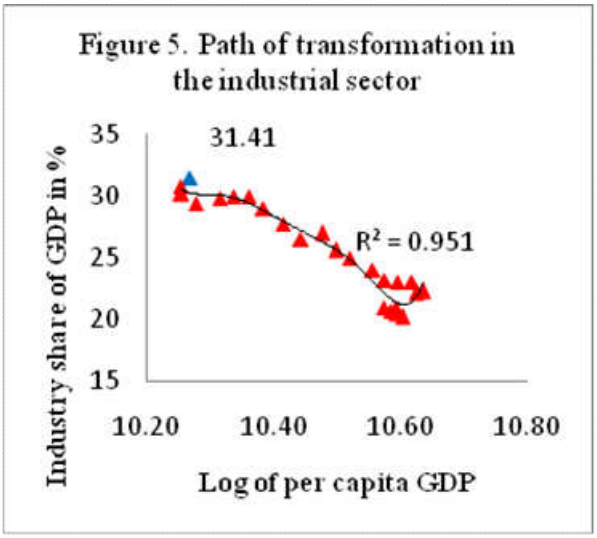


It appears from these figures that as the country gets richer it consistently increases the contribution of its service sector to wealth. Hence, for France, the answer to our initial question to know how the country managed to remain in the "Club" has found an answer. First decrease agriculture and Industry contribution to wealth while increasing consistently that of the service sector.

United Kingdom

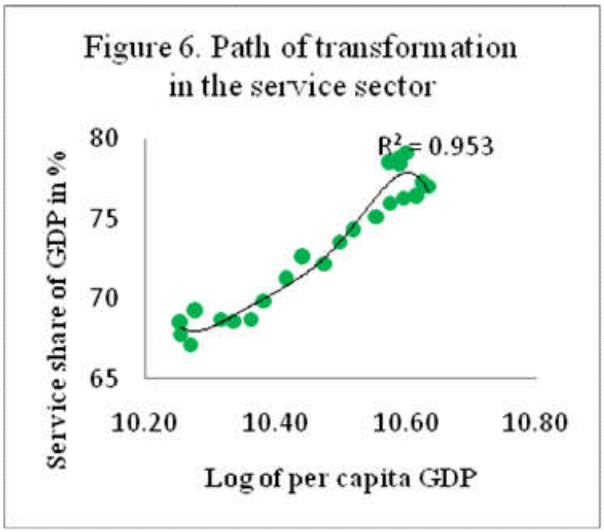
The United Kingdom (UK) is also a developed country, it ranks 10th economic power by the International Monetary Fund. UK is a member of the "Club". We ask the same question "to what extent, UK has managed to remain in the "Club"? First, let's look at Agriculture. We observe that the relationship between Agriculture and per capita GDP is downward sloping with a good polynomial fit of 0.97. That is, to remain richer the country is consistently reducing Agriculture's contribution to wealth. For the UK, the highest Agriculture contribution over the period of analysis stood at 1.5% with a per capita GDP of US$ 30,842.29. Compared to France, where the highest contribution of Agriculture stood at 7.68% for the time period of analysis, we observe that Agriculture's contribution is less important in the UK's wealth. Next, let's consider the industrial sector. Similar to that of France, the path of transformation followed in the industrial sector is downward sloping with a polynomial fit of 0.95. The highest contribution of industry to the country's wealth stood at 31.41% of GDP with per capita income of US$ 28,780.30. The contribution of industry to the country's wealth is about 26 times that of Agriculture.





Here, although the difference may not be that significant as in the case of Agriculture, the Industrial sector contribute more to wealth in France than it does in the UK. We look next at the service sector. The relationship between the service sector's

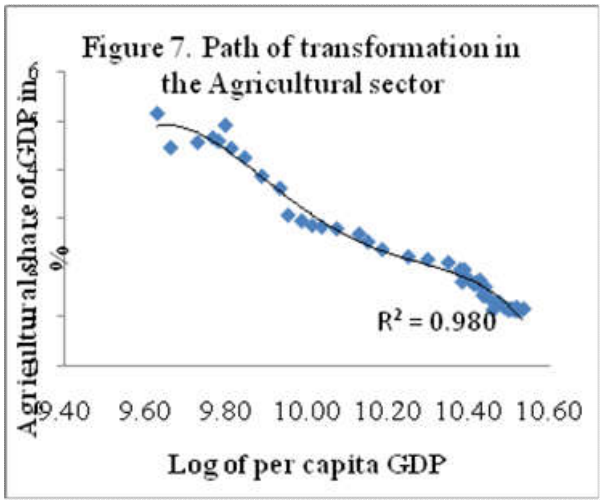
share of GDP and per capita GDP depicts an upward sloping trend with also a very good polynomial fit of 0.95. The highest contribution registered for that sector stood at 76.16% with per capita income at US$ 40,231.02. The sector's contribution to the country's wealth is about 3 times that of the industrial sector and 77 times that of Agriculture.



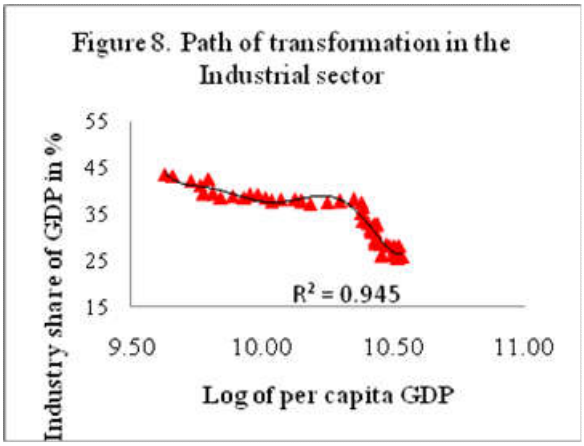
[Figures 4, 5 and6 here] The graphical analysis of the transformation path followed by the UK is similar to that of France and clearly shows that to remain in the "club" the countries reduce the contribution of both Agriculture and Industry and increase that of the service sector. Let's look at what happen to a "club" member from a different continent.

Japan

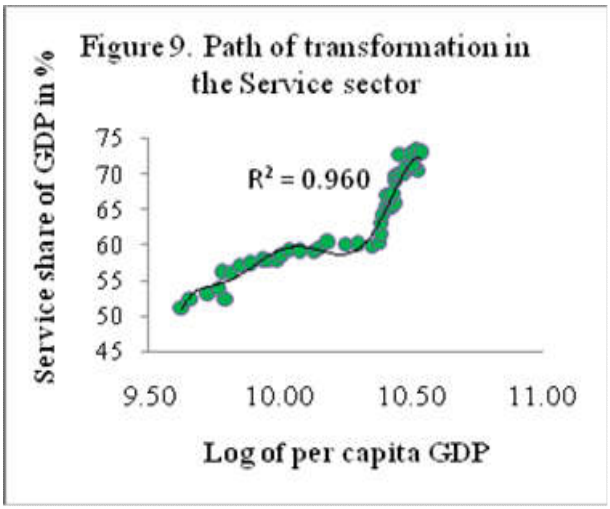
Japan is a developed country and ranks 4th economic power by the IMF listing. Japan is member of the "club" and even ranked higher than the other two countries analyzed above. With Japan, We also looked at Agriculture, Industry and Services. We start with the relationship between Agriculture share of GDP and per capita income (Figure 7). Just as in the previous two cases, the relationship exhibits a downward sloping trend with a very good polynomial fit of 0.98.



The highest contribution of the sector to the country's wealth stood at 5.14% of GDP with a per capita income of US$ 15,161.23. Let's move to Industry. The relationship between Industry share of GDP and per capita income (Figure 8.)



depicts a downward slopping trend with a polynomial fit of 0.94. The highest contribution of the sector to the country's wealth stood at 43.67% with per capita income at US$ 15,161.2. The sector's contribution is 14 times higher than that of Agriculture. When compared to France and UK, Japan's industry sector contributes more to the country's wealth than it is the case for the other two. What is the situation in the service sector for this club member? Next, we look at the Service sector in Figure 9. The relationship between the service sector's share of GDP and per capita income is upward sloping with a polynomial fit of 0.96. The highest contribution of the sector stood at 73.18 % with a per capita income of US$ 36912.19. The sector's contribution to the country's economy is around 1.8 times that of the industrial sector and 26 times that of the Agricultural sector. It results from the above analysis of developed economies that to remain in the "club" of developed countries they have to gradually reduce the contributions of both Agricultural and Industrial sectors while increasing that of the Service sector. All the three countries considered followed similar path. This path of transformation has some evident policy implications. Indeed, it supposes that Agriculture sector is well developed and efficient in supplying the country with the needed food. It also means that the Industrial sector is well developed, manufactures are in place and work efficiently and what is remaining is the Sector service that needs to be developed to take advantage of all the realizations of the other two sectors.



Emerging Economies

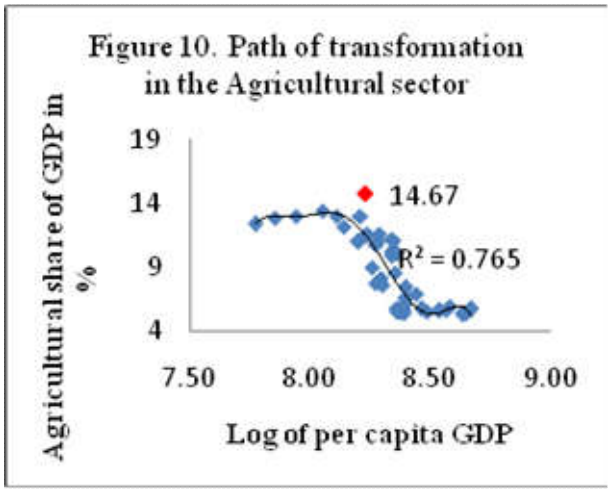
To analyze structural transformation in emerging economies we considered two separate groups. The first one is made up of

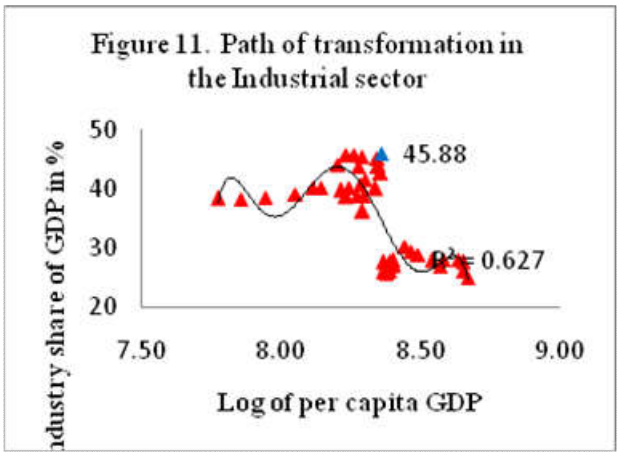
three countries from the BRICS (Brazil, Russia, India, China and South Africa). The three countries selected are: Brazil, India and China. The second group is made up of non BRICS emerging economies. we also selected three countries namely: Indonesia, Malaysia and South Korea.

Selected BRICS

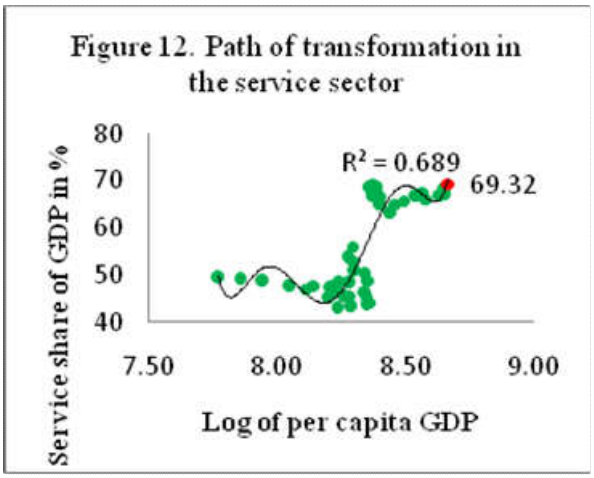
Brazil

Brazil is an emerging economy although it ranks 7th ahead of France and UK that are in the "club". We undertook the same analysis as we did for the developed economies. We first looked at the Agricultural sector (Figure 10). Here the relationship between Agriculture share of GDP and per capita income depicts a downward sloping trend with a polynomial fit of 0.76. The highest contribution of Agriculture to the country's wealth stood at 14.67% with a per capita income of US$ 3762.48. Second, we considered the relationship between the Industry share of GDP and per capita income. We observe that the relationship also depicts a downward trend with a polynomial fit of 0.62 (Figure 11).





It is important to note that although the polynomial fit of above 0.50 is deemed acceptable it is well below that of countries in the "club". The highest contribution of the sector to the country's wealth stood at 45.88% with a per capita income of US$ 4,275.76. It appears from the above two sectors that as countries get richer (increase of per capita GDP) they reduce the contribution of these sectors to wealth and focus more on the Service sector. Now let's look at the behavior of the Service sector in Brazil. The relationship between the sector's share of GDP and per capita income depicts an upward sloping trend with a polynomial (6th degree) fit of 0.68 (Figure 12).

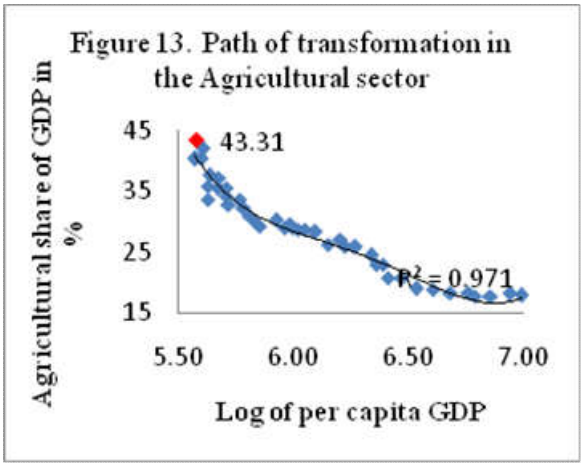


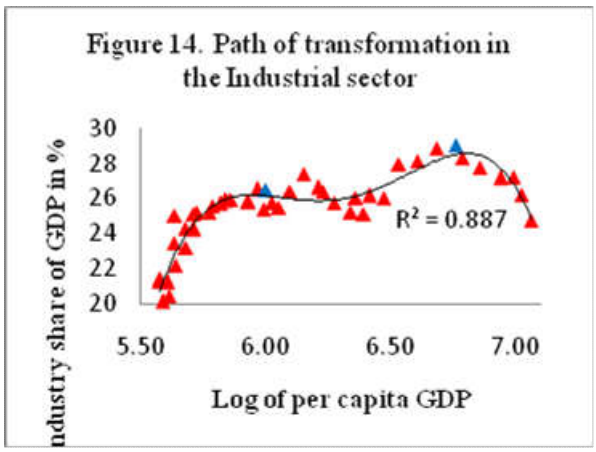
The highest contribution of the sector to the country's wealth stood at 69.32% at per capita income of US$ 5,823.04. It results from the analysis of this country that Agriculture is still important although its importance is decreasing. The industrial sector is important as well and contributes to the country's wealth 4 times more than Agriculture. The Service sector is on the rise and it contributes to the country's wealth 6 times more than Agriculture and around 2 times more than the industrial sector industrial. Let's turn now to India the other BRICS country.

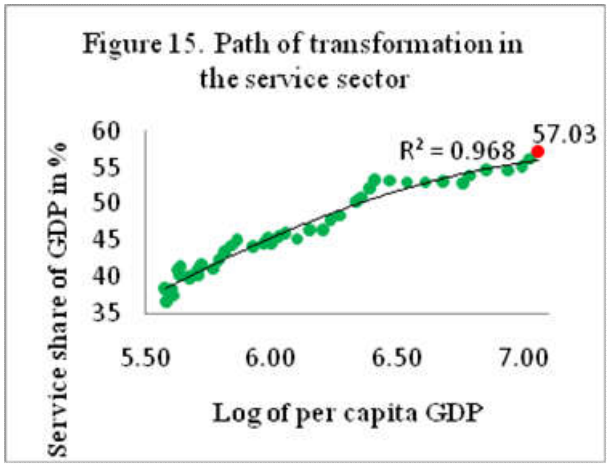
India

India ranks 3rd economic power by IMF above both France and UK, members of the "club" of developed economies. What is the country's path of transformation? Let's look at Agriculture. The relationship between Agriculture share of GDP and per capita income is downward sloping with a polynomial fit of 0.97. The highest contribution of the sector to the country's wealth stood at 43.31% with a per capita income of US$ 273.26. Looking at the country's wealth at the highest contribution of the Agriculture sector over the period of analysis, tells us to some extent, why the country despite being the 3rd economic power is not yet member of the "club". Let's turn to the industrial sector and see the path followed. The relationship between Industry's share of GDP and per capita income does not depict a clear cut trend as in the previous analysis. Indeed, it exhibits a polynomial function of degree 4 with three episodes. The first episode is when logarithm of per capita GDP ranged between 5.50 and 6 (per capita income of US$ 273.26 in 1970 to US$ 403 in 1990). During that episode, the contribution of the industrial sector increased significantly with increased per capita income. The second episode ranged from 1990 at log of per capita income of 6 (US$ 403) to 2008 at log of per capita income of 6.79 (US$ 885.17). During this episode we observe a deceleration of the industrial sector's contribution to the country's wealth. The last episode goes from 2008 to 2013, we observe a sharp decrease in the contribution of the industrial sector to the country's wealth. It is important to also note that the industrial has not over performed the Agricultural sector in terms of contribution to wealth. Indeed, the Agricultural sector's contribution is 1.1 times that of the industrial sector. Let's look at what happens to the service sector. The relationship between the Chinese service sector's share of GDP and per capita income depicts an upward sloping trend. It is best captured by a polynomial

function of degree 3. The goodness of fit of the function is quiet high at 0.97. The highest contribution of the sector stood at 57.03 with a per capita income of US$ 1,165.00. That is, as the country gets richer it focuses more on the service sector to maximize its wealth. Indeed, the sector's contribution to the country's wealth is 1.6 times that of Agriculture and 1.8 times that of the industrial sector. Let's now move to the last country considered among the BRICS i.e China.

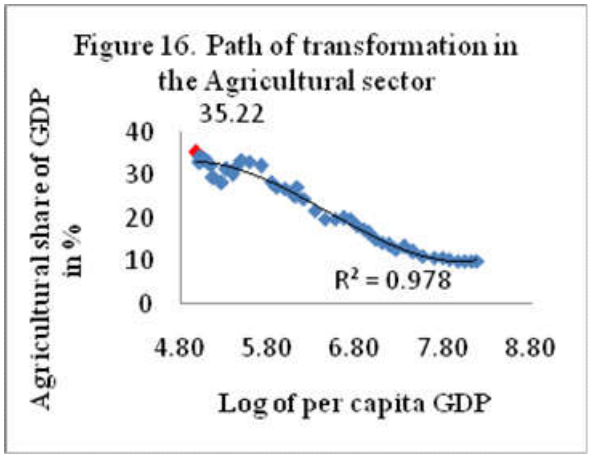


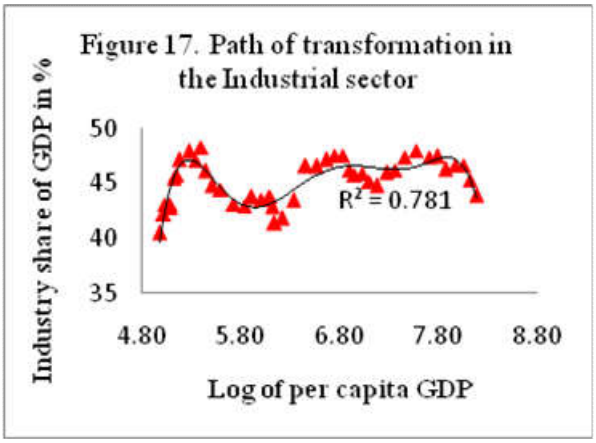


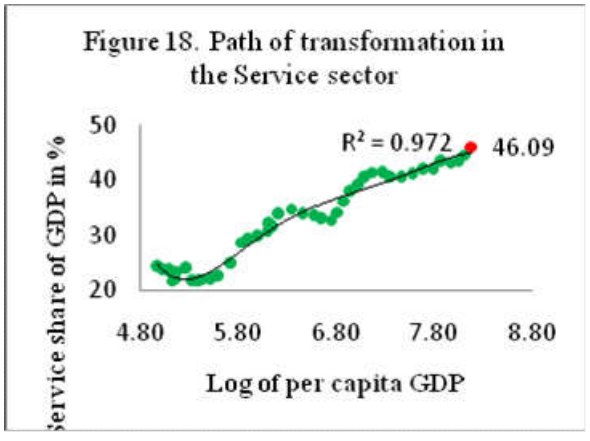


China

China is ranked 2nd economic power of the world by IMF ranking. Notwithstanding its rank as economic power, China remains an emerging economy. Let's analyze the path of transformation that china has followed. We start with Agriculture as we did for the other countries. The relationship between Agriculture's share of GDP and per capita income depicts a downward sloping trend best captured by a third order degree polynomial function with a quiet high fit of 0.98. The highest contribution of the sector stood at 35.22% with a per capita income of US$ 144.62. Just like in the case of India, looking at the country's wealth at the point of highest contribution of the Agriculture sector, we see, to some extent, why the country is not yet in the "club" of developed economies despite being the 2nd economic power of the world. Let's look at the other two sectors.







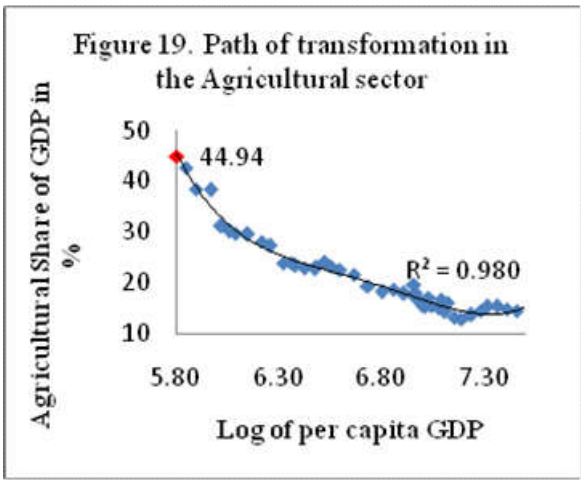
The relationship between the Chinese Industry's share of GDP and per capita income has no clear trend orientation. We was able to fit a polynomial function of order 6. The key features that appears from the figure are an upward sloping trend in the early seventies where per capita GDP ranged from 1970 (US$ 144.62) to 1980 (US$ 220.45), followed by a sharp decline of the sectors contribution till 1990 (US$ 462.73). After 1990 we observe an upward sloping trend followed by a deceleration till 2010 (US$ 2,870.05) where we have another sharp decline of

the sector's contribution. Let's turn to the service sector. Here, there is a clear cut trend orientation. Indeed, the relationship between the Chinese service sector's share of GDP and per capita income depicts an upward sloping trend with a quiet high polynomial fit of 0.97. The highest contribution of the sector stood at 46.09% with per capita income of US$ 3,583.38. The service sector's contribution to the country's wealth is 1.4 time that of Agriculture but it is less than the industrial sector's contribution. In fact the industrial sector's contribution is 1.3 time that of the service sector. It results from the above analysis that the selected BRICS countries have followed to a large extent similar path for transformation. Agriculture is important although decreasing in its contribution to wealth. There is no clear orientation for the industrial sector. However, the service sector is contributing the most to the wealth of these countries. When compared to the countries in the "club" of developed economies we can see that these BRICS countries followed the same path of transformation with the exception of the industrial sector. Now let's consider non BRICS emerging economies.

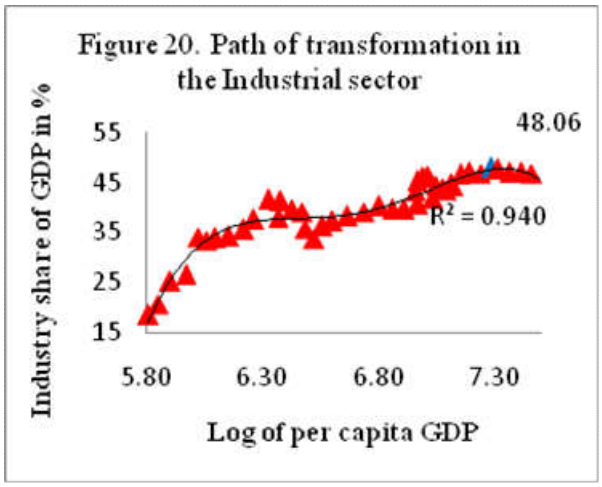
Other Emerging Economies

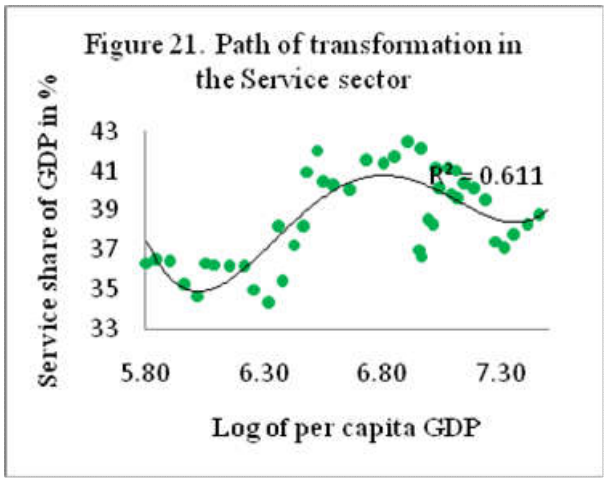
Indonesia

Indonesia ranks 9th economic power of the world by IMF rankings. We conduct the same analysis as we did for the developed and the BRICS countries. We will start with Agriculture (Figure 19). The relationship between Agriculture's share of GDP and per capita income depicts a downward sloping trend best captured by a polynomial function of order 5. The goodness-of-fit for this functional form is 0.98. The highest contribution of Agriculture to the country's wealth stood at 44.94% with per capita income of US$ 332.50. This path is similar to that of the BRICS countries.



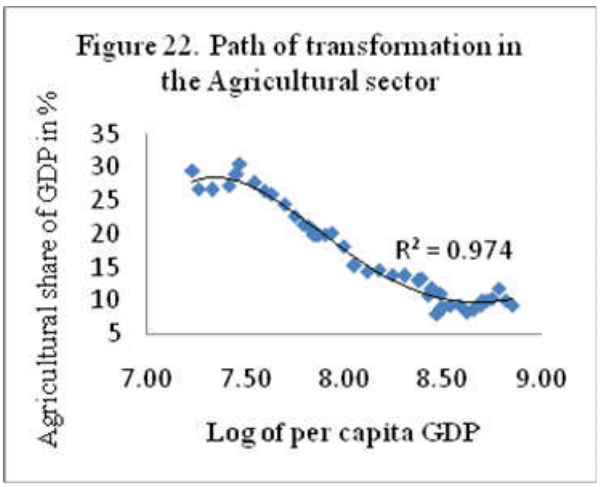
The relationship between the industry's share of GDP and per capita income depicts an upward sloping trend best captured by a polynomial function of order 4 with a very high fit of 0.94. The sector's highest contribution to the country's wealth stood at 48.06% with a per capita income of US$ 1,498.01. Looking at the service sector we can observe that the relationship between the service sector's share of GDP and per capita income depicts a globally upward sloping trend. However the goodness-of-fit is not as high as the other two sectors. The sector's highest contribution stood at 42.44% with per capita income of US$ 679.92. The mapping of the relationship between the service sector's share of GDP and per capita income is best captured by a polynomial function of order 4 with a goodness-of-fit of 0.61.





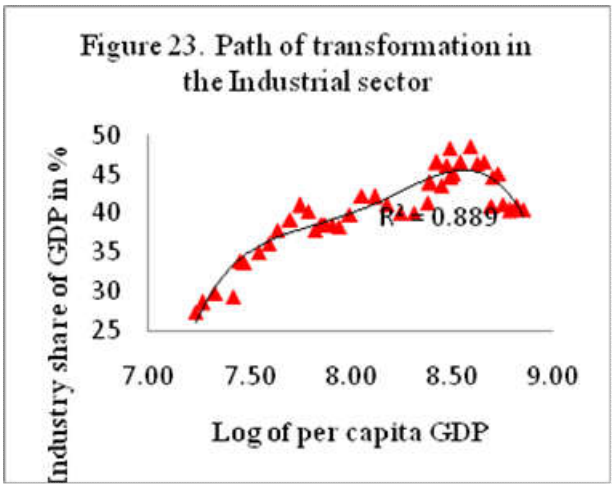
Malaysia

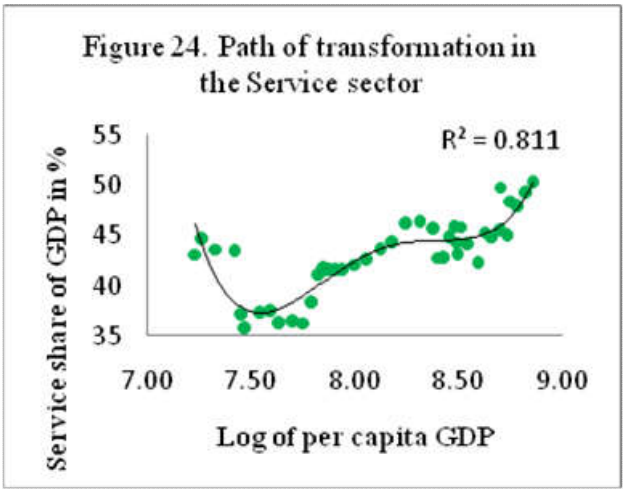
Malaysia is ranked 28th economic power of the world by the IMF. The country is also among the emerging economies. Let's analyze the country's path of transformation.



The mapping of the relationship between agricultural sector's share of GDP and per capita income shows a downward sloping trend which indicates that as per capita income increases, the contribution of the Agricultural sector to the country's wealth decreases. That is expected when a country

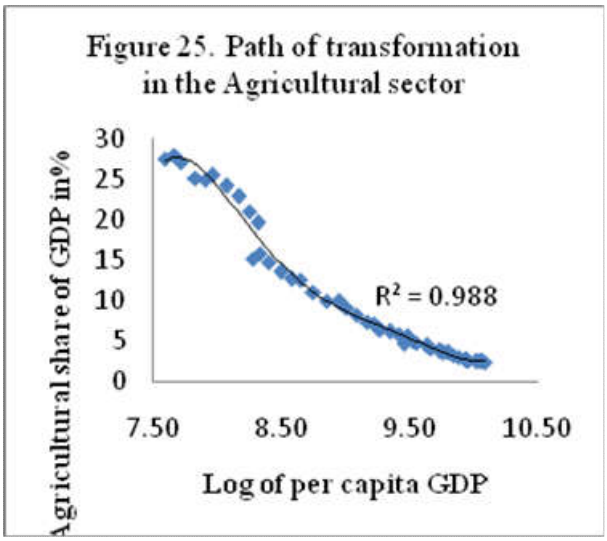
enters phase two of the structural transformation process. The highest contribution of this sector to the country's wealth stood at 32.52% (1974) with per capita income of US$ 1756.21. Next we turn to the industry sector (Figure 23). The mapping of the relationship between the sector's share of GDP and per capita income depicts a globally upward sloping trend. The mapping is best captured by a polynomial function of order 4 with a goodness-of-fit of 0.89. Although the trend is globally upward sloping we can observe that it is declining with higher per capita income. The highest contribution of the sector to the country's wealth stood at 48.53 % (2004) with per capita income of US$ 5,372.23. We move to the service sector in Figure 24. The mapping of the relationship between the sector's share of GDP and per capita income portrays an initial downward sloping trend which quickly overturned for a globally upward sloping trend indicating an increased preeminence of the sector as the country got richer. The highest contribution of the sector to the country's wealth stood at 50.18% (2013) with per capita income of US$ 6,997.67. The relationship between the sector's share of GDP and per capita income is best captured by a polynomial function of order 4 with a Goodness-of-fit of 0.81.



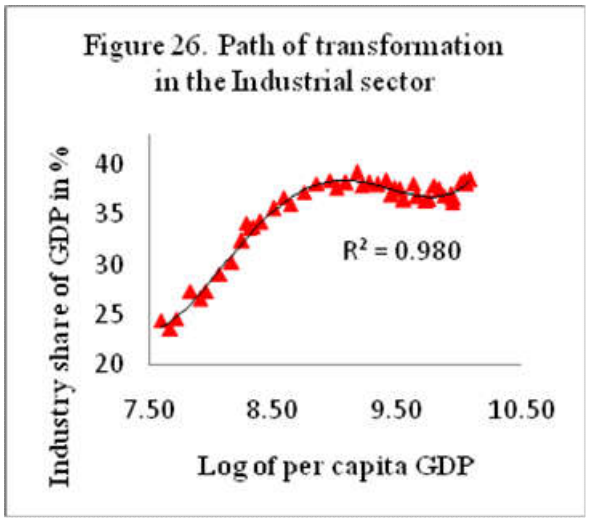


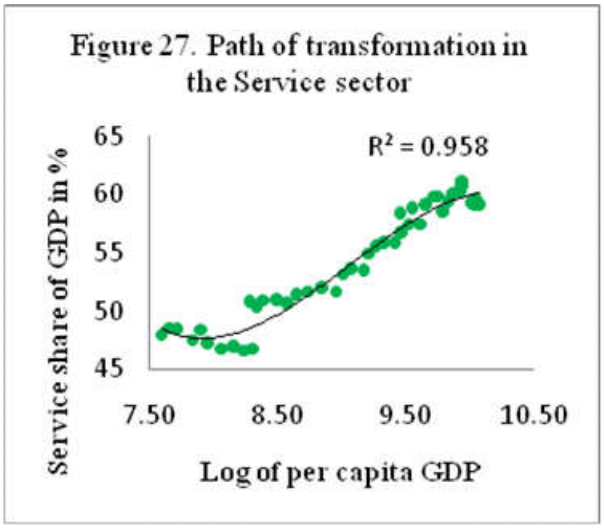
South Korea

South Korea is the 13th economic power by IMF ranking. It is also an emerging economy. Let's look at its transformation path over the period of analysis. Let's start with Agriculture (Figure 25). The relationship between the sector's share of GDP and per capita income is downward sloping indicating that the sector's contribution to the country's wealth is reduced has the country gets richer. The highest contribution of this sector to the country's wealth stood at 27.85% (1971) with per capita income of US$ 2,130.91. Let's turn to the industrial sector (Figure 26). The mapping of the relationship between the sector's share of GDP and per capita income depicts an upward sloping trend indicating an increased contribution of the sector with higher per capita income. The relationship between the sector's share of GDP and per capita income is best captured by a polynomial function of order 4 with a quite high goodness-of-fit of 0.98. The highest contribution of the sector to the country's wealth stood at 39.23% (1991) with per capita income of US$ 9,591.26. The sector's contribution to the country's wealth is 3.2 times higher than that the Agricultural sector. Now let's turn to the service sector (Figure 27).



The mapping of the relationship between the sector's share of GDP and per capita income depicts a clear upward sloping trend. This relationship is best captured by a polynomial function of order 3 with a Goodness-of-fit of 0.96. The highest contribution of the sector to the country's wealth stood at 61.21% (2008) with per capita income of US$ 20,928.38. It is important to note that the sector's contribution to the country's wealth is on average 5 times that of the Agricultural sector and 1.5 times that of the industrial sector.



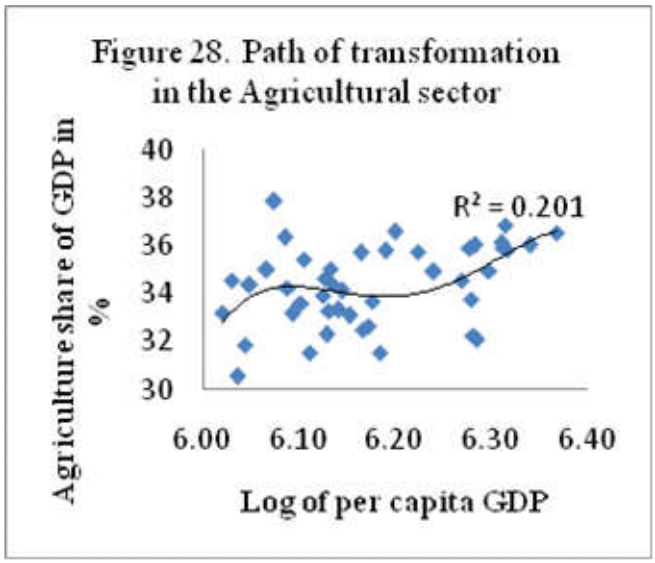


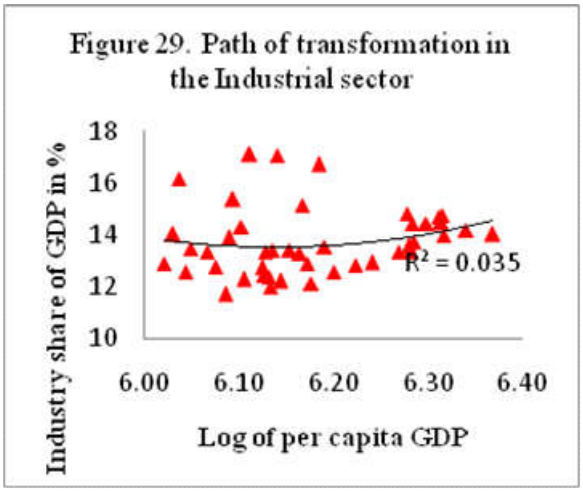
Assessing structural transformation processes in ECOWAS member States

After analyzing the path of transformation followed by selected developed and emerging economies, let's now turn to ECOWAS member states to see how they behaved over the same period of time and to what extent they mimic the transformation path of the above countries. Let's recall that countries in the ECOWAS Community are among the poorest in the world. We analyze the ECOWAs countries in alphabetic order starting with Benin and ending with Togo.

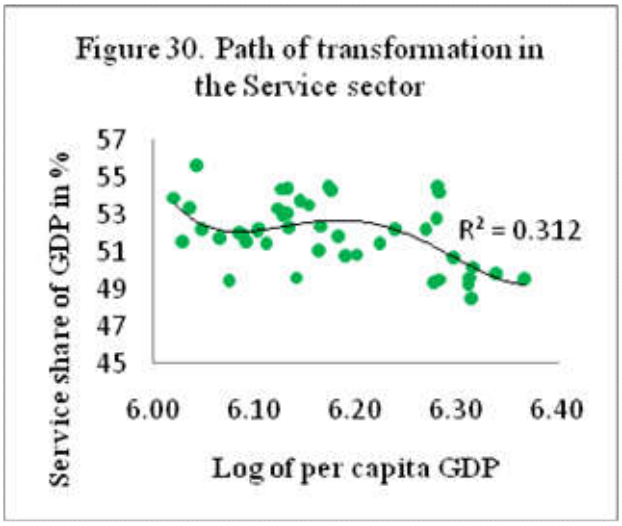
Benin

Benin is the 135th economic power by the IMF ranking. Let's start with the Agricultural sector (Figure 28). The mapping of the relationship between the sector's share of GDP and per capita income does not show a clear trend. Efforts to fit a polynomial function to this relationship yielded a polynomial function of order 4 which is globally upward sloping but with a very poor goodness-of-fit of 0.20. The highest contribution of the sector to the country's wealth stood at 37.86% (1989) with per capita income of US$ 434.56. What could be said about this sector is that its contribution to the country's wealth is still significant and it is not decreasing as it was observed in the case of the developed and emerging economies. We next turn to the industrial sector (Figure 29)





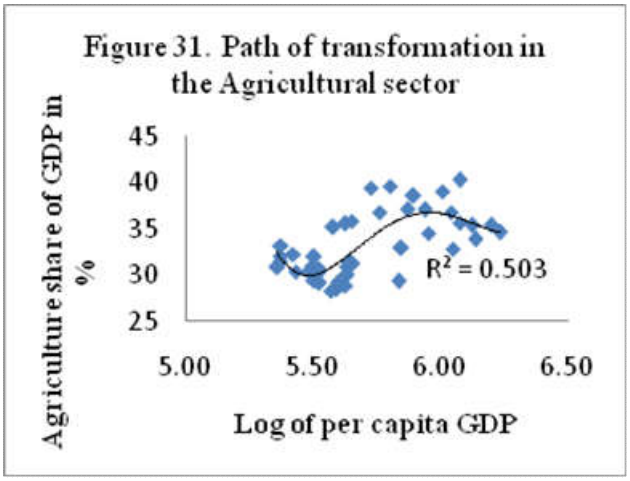
to see the path followed. The mapping of the relationship between the sector's share of GDP and per capita income does not depict a clear trend. Here, efforts to fit a polynomial function yielded a quadratic function with no clear trend. The highest contribution of the sector to the country's wealth stood at 17.08% (1974) with per capita income of US$ 450.86. Let's now look at the service sector (Figure 30). The mapping of the relationship between the sector's share of GDP and per capita income does not depict a clear trend. Efforts to fit a polynomial function yielded a globally downward sloping polynomial function of order 4 with goodness-of-fit of 0.31. The highest contribution of the sector to the country's wealth stood at 55.59 (1977) with per capita GDP of US$ 421.36. If we compare the path of transformation in the various economic sectors of Benin to that of the developed and emerging economies, we can assert that of the path of transformation in Benin is quite different from that the developed as well as the emerging economies. The question that comes to mind is whether Benin can structurally transform to move to the status of emerging economies.

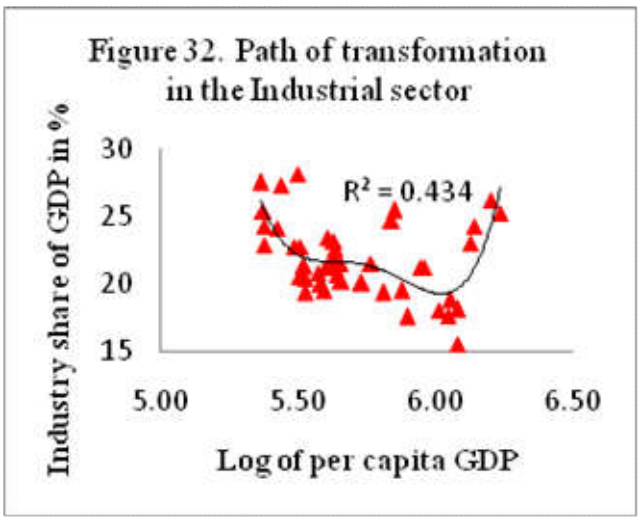


Burkina Faso

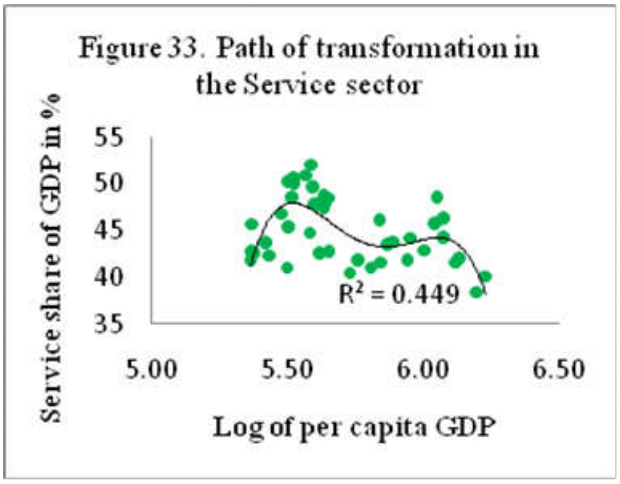
Burkina Faso is ranked 119th economic power by the IMF. The country is landlocked. Let's look at the paths of transformation followed by the country over the period of analysis. Let's start with Agriculture in Figure 31. The mapping of the relationship between the sector's share of GDP and per capita income depicts a globally upward sloping trend. Efforts to fit a

polynomial function yielded a 4th order polynomial function with a goodness-of-fit of 0.5. The highest contribution of the sector to the country's wealth stood at 40.24% (2008) with per capita income of US$ 436.11. This indicates that Agriculture is still preeminent in the country's wealth. The country could therefore be at the initial stage of the first phase of structural transformation. Let's now turn to the industrial sector (Figure 32). The mapping of the relationship between the sector's share of GDP and per capita income does not depict a clear trend. However, efforts to fit a polynomial function yielded a 4th order polynomial function with a goodness-of-fit of 0.43. The highest contribution of the sector to the country's wealth stood at 28.09% (1976) with per capita income of US$ 243.92. Let's now look at the service sector (Figure 33).



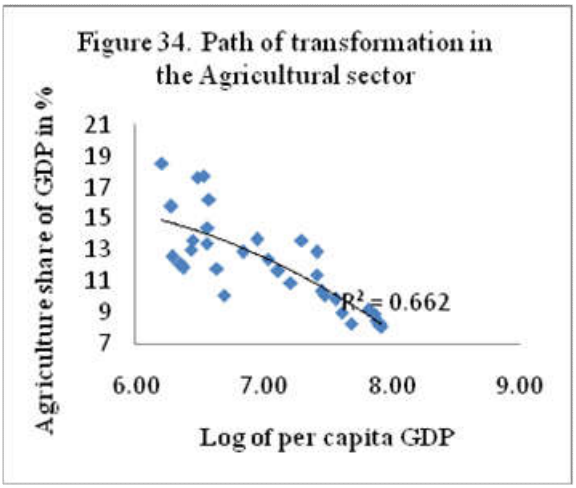


The mapping of the relationship between the sector's share of GDP and per capita income is best depicted globally speaking by a downward sloping trend. This relationship is best captured by a polynomial function of order 4 with a goodness-of-fit of 0.45. The highest contribution of the sector to the country's wealth stood at 52.13% (1982) with per capita income of US$ 267.91. How is this country's transformation path compared to that of developed and emerging economies? It is clear from the above that the transformation path of Burkina Faso is quite different. Although, Figure 33 shows a declining trend with increased per capita income, the sector remains the highest contributor to the country's wealth. Its contribution stood on average at 45% whereas those of the other two sectors are 33% for Agriculture and 21.84% for Industry.



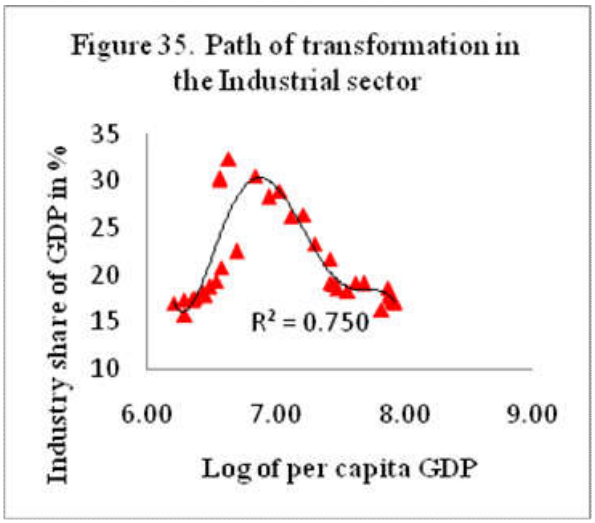
Cape Verde

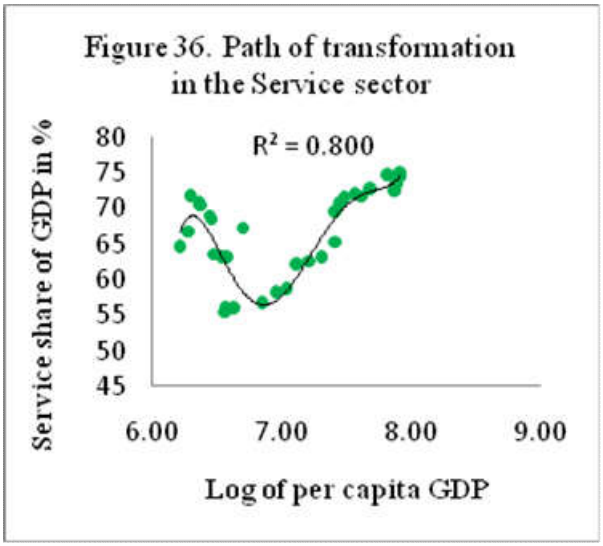
Cape Verde is ranked 164th economic Power of the world by IMF ranking. Cape Verde is one of the smallest countries of the ECOWAS region. The country aspires to join the group of emerging economies. To what extent this aspiration could materialize? Let's consider the path of transformation of the economic sectors of the country. Let's start with Agriculture (Figure 34). The mapping of the relationship between Agricultural sector's share of GDP and per capita income depicts a downward sloping trend which best captured by a downward sloping quadratic function with a goodness-of-fit of 0.66. This downward sloping trend indicates that the sector's contribution to the country's wealth decreases as the country gets richer. The highest contribution of the sector to the country's wealth over the period of analysis stood at 18.56% (1980) with per capita income of US$ 496.99. On average le sector's contribution the country's wealth is about 11.9%.Let's look at the industrial sector in Figure 35. The mapping of the relationship between the sector's share of GDP and per capita income is best depicted by a bell shape curve captured by a polynomial function of order 5 with a goodness-of-fit of 0.75. The sector's highest contribution to the country's wealth stood at 32.38% (1992) with per capita income of US$ 761.99.



Let's turn to the service sector (Figure 36).The relationship between the sector's contribution to GDP and per capita income has a V-shape and best fitted by polynomial function of order 5 with goodness-of-fit of 0.80. This indicates that the service sector's contribution to the country's wealth increase with per capita income. The sector's highest contributiopn stood at 74.87% (2012) with per capita income of US$

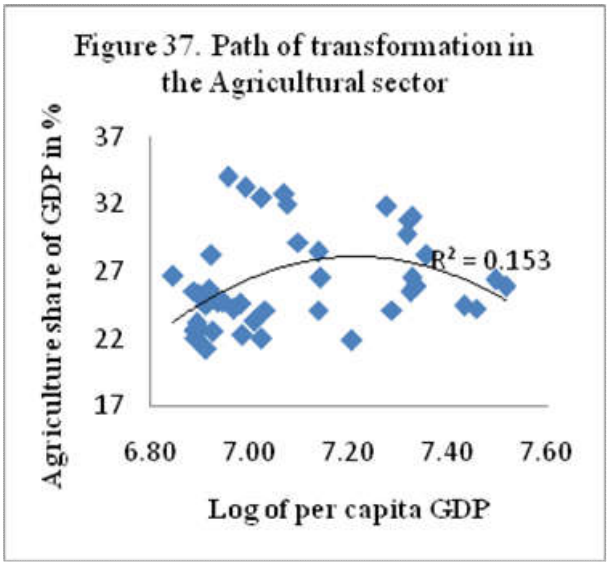
2,749.48. it is important to also note that the sector's contribution to wealth is 5.6 tyiles that of Agricuture and 3 tomes that of the industrial sector.

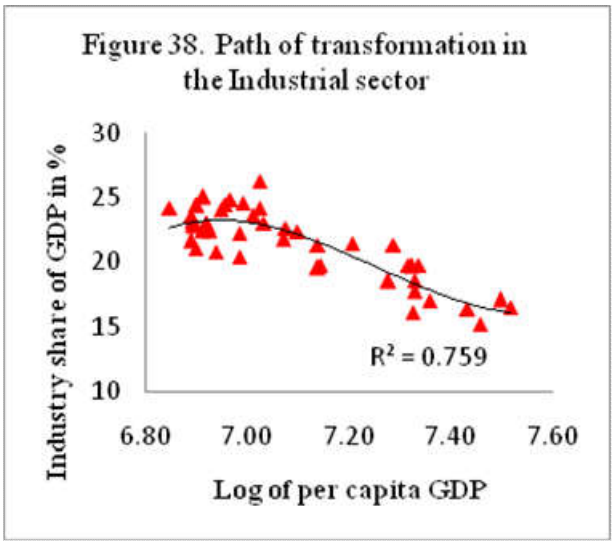


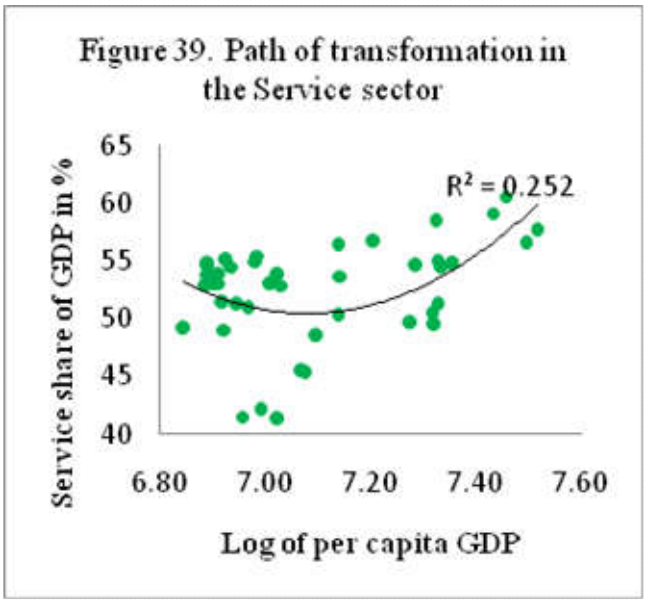


Cote d'Ivoire

Cote d'Ivoire is ranked 92nd economic power by the IMF. For about a decade the country went through a political turmoil that led to a civil war by the end of 2010. The country came out of this turmoil in 2011 with the aspiration of becoming an emerging economy by 2020. Is this a legitimate aspiration? And can the country do it? What path of transformation is the country following to make this aspiration a reality? Let's look at the Agricultural sector (Figure 37). The mapping of the relationship between the sector's share of GDP and per capita income does not depict a clear trend. Efforts to fit a polynomial function yielded a quadratic function with a very poor goodness-of-fit of 0.153. From this functional form, despite the poor fit, we can observe that the trend is globally downward sloping indicating that the sector's contribution to the country's wealth is declining with increased per capita income. The highest contribution of the sector to the country's wealth stood at 34.01% with per capita income of US$ 1,048.69 (1992). Let's see how the industrial sector behaved (Figure 38). Here, the mapping of the relationship between the sector's share of GDP and per capita income depicts a downward sloping trend best captured by a polynomial function of order 3 with goodness-of-fit of 0.76.





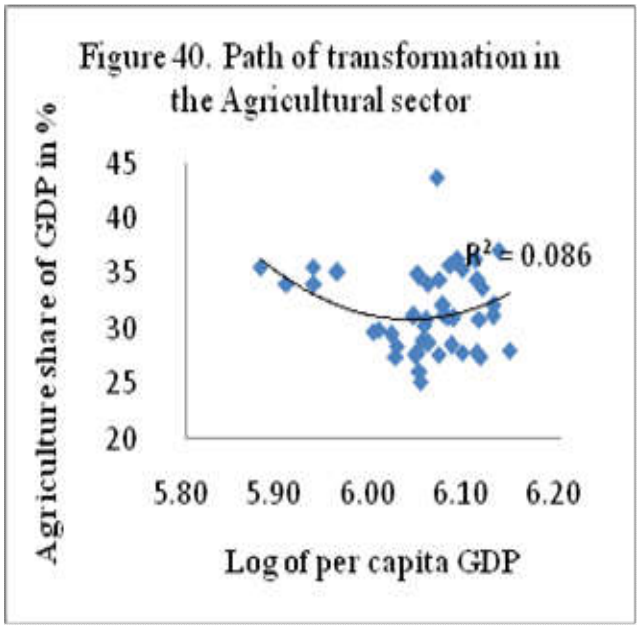


The sector's highest contribution to the country's wealth stood at 26.27% (1990) with per capita income of US$ 1,123.27. This downward sloping trend indicates that the sector's contribution to the wealth of the country is declining with increased per capita income. Let's now turn to the service sector (Figure 39). The relationship between the service sector's share of GDP and per capita income shows a globally

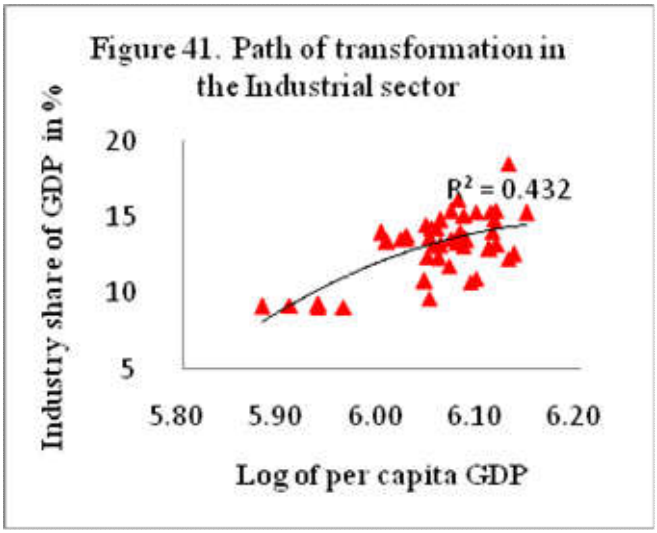
upward sloping trend. Here, effort to fit a polynomial function yielded an upward sloping quadratic function with goodness-of-fit of 0.52. The highest contribution of the sector to the country's wealth stood at 60.58% (1977) with per capita income of US$ 1,731.89. Looking at the transformation paths of the country, we observe, although the goodness-of-fit is not very satisfactory, that the country is mimicking developed economies. Indeed, we earlier showed that in the selected developed economies the contributions of both the agricultural and industrial sectors are declining as the countries' got richer and it was rather the service sector that was gaining preeminence. We also showed that for the selected non BRICKS emerging economies, although the path of Agricultural transformation has a downward sloping trend with per capita income, the other two sectors i.e. Industry and Service have exhibit an upward sloping trend with per capita income. Is the current path of transformation sustainable and could it make the country an emerging economy by 2020? From what this analysis shows we are not so sure.

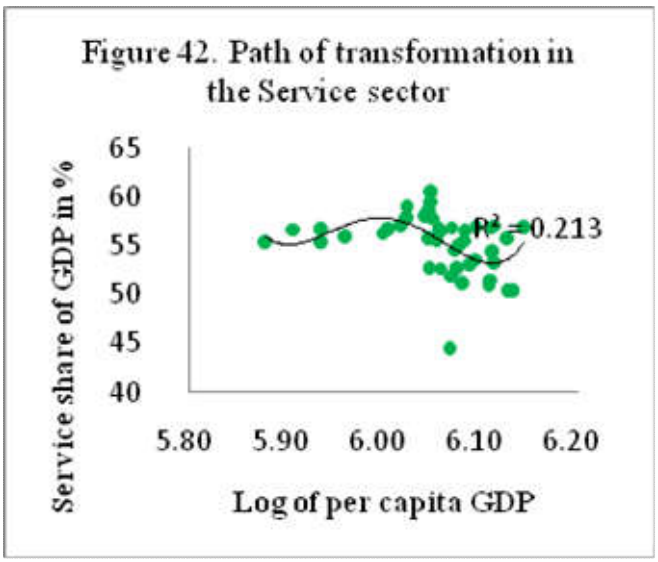
The Gambia

The Gambia is the smallest country of the ECOWAS community. It is ranked 165th by the IMF. Let's look at the country's transformation path. The mapping of the Agricultural sector's share of GDP and per capita income (Figure 40) depicts a downward sloping trend best captured by polynomial function of order 2 with a very poor goodness-of-fit of 0.08. The sector's highest contribution to the country's wealth stood at 43.78% (1982) with per capita income of US$ 431.65. Let's look at the industrial sector (Figure 41).



Here, we observe that the mapping of the relationship between the sector's share of GDP and per capita income depicts an upward sloping trend best captured by a polynomial function of order 2 with goodness-of-fit of 0.43. The sector's highest contribution to the country's wealth stood at 18.53% (1984) with per capita income of US$ 458.16. Let's now move to the service sector (Figure 42). The mapping of the relationship between the sector's share of GDP and per capita income does not show a clear trend. Efforts to fit a polynomial function yielded a function of order 4 with goodness-of-fit of 0.21. The sector's highest contribution to the country's wealth stood at 60.48% (1993) with per capita income of US$ 423.96.

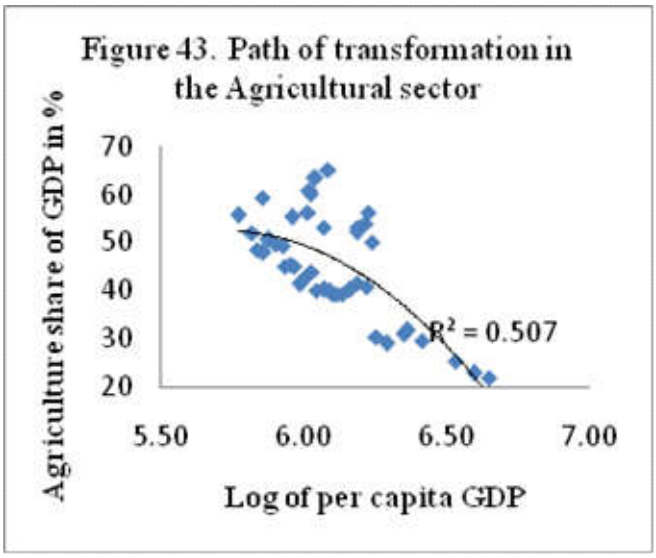


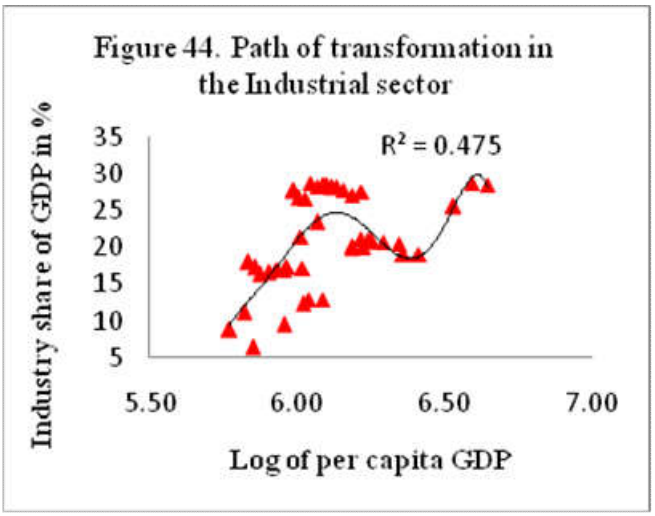


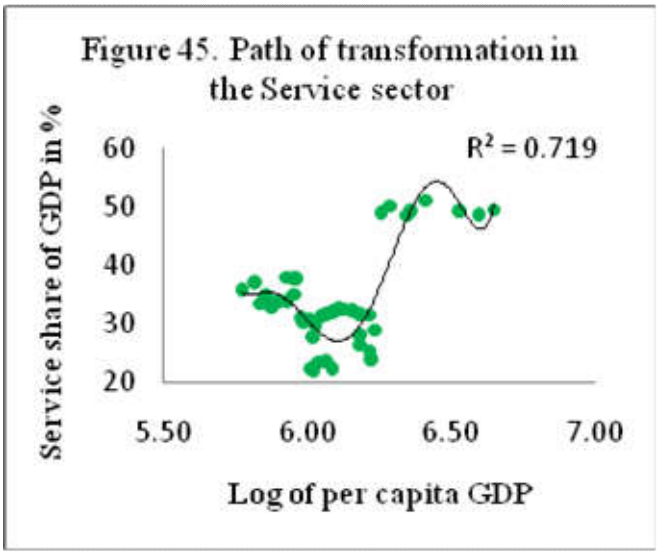
Ghana

Ghana is ranked 79th economic power of the world by the IMF and by the same ranking it is the second largest economy of the ECOWAS region. The country has become the West African icon for stability and democratic power transfer. Let's look at the country's transformation path. We start with Agriculture (Figure 43). The mapping of the relationship between the sector share of GDP and per capita income shows a downward sloping trend best captured by a polynomial function of order 2 with a goodness-of-fit of 0.51. The sector's highest contribution to the country's wealth stood at 65.04% (1978) with per capita income of US$ 438.93. The downward sloping trend observed here indicates that as the country gets richer the contribution the Agricultural sector decreases. Let's now see what happen with the industrial sector (Figure 44). The relationship between the sector's share of GDP and per capita income depicts a globally upward sloping trend best captured by a polynomial function of order 6 with goodness-of-fit of 0.47. The sector's highest contribution to wealth stood at 28.73% (1997) with per capita income of US$ 421.49. Let's turn to the service sector (Figure 45). The mapping of the relationship between the sector's share of GDP and per capita income does not show a clear trend. However, efforts to fit a function yielded a polynomial function of order 6 with goodness-of-fit of 0.72. The sector's highest contribution to wealth stood at 51.13% (2010) with per capita income of US$ 610.19. It is clear from the above graphical analysis that the

country tries to mimic the transformation paths of the selected non BRICKS emerging economies.

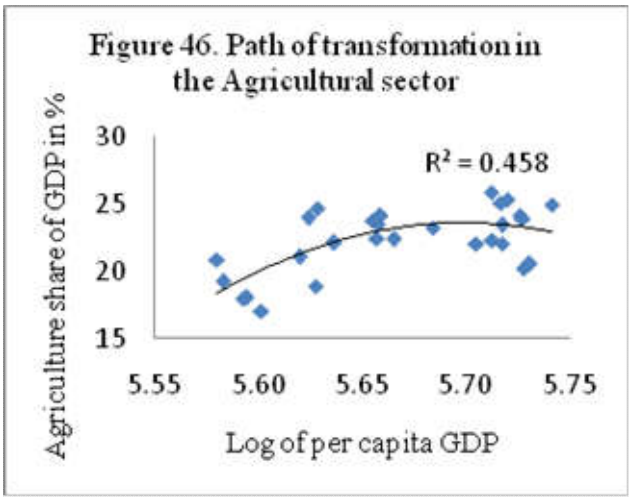


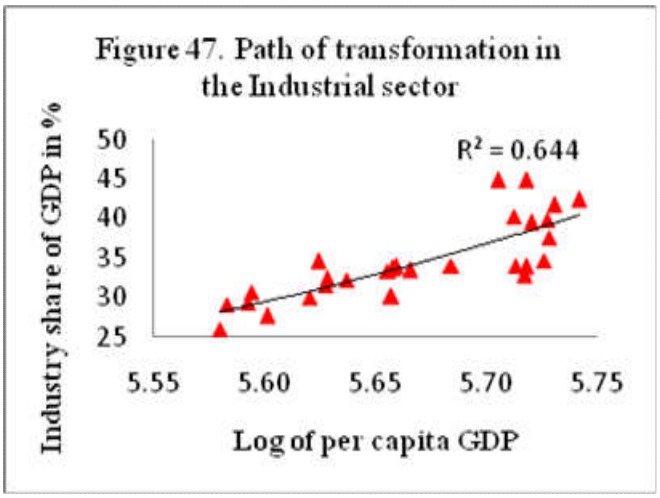


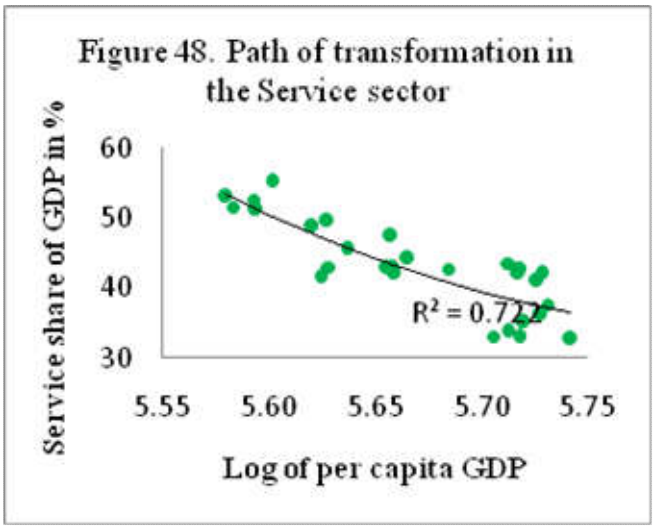


Guinea

Guinea is the 143rd economy of the world by the IMF ranking. After a period of lethargy, the country successfully organized a presidential election and tries to better the lives of its citizens. Although this is quite recent, let's look at this country's transformation path over the period of analysis. We start with Agriculture (Figure 46).





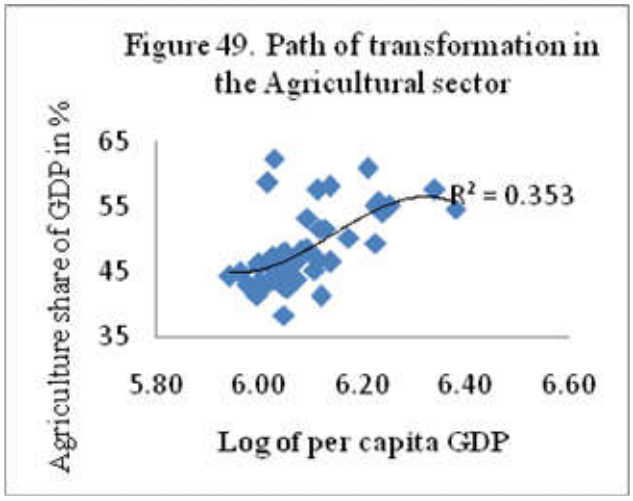


The mapping of the sector's share of GDP and per capita income shows an upward sloping trend best captured by a second order polynomial function with a goodness-of-fit of 0.46. The sector's highest contribution to wealth stood at 25.86% (2009) with per capita income of US$ 302.60. Let's look at the transformation path followed by the industrial sector (Figure 47). The mapping of the relationship between the sector's share of GDP and per capita income depicts an

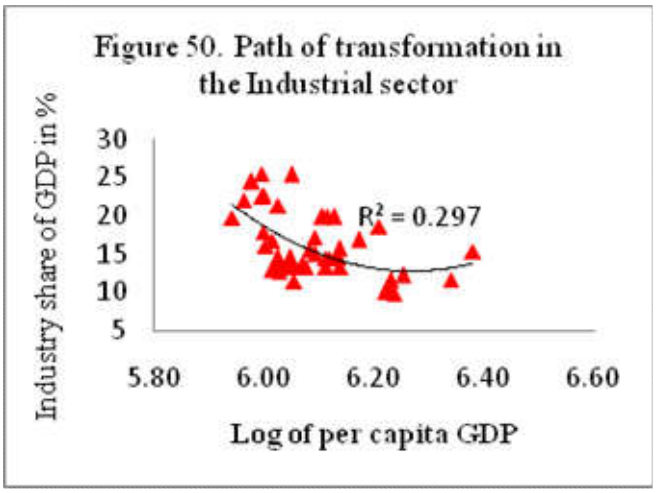
upward sloping trend best captured by a second order polynomial function with goodness-of-fit of 0.64. The sector's highest contribution to the country's wealth stood at 44.84 (2011) with per capita income of US$ 304.20. Let's now look at the transformation path of the service sector (Figure 48). The mapping of the relationship between the sector's share of GDP and per capita income depicts a downward sloping trend best captured by a second order polynomial function with goodness-of-fit of 0.72. The sector's highest contribution to wealth stood at 55.21% (1992) with per capita income of US$ 270.78. The observation of the country's transformation path shows that it is at the initial stage of structural transformation.

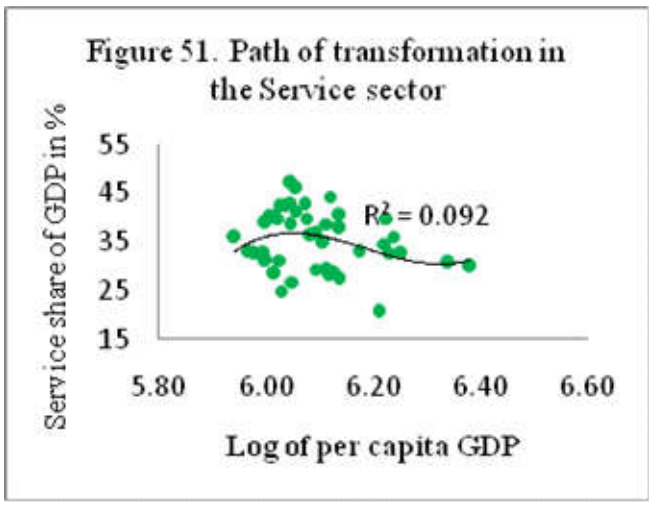
Guinea Bissau

Guinea Bissau is one of the lusophone countries of the ECOWAS Community and it is ranked 169th economic power by the IMF. The country has gone through a lot of instability lately. Concerted efforts of the ECOWAS member states have led to stability creating a conducive environment for development strategies to be implemented. Let's analyze the path of transformation that the country followed over the period of analysis. We start with Agriculture (Figure 49). The mapping of the relationship between the sector's share of GDP and per capita income depicts an upward sloping trend best captured by a third order polynomial function with goodness-of-fit of 0.35. This trend indicates that the country could be at the initial stage of structural transformation. The sector's highest contribution to wealth stood at 62.38% (1998) with per capita income of US$ 414.76. When we turn to the industrial sector (Figure 50)



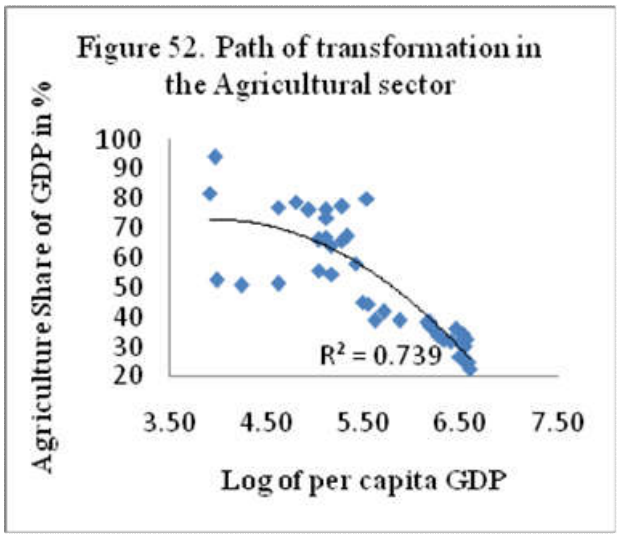
we observe that the mapping of the relationship between the sector's share of GDP and per capita income exhibits a downward sloping quadratic function with goodness-of-fit of 0.29. The sector's highest contribution wealth stood at 25.49% (1974) with per capita income of US$ 401.20. Next we turn to the service sector (Figure 51). Here, we also observe that the mapping of the relationship between the sector's share of GDP and per capita income exhibits a downward sloping trend best fitted with a third order polynomial function with quite poor goodness-of-fit of 0.09. The sector's highest contribution to wealth stood at 46.11% (1986) with per capita income of US$ 426.17. It results from the above that the country could be at the initial stage of structural transformation where preeminence is given to agriculture over the other sector. Indeed, as we observe, on average, the Agricultural sector's contribution to the country's wealth is three times that of the industrial sector and 1.4 times that of the service sector. Over the period of analysis, this transformation path differs from that of both the developed and the emerging economies.

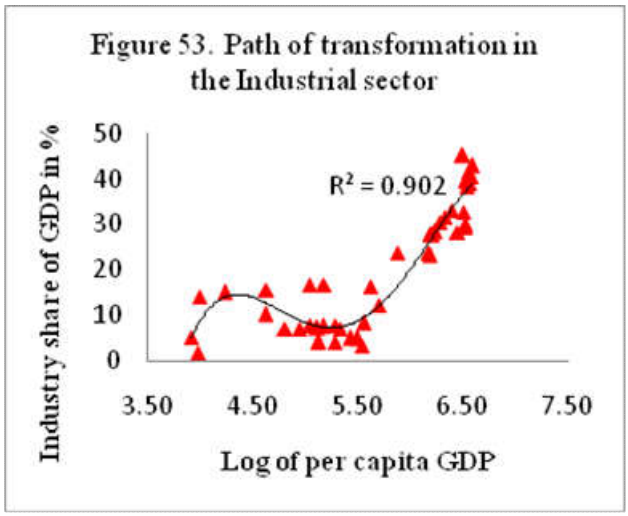


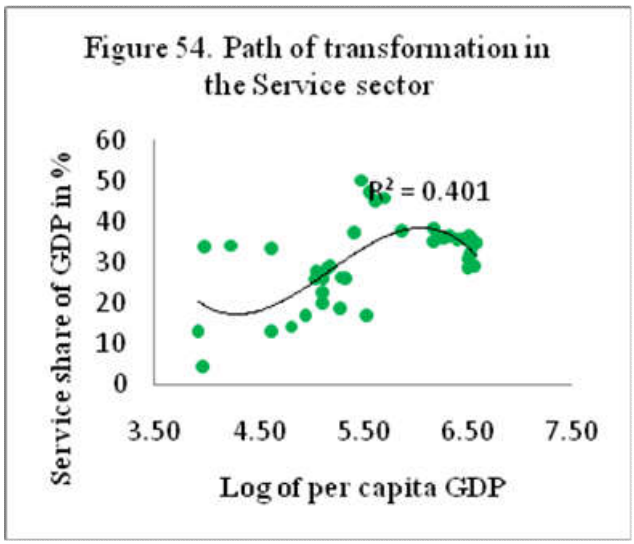


Liberia

Liberia is ranked 163rd economic power of the world by the IMF. This country has also been through political instability. Here also, it was a concerted effort of the ECOWAS member states that brought back peace and democracy. Let's look at the path of transformation in the various sectors of the country's economy. We start with Agriculture in Figure 52. The mapping of the relationship between the Agricultural sector's share of GDP and per capita income exhibits a downward sloping trend best fitted with a quadratic function with goodness-of-fit of 0.74 indicating that as the country get richer the contribution of the Agricultural sector becomes less important. The sector's highest contribution to the country's wealth stood at 93.98% (1996) with per capita income of US$ 53.10. This path is similar is similar to that of developed and emerging economies over the period of analysis. This also assumes that the country has passed the initial stage of structural transformation and that it is moving to the next stage where preeminence is given to the industrial sector. Let's then turn to the industrial sector in Figure 53. The mapping of the relationship between the sector's share of GDP and per capita income depicts a globally upward sloping trend best captured by a fourth order polynomial function with goodness-of-fit of 0.90. The sector's highest contribution to wealth stood at 45.15% (1975) with per capita income of US$ 661.32.



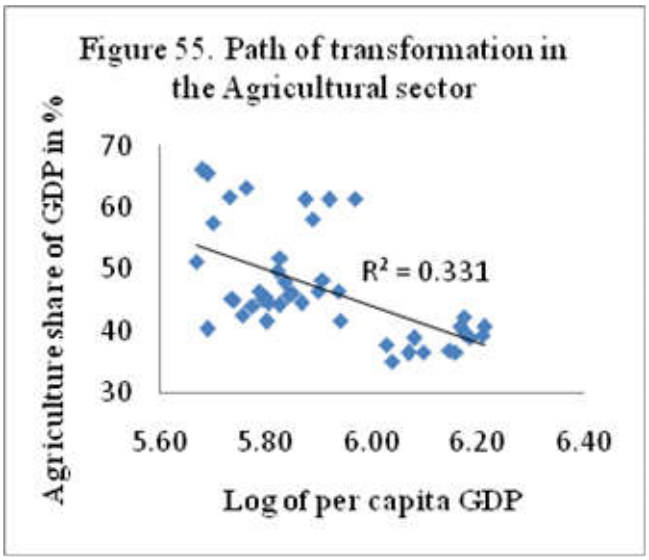




This path similar to that of the non BRICS emerging economies and concur with the idea that the country could be embracing the second phase of structural transformation where preeminence is given to the industrial sector. Let's now move to the service sector in Figure 54. Here, the mapping of the relationship between the sector's share of GDP and per capita income depicts an upward sloping trend best fitted with polynomial function of order 4 with goodness-of-fit of 0.40. The sector's highest contribution to the country's wealth stood at 38.62% (1987) with per capita income of US$ 481.99. Despite the decreasing importance of Agriculture as the country becomes richer, it is important to note that the sector's contribution to the country's wealth is on average 2.5 times that of the industrial sector and 1.6 times that of the service sector.

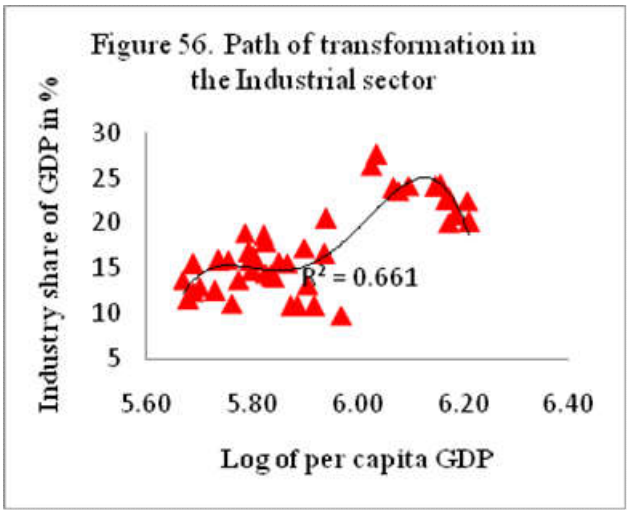
Mali

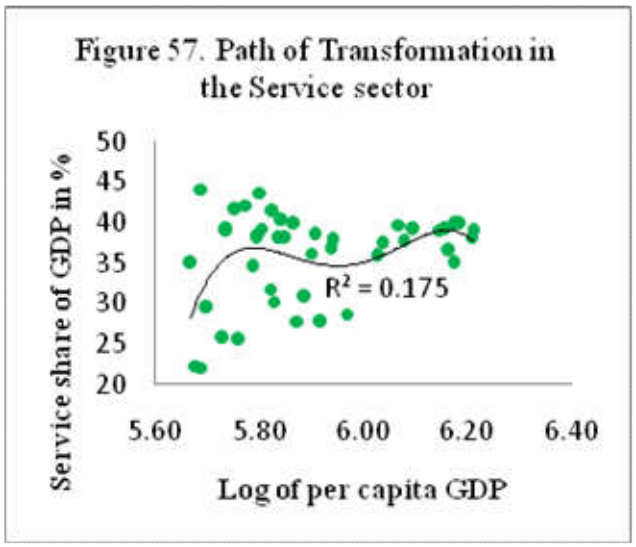
Mali is among the landlocked countries of the ECOWAS community. The country is ranked 129th economy by the IMF and it has experienced recently a wave of political instability. Despite the democratic election that took place and brought back some kind of normalcy, the country's peace is always under threat by the secessionist movement of the North. Let's look at the path of transformation that the country followed over the period of analysis. We start with Agriculture (Figure 55). The mapping of the relationship between the sector's share of GDP and per capita income depicts a downward sloping trend best fitted with a linear function with goodness-of-fit of 0.33. The sector's highest contribution to the country's wealth stood at 66.02% (1970) with per capita income of US$ 292.63. The trend observed with the Agricultural sector indicates that the importance of the sector in the country's economy is declining as the country gets richer. This is a path observed with both developed and emerging economies. Let's now move to the industrial sector in Figure 56. The relationship between the sector's share of GDP and per capita income exhibits a globally upward sloping trend best fitted with a polynomial function of order 4 with Goodness-of-fit of 0.66. The sector's highest contribution to the country's wealth stood at 26.32% (2001) with per capita income of US$ 414.06.



Let's now turn to the service sector in Figure 57.The mapping of the relationship between the sector's share of GDP and per capita income depicts an upward sloping trend best captured by a polynomial function of order 4 with Goodness-of-fit of 0.17. The highest contribution of the sector to wealth stood at 44.16% (1985) with per capita income of US$ 295.25. Although the contribution of the Agricultural sector to the country's wealth is decreasing, it is important to note that on average that contribution is 2.7 times that of the industrial sector and 1.3 times that of the service sector. That is to say that the Agricultural sector continues to play an important role

in the country's development strategy and should not be neglected.

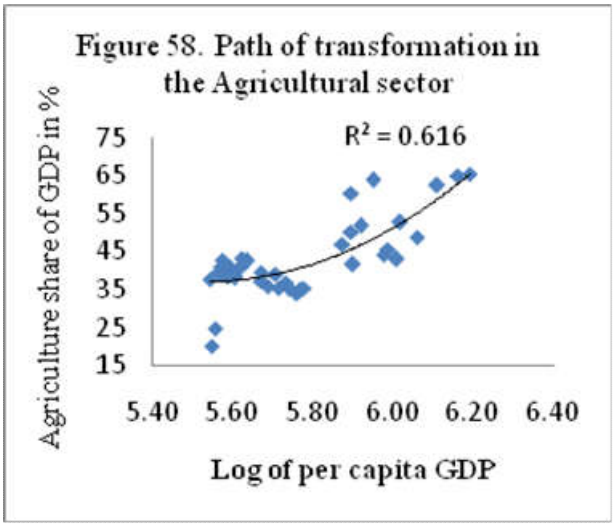


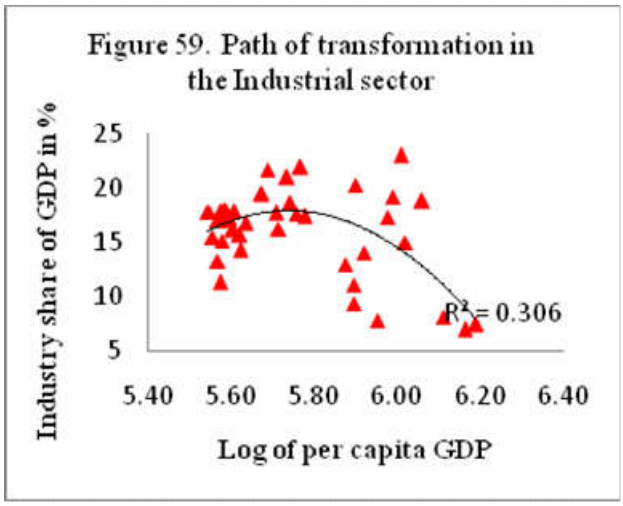


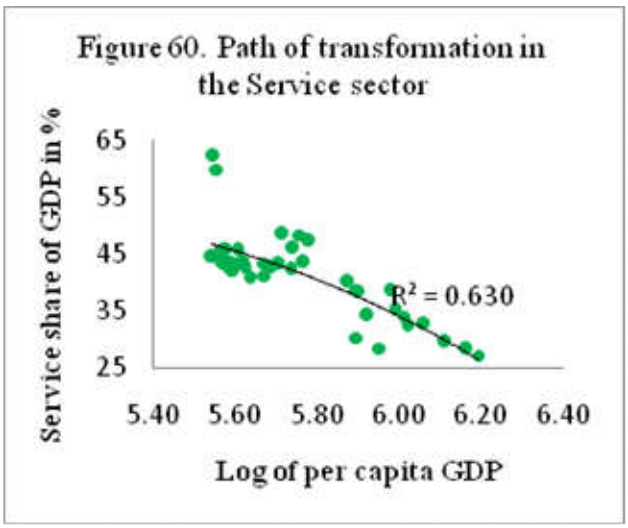
Niger

Niger is also a landlocked country. It is ranked 141st economy by the IMF. The country also aspires to better the life of its citizen by transforming its economy. Let's analyze together the path of transformation followed. We start with the Agricultural sector in Figure 58. We observe that the mapping of the relationship between the sector's share of GDP and per capita income exhibits an upward sloping trend best captured by a quadratic function with Goodness-of-fit of 0.62 indicating that the country could still be at the initial stage of structural transformation where the Agricultural sector has preeminence of the other two sectors.

The sector's highest contribution to the country's wealth stood at 65.46% (1971) with per capita income of US$ 487.74. Let's move to the industrial sector in Figure 59. Here, we observe that the mapping of the relationship between the sector's share of GDP and per capita income depicts a downward sloping trend best fitted with a quadratic function. The Goodness-of-fit of the quadratic function is quite low at 0.31. The sector's highest contribution to the country's wealth stood at 22.94% (1980) with per capita income of US$ 406.89. Let's now consider the service sector in Figure 60. Here, we also observe that the mapping of the relationship between the sector's share of GDP and per capita income depicts a downward sloping trend best captured by a quadratic function with Goodness-of-fit of 0.63. It is important to note that on average, the Agricultural sector's contribution to the country's wealth is about 2.6 times that of the industrial sector but almost as important as the service sector.





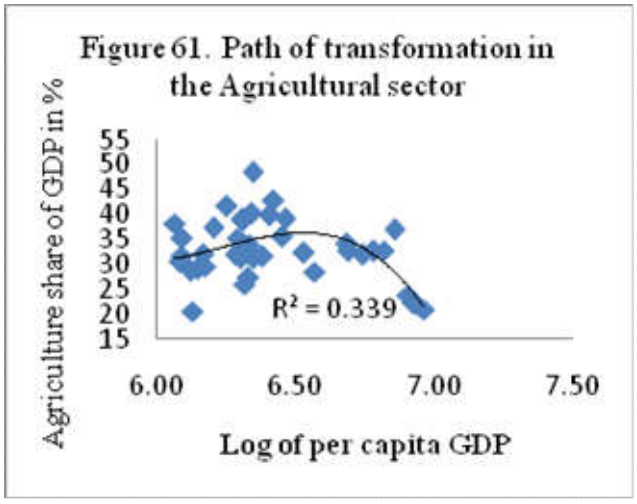


Nigeria

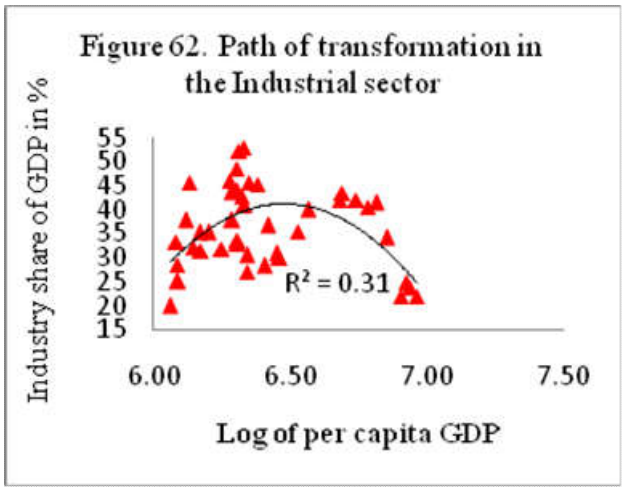
Nigeria is not only the most populous country of Africa, it is an oil rich country and it is ranked 20th economy of the world by the IMF.

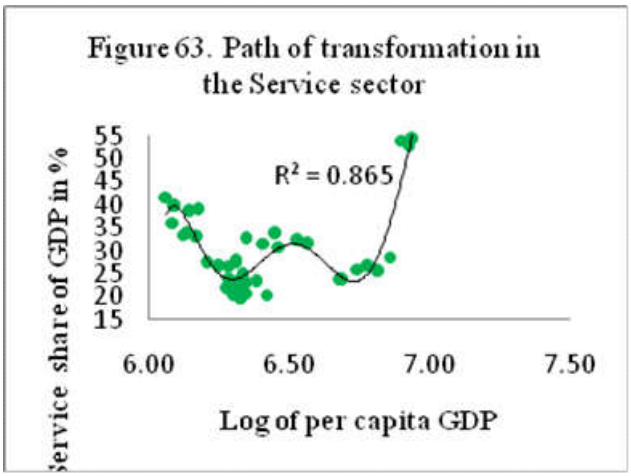
By the same ranking, Nigeria is the 1st economic power of Africa. Let's look at the path of transformation of this country over the period of analysis. We first look at the transformation path of Agriculture (Figure 61). The mapping of the relationship between the sector's share of GDP and per capita income exhibits a downward sloping trend best fitted with polynomial function of order 3 with Goodness-o-fit of 0.34. This downward sloping trend, although it indicates a reduction in the preeminence of the sector in the country's wealth as the country gets richer, it is not as sharp as that of the developed and emerging economies. The highest contribution of the sector to the country's wealth stood at 48.57% (2002) with per capita income of US$ 568.97. Next, let's look at the industrial sector (Figure 62).

The mapping of the relationship between the sector's share of GDP and per capita income depicts a downward sloping trend best captured by a quadratic function with a low Goodness-of-fit of 0.31. The highest contribution of the sector to the country's wealth stood at 53% (1992) with per capita income of US$ 559.82. Let's now look at the service sector in Figure 63.The mapping of the relationship between the sector's share of GDP and per capita income does not exhibit a clear trend. Indeed, it started with a downward sloping trend with increasing per capita income before registering an upward sloping trend starting from per capita income of US$ 911. Efforts to fit a polynomial function yielded a 6th order polynomial function with goodness-of-fit of 0.86. The highest contribution of the sector to the country's wealth stood at 57.01 (2013) with per capita income of US$ 1,055.84. It is important to note that the country did not quite follow the path of the developed and emerging economies. Indeed, while for the developed and emerging economies we have a sharp decline of the Agricultural sector's contribution to wealth which is also captured by a polynomial function with a quite high goodness-of-fit around 0.90, in the case of Nigeria the Goodness-of-fit could barely reach 0.35. Moreover, in Nigeria the contribution of the different sectors to the country's wealth is almost similar. Indeed, we have on average over the period of analysis, 32.82% for Agriculture, 36.14 % for the Industrial sector and 31.01% for the service sector.



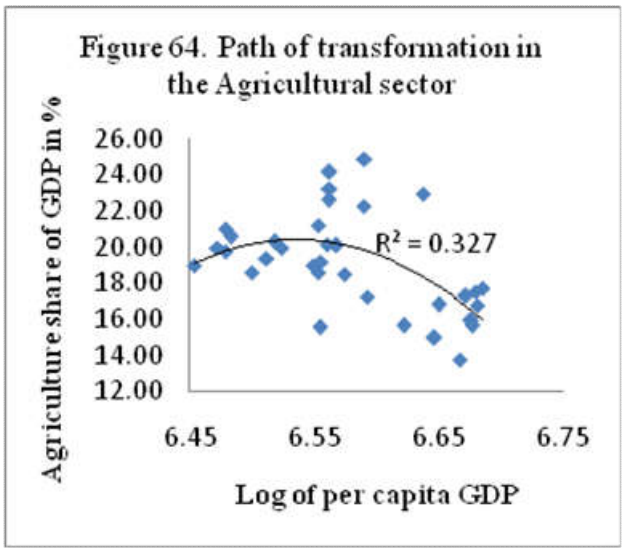
Over the same period in a country like Malaysia which is ranked 28th, hence behind Nigeria, not only we observe a sharp decline of the Agricultural sector to the country's wealth but on average it is around 16.82 % whereas the other two sectors Industry and Service contribute 40 and 43 % respectively indicating the strategic option taken by the country for a true structural transformation.





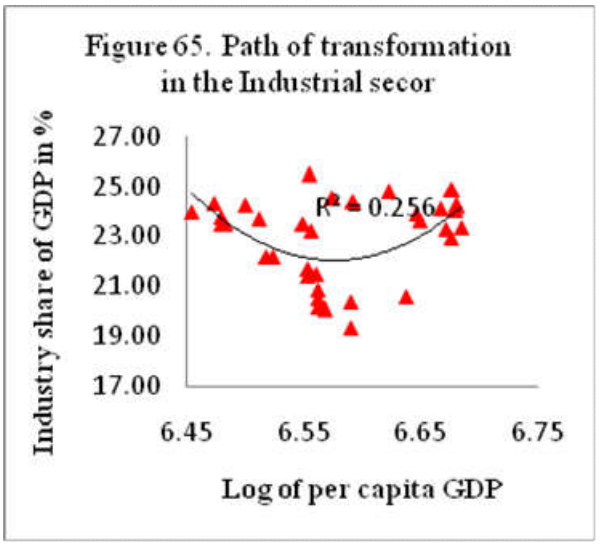
Senegal

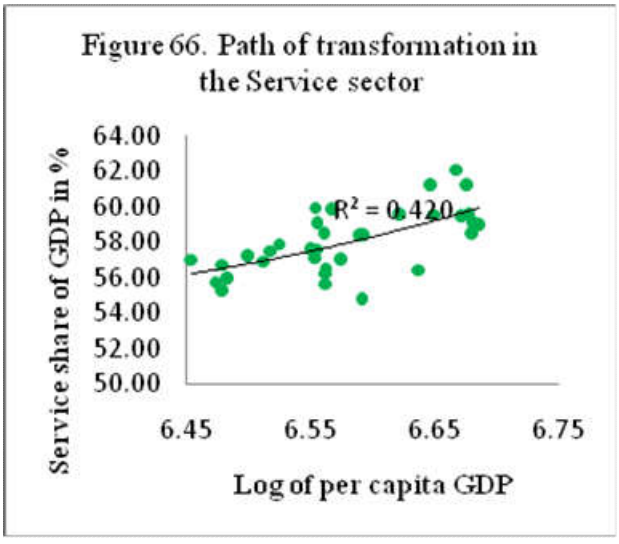
Senegal is the most stable country in the ECOWAS community. Indeed, it has never been confronted with a military coup. The country is ranked 114th by the IMF. Let's look at the country's transformation path over the period of analysis. We start with Agriculture (Figure 64).



The mapping of the relationship between the sector's share of GDP and per capita income depicts a slightly downward

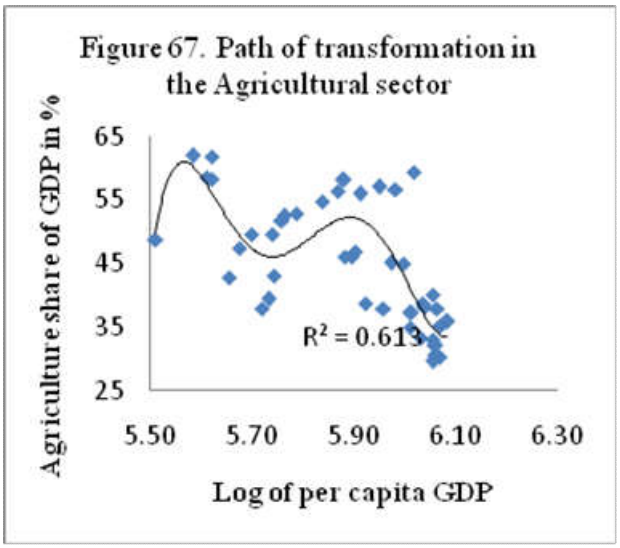
sloping trend best captured by quadratic function with Goodness-of-fit of 0.33. The sector's highest contribution to the country's wealth stood at 24.87% (1987) with per capita income of US$ 728.15. Let's turn to the industrial sector in Figure 65.We observe that the mapping of the relationship between the sector's share of GDP and per capita income depicts an unclear trend. Efforts to fit a polynomial function yielded a quadratic type function with Goodness-of-fit of 0.26. The sector's highest contribution stood at 25.47% (2002) with per capita income of US$ 702.46. Let's now move to the service sector in Figure 66. The mapping of the relationship between the sector's share of GDP and per capita income depicts an upward sloping trend best captured by a quadratic polynomial function with Goodness-of-fit of 0.42. The highest contribution of the sector to the country's wealth stood at 59.94% (1983) with per capita income of US$ 701.47. The sector has preeminence over the other two sectors. Indeed, it is important to note that the service sector's contribution to the country's wealth is on average 3 times that of Agriculture and 2.5 times that of the Industry. The country relies therefore heavily on services.

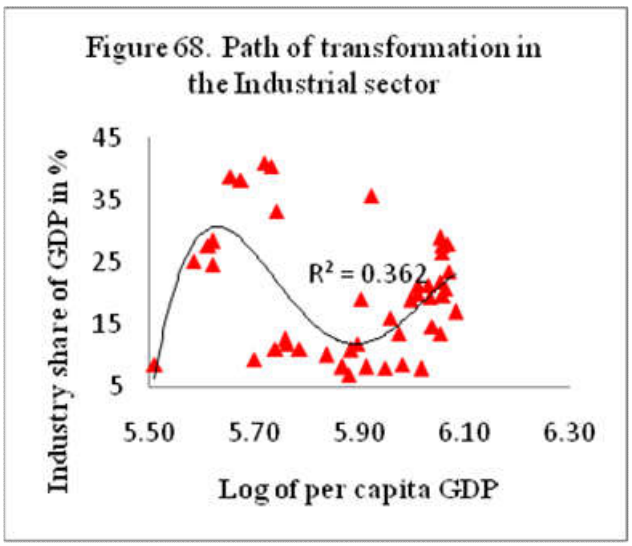




Sierra Leone

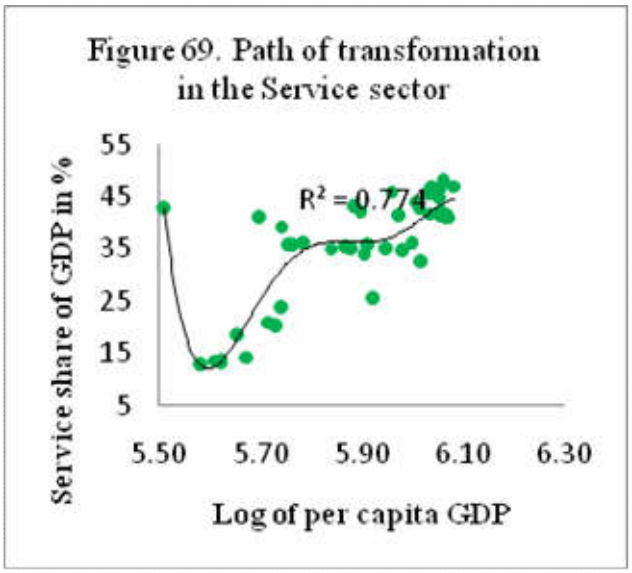
Sierra Leone is one of the ECOWAS countries that went through severe political instability. Concerted efforts of the international community led by the ECOWAS Commission brought back peace and stability. The country is now ranked 148th economy of the world by the IMF. The country aspires to better the livelihood of its citizen by transforming its economy. Let's analyze the transformation path followed by the country over the period of interest (1970-2013). Let's start with the Agricultural sector (Figure 67). The mapping of the relationship between the sector's share of GDP and per capita income depicts a downward sloping trend best captured by a 6th order polynomial function with Goodness-of-fit of 0.62. The highest contribution of the sector to the country's wealth stood at 61.97% (1999) with per capita income of US$ 265.94. This trend indicates that in Sierra Leone the importance of Agriculture to the country wealth is decreasing as the country get richer. Let's now look at the industrial sector in Figure 68. Here, we observe that the mapping of the relationship between the sector's share of GDP and per capita income exhibits an unclear trend.





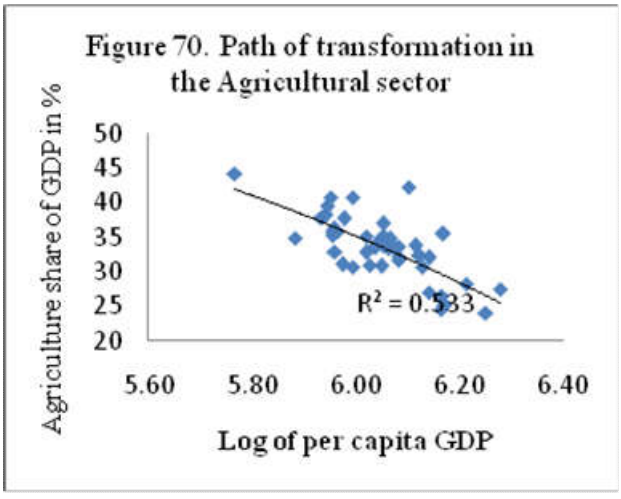
Efforts to fit a function yielded a polynomial function of order 4 with Goodness-of-fit of 0.36. The sector's highest contribution to the country's wealth stood at 41.02% (1992) with per capita income of US$ 304.25. We then turn to the service sector in Figure 69. Here, we observe that the mapping of the relationship between the sector's share of GDP and per capita income exhibits an upward sloping trend best captured by a polynomial function of order 5 with a Goodness-of-fit of 0.77. The sector's highest contribution stood at 48.01% (1981) with per capita income of US$ 428.08. It results from the

above analysis of the transformation path of Sierra Leone that Agriculture is still preeminent in terms of contribution to the country's wealth. Indeed, the sector's contribution is to the country's wealth is 2.2 times that of the industrial sector and about 1.3 times that of the service sector. This transformation path differs from that of the developed and emerging economies over the period of analysis.

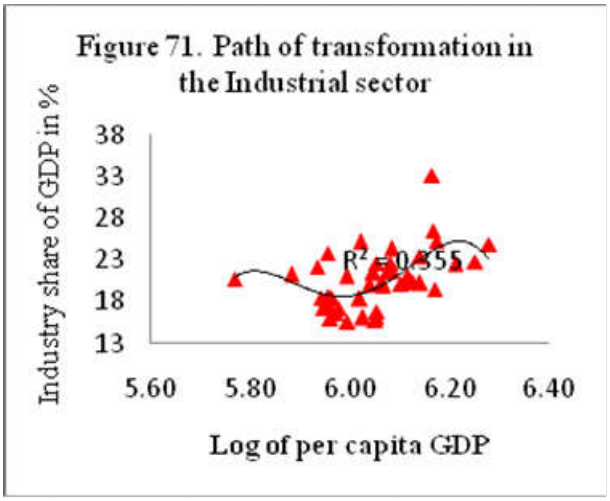


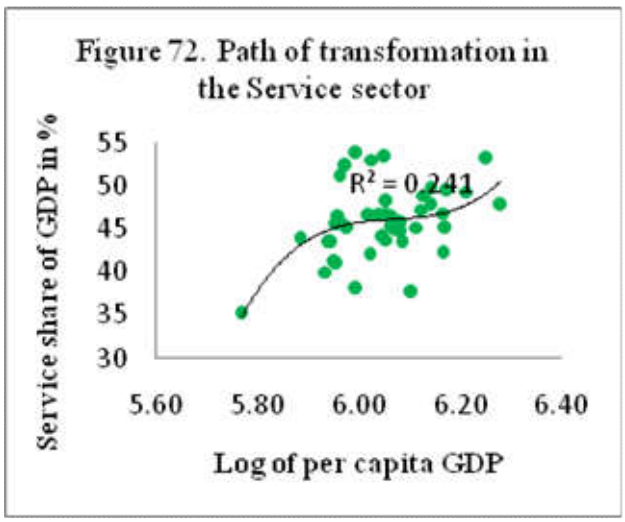
Togo

Togo is the 149th economy of the world by the IMF ranking. The country aspires to transform its economy to better the livelihood of its citizens. What transformation path did the country follow? Let's consider the various sectors of the economy starting with Agriculture in Figure 70. The mapping of the relationship between the sector's share of GDP and per capita income exhibits a downward sloping trend best captured by a quadratic function with Goodness-of-fit of 0.53. The sector's highest contribution to the country's wealth stood at 44.14 (1993) with per capita income of US$ 319.66. This trend is similar to that of the developed as well as emerging economies although the Goodness-of-fit in the case of Togo is lower. The trend also indicates that as the country gets richer, the contribution of Agriculture to the country's wealth decreases.



The industrial sector (Figure 71) shows a slightly upward sloping trend best captured by a polynomial function of order 4 with Goodness-of-fit of 0.35. The sector's highest contribution to the country's wealth stood at 33.14% (1974) with per capita income of US$ 475.71. The service sector in Figure 72 depicts a relationship between the sector's share of GDP and per capita income that is upward sloping best captured with third order polynomial function with Goodness-of-fit of 0.24. The sector's highest contribution to the country's wealth stood at 53.70% (2011) with per capita income of US$ 401.45. On average, the sector's contribution to the country's wealth is 1.4 times that of the Agricultural sector and about 2.2 times that of the industrial sector. Globally speaking, the country tries timidly to mimic the path followed by emerging economies unfortunately the country's efforts are yet to produce the desired outcome.





Concluding remarks and recommendations

The objective of this paper was to contribute to the understanding of the transformation path followed by ECOWAS member states in their struggle to better the life of their citizens. Literature suggests that transformation especially structural transformation takes place in phases. At the initial phase it is the agricultural sector that contributes the most to country's wealth. As productivity increases in the Agricultural sector, some production factors are reallocated to the industrial sector where their contributions become more appealing. In so doing, the contribution of Agriculture to the country's wealth decreases whereas that of the industrial sector increases, that is phase two of the structural transformation. In

phase two, the country industrializes and produces goods with high technological content. As the country produces more and more finite products, the need for an effective and efficient distribution and marketing mechanisms arise. The country therefore reallocates some resources to the service sector to cater for that need. This is the third phase of structural transformation. In the course of this process, the contribution of the industrial sector declines to the benefit of the service sector.

The process described above is the one followed by the selected developed countries (France, United Kingdom and Japan). All three countries exhibit similar path of transformation. We then, considered some emerging economies i.e. three countries from the BRICS (Brazil, China and India) and three countries from the non-BRICS (Indonesia, Korea and Malaysia). The pattern of transformation varies from one group to the other. Indeed, all the selected emerging economies followed the same path in the agricultural sector i.e. declining contribution of the sector as the country gets richer (increased per capita income). However, the path in the industrial sector is quite different. For the non-BRICS countries the transformation path is not ambiguous. Indeed, these countries are industrializing. The sector's contribution to wealth is on the rise. A similar path is observed for the service sector. The BRICS countries did not show a clear picture of the industrial sector's path of transformation. Unlike this sector, the service sector's path is upward sloping indicating an increased contribution to the country's wealth. The analysis of the ECOWAS member states showed that only few countries are trying to mimic the path of transformation followed by the emerging economies, especially that of the non-BRICS countries. These are Ghana and Liberia. The remaining countries do not exhibit a clear transformation path over the period of analysis. This is worrisome since most of these countries ambition to rise to emerging economy status by the year 2020. Thus, unless a serious course of action is taken to ignite the process of structural transformation, these countries ambitions will remain wishful thinking.

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