Structural Transformation and Productivity Growth in Morocco

Abdelghani Bensaïd
Ph.D. student, Faculty of Law, Economic and Social Sciences Agdal
Mohamed V Rabat University
Rabat, Morocco
bensabdel@gmail.com

Taoufiq Yahyaoui
Professor, Faculty of Law, Economic and Social Sciences Agdal
Mohamed V Rabat University
Rabat, Morocco
yahyaoui.taoufiqvdp@gmail.com

Outmane Soussi Noufail
Professor, Faculty of Law, Economic and Social Sciences Salé
Mohamed V Rabat University
Rabat, Morocco
soussioutmane@gmail.com

Abstract

This paper presents an analysis of structural transformation in Morocco and its contribution to productivity growth over the period 1990 to 2018 and highlights two major findings. The first is that there has been an increase in agricultural productivity that has been accompanied by a reallocation of labor to the service sector, particularly trade services. This situation reflects sectoral mobility between activities with low requirements in terms of specific skills, or what is called a structural transformation without industrialization. Moreover, it turns out that the main driver of labor productivity gains is intra-sectoral dynamics; indeed, the contribution of structural change to productivity growth accounts for only about a quarter of these productivity gains.

Keywords
Employment, Morocco, productivity, structural change

1. Introduction

Productivity growth involves two distinct but closely related processes: the first is structural transformation (or structural change), which results in an increasing share of the workforce being employed in higher-productivity sectors, while the second is intra-sectoral productivity growth, which is the result of several factors, including the impact of technical progress on human capital skills, on the production process and the mode of organization. The two processes are linked insofar as productivity gains allow for transfers of labor and capital between sectors of activity, McMillan & Rodrik (2011).

At the national level, despite significant progress in terms of macroeconomic stability and diversification of growth sources, which have resulted in less volatile growth levels than in the past, the pace of sustainable and productive job creation remains low and significantly correlated with the performance of the agricultural sector.

1.1 Objectives

Taking this into account, the objective of this paper is to analyze the structural transformation in Morocco over the period 1990 to 2018, by studying the sectoral reallocation of jobs across sectors of the economy and the contribution of this reallocation to labor productivity growth.
To do so, we adopt Rodrik & Macmilan's (2011) methodology for decomposing labor productivity growth into intra- and inter-sectoral components.

Thus, the paper is organized as follows, the first section reviews the existing literature on structural change, while the second section analyzes the evolution of productivity in Morocco over the period 1990 to 2018. The third section presents a decomposition of productivity in Morocco to identify the sectoral dynamics of structural change in Morocco, before presenting the main conclusions.

2. Literature Review

In the 1960s and 1970s, Arthur Lewis' (1954) model, also known as the "two-sector model" or the "surplus labor" model, gained popularity in development theory. This model emphasizes the need for countries to transform their productive structures from an archaic, low labor productivity sector dominated by agriculture and the informal economy to a modern, higher labor productivity sector, which is the industrial sector with an unlimited supply of labor. Kuznets (1973) explained the reallocation process by the combination of two factors, the first is the non-homothetic preference of consumption demand, in other words, goods are imperfectly substitutable when income increases, precisely the income elasticity, while the second is related to the degree of technological absorption by sector, which translates into a change in relative prices, these two factors are still mentioned in the recent theoretical literature on the subject.

For Rodrik (2008), structural change is the process that allows the production of new goods based on new technologies and the transfer of resources from traditional activities to new ones. Poor countries remain poor because markets do not work as well as they could to foster the necessary structural transformation.

According to Rodrik, the primary sector is the first to benefit from the more intensive use of capital and the emergence of new technologies, which allows it to increase its productivity and free up a large supply of labor for the industrial sector. As the secondary sector develops it, in turn, releases excess labor supply to the tertiary sector. Recently, the focus is on other channels, such as technological change, factor accumulation, as well as international trade.

Mc Millan & Rodrik (2011), estimate that as labor and other resources shift from agriculture to modern economic activities, overall productivity increases and incomes rise. The speed with which this structural transformation occurs is the key factor that differentiates successful from unsuccessful countries.

Studying structural change in the United Kingdom (in the 19th century) and South Korea (over the past 50 years), Teignier (2017) focused on the considerable advantage that low-income countries can gain by adopting a strategy of producing manufactured goods in exchange for agricultural products, leading to less preponderant agriculture, faster growth, and higher welfare. He also showed that international trade would have played a much larger role in South Korea had the country not introduced policies to protect its agricultural sector, estimating that without protectionist policies, Korean agriculture would have been 50 percent less important.

3. Labor productivity in Morocco: a slow evolution

Productivity in Morocco Figure 1 has been marked by an average growth rate of 2.6% over the period 1990 to 2018. However, the analysis highlights three different sub-periods, the first of which concerns the 1990s, which saw a rollercoaster growth, with an average of almost zero (0.1%), before the latter resumed an upward trend with an average of 3.3% over the period before the crisis of 2000-2007. This trend was further strengthened during the period 2008 to 2017 when it reached a rate of 4.4%.

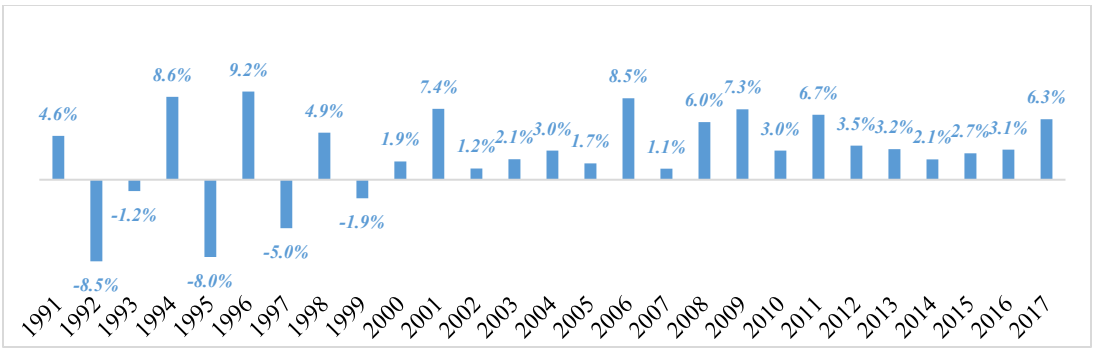
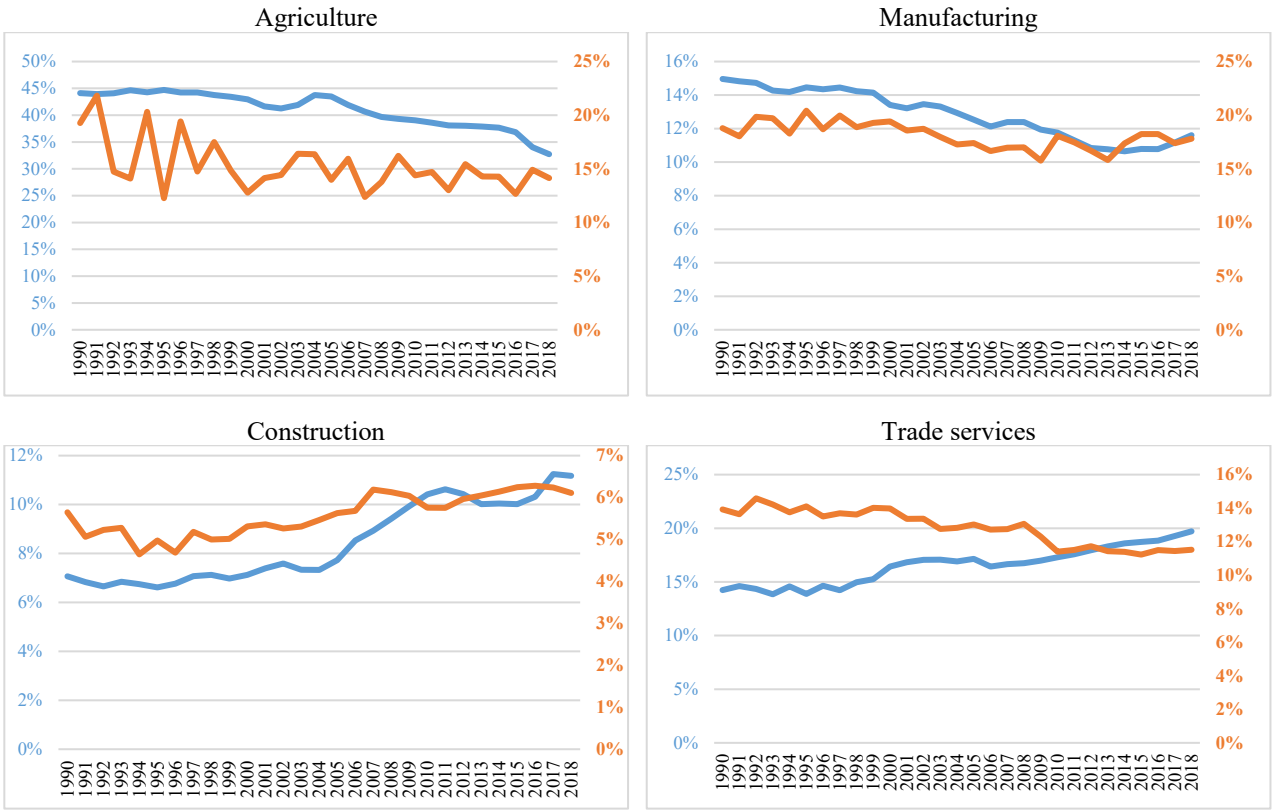


Figure 1: Annual growth rate of labor productivity in Morocco

The evolution of the share of employment and value-added by sector of activity provides a more detailed picture of the economic transformation of an economy over a more or less long period. Indeed, the evolution of these two aggregates confirms the tertiarization process of the Moroccan economy, characterized by a decrease in the share of agriculture in total employment to the benefit of tertiary activities, while the weight of industry remains more or less constant.

Thus, Figure 2 presents the sectoral composition of employment and value-added for the period 1990-2018. The main point that emerges is that the agricultural sector has experienced the most significant decline in the shares of employment from 44% to 33% and to a lesser extent that of value-added, which fell from 19% to 14% over the period 1990-2018. The loss of the share of agricultural employment has benefited the tertiary sectors, including trade services (+5.5 points to 20%) and transport services (2.4 points to 5%), and the construction (+4.1 points to 11%). The decline in the share of employment has also affected manufacturing, from 15% to 12% against a slight decline in the share of value-added during the period 1990 to 2018.



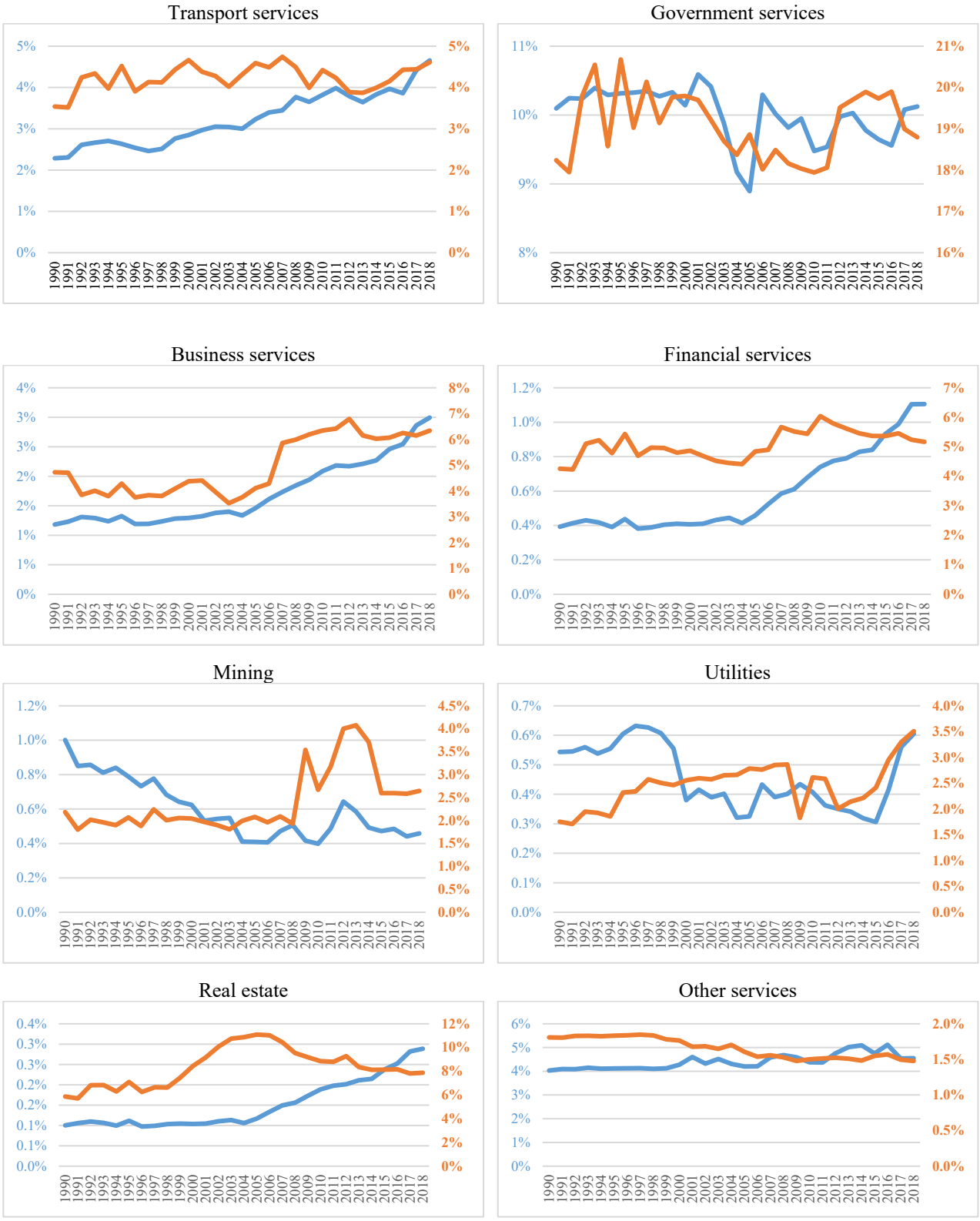


Figure 2: Evolution of the sectoral share in total value-added **(orange)** and total employment **(blue)**

The previous figure indicates that a reallocation of labor has taken place between the agricultural sector and the service sector, particularly in trade services. This situation highlights sectoral mobility between sectors of activity with low requirements in terms of specific qualifications, contrary to the expected structural transformation of the economy. It is therefore a structural transformation without industrialization, in other words, a premature tertiarization of the Moroccan economy in which the industrial sector does not play the role of bridge between the primary and tertiary sectors.

4. Methods

To assess the structural transformation in Morocco, we use the labor productivity growth decomposition equation proposed by McMillan & Rodrick (2011) to calculate the intra- and inter-sector components:

$$P_t = \sum_{i=1}^{n} \theta_{i,t}\, p_{i,t}$$

Where, in year t, Pt is total labor productivity, $\theta_{i,t}$ is the share of total labor employed in sector i, and pi is labor productivity in sector i. Then, the change in total labor productivity between t and $t-k$ (ΔPt) can be written as:

$$\Delta P_t = \sum_{i=1}^{n} \theta_{i,t-k}\, \Delta p_{i,t} \; + \sum_{i=1}^{n} p_{i,t}\, \Delta\theta_{i,t}$$

The operator Δ indicates the change in productivity or employment share between $t-k$ and t. The first term in the decomposition, called the "within-sector" component of productivity growth, is the weighted sum of the change in productivity by sector, with the weights being the share of employment in each sector at the beginning of the period. The second term, called "structural change," captures the effect of reallocations of labor between different sectors on productivity.

5. Data Collection

The data source used is the "Economic Transformation Database, UNU-WIDER / GGDC" of the University of Groningen (Netherlands), which includes annual data on gross value added at current and constant prices, on employment, at the level of 51 countries in Africa, Asia, and Latin America, including Morocco for the period 1990-2018, which allows the calculation of labor productivity trends in Morocco.

6. Results and Discussion

6.1 Decomposition of Productivity in Morocco: the dominance of the intra-sectoral component

During the period 1990 to 2018, the Moroccan economy recorded a productivity growth of 2.6% per year, of which almost three quarters was generated by the "intra-sectoral" component, i.e., by capital accumulation and technological upgrading, while the remaining quarter was due to the reallocation of labor to higher productivity sectors.

Figure 3 shows the evolution of intra- and inter-sectoral contributions to productivity growth:
During the 1990s, productivity experienced almost zero average annual growth (0.1%), due to a contribution of structural change of -0.01% and the internal component of 0.04%. It is recalled that during this period, the Moroccan economy was oriented towards greater openness through the development of the private sector and the launch of the privatization program, the substantial reduction of tariff and trade barriers with the ratification of the EU agreements in 1996, in parallel with the flow of foreign investment, which was limited to activities with low skilled labor intensity and low technological content.

- The period 2000-2007 saw a sustained rate of productivity growth of 3.3%. This new level of growth was achieved more through intra-sectoral productivity dynamics (2.8%) than inter-sectoral dynamics (0.5%). This dynamic was the result of dedicated sectoral policies and strategies: the emergence plan, the AZUR plan, basic infrastructure projects (roads, highways, ports, etc.), liberalization of the transport and telecommunications sectors, etc.
- The period 2008 to 2018 was characterized by a consolidation of the upward trend in labor productivity, which reached an annual average of 4.4%. This new level of growth was achieved more thanks to the intra-

sectoral dynamics of productivity (3.2%) than the inter-sectoral dynamics (1.2%). This performance could be attributed to the conduct of a counter-cyclical macroeconomic policy, supporting domestic demand and helping to mitigate the effects of the financial crisis, and to the emergence of new high-growth and technology-intensive businesses, such as the automotive industry, whose share of exports doubled between 2007 and 2017, rising from 12% to 24%.

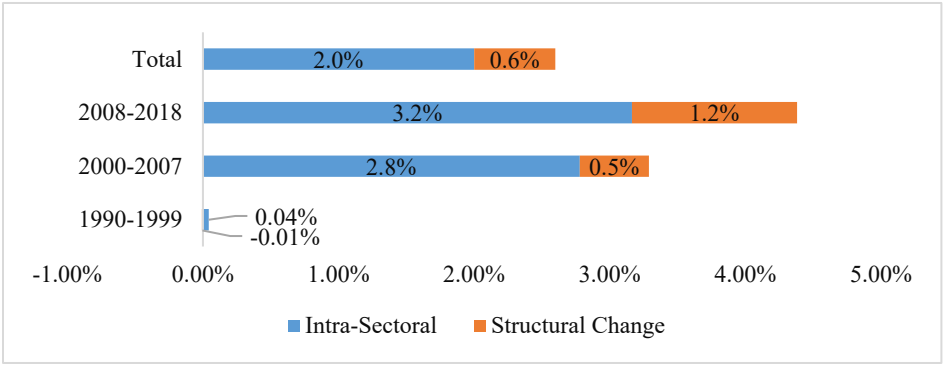
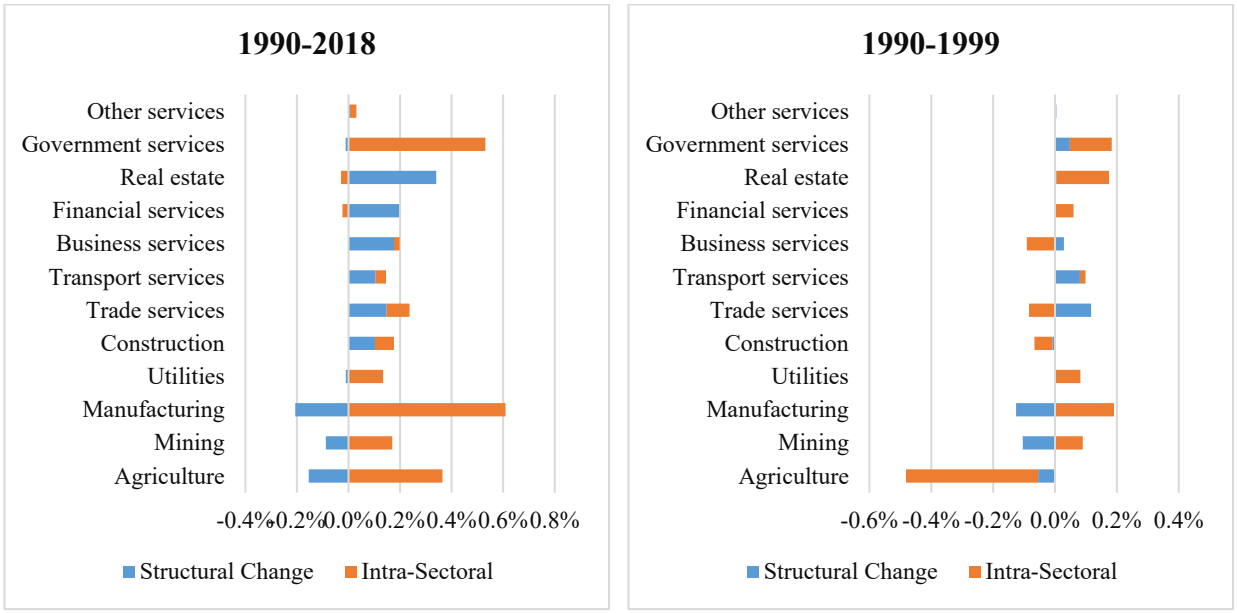


Figure 3: Decomposition of labor productivity in Morocco

In summary, Morocco's productivity dynamics were explained much more by productivity increases within sectors and not by the reallocation of labor to more productive sectors (structural change). The slowness of this structural change in the Moroccan economy could be explained by several factors, including the weight of agriculture, whose performance is still dependent on rainfall. This impacts economic growth both through agricultural production and employment, given that the primary sector remains an important provider of employment for 34.4% of the employed population in 2018 (compared to 46.2% in 1999) and therefore represents an important driver of domestic demand.

6.2 Sectoral contribution to labor productivity

Sectoral analysis of the behavior of the two terms in equation 1 (components, structural and intra-sectoral) for the period 1990-2018, allows us to identify differences across sectors.



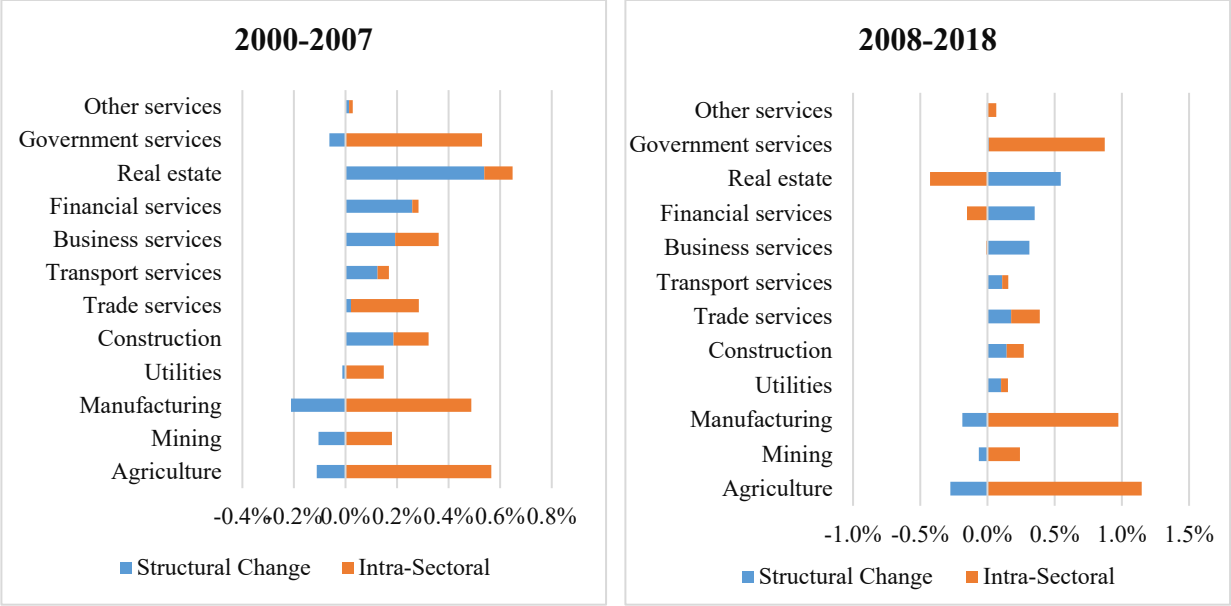


Figure 4: Breakdown of productivity growth into intra- and inter-sectoral components by sector (annual growth in %)

Thus, Figure 4 shows that the sectors contributing most to total productivity growth are government services (0.5 points) and manufacturing (0.4 points) over the entire 1990-2018 period. These sectors made the largest contribution to productivity growth through the intra-sectoral component (0.5 and 0.6 points, respectively), compared with a negative contribution from the structural component for government services (-0.2 points) and none for manufacturing industries.

Figure 4 also shows that unlike manufacturing, mining and agriculture, where structural change was negative in all three sub-periods, tertiary activities showed a positive contribution of structural change to overall productivity.
In addition, agriculture shows a contribution to total productivity of 0.2 points over the period 1990-2018, reflecting a negative contribution to intersectoral productivity gains (-0.2 points on average per year over the period 1990-2018), thus expressing a reallocation of agricultural labor to other sectors of activity, particularly from the year 2000 onwards. This reallocation of labor was combined with a strengthening of intra-sectoral productivity gains (0.4 points over the entire 1990-2018 period, compared to -0.4 points in 1990-1999, 0.6 points in 2000-2007, and 1.1 points in 2008-2018). Thus, it can be concluded that these intra-sectoral productivity gains, due to capital accumulation and technological upgrading in this sector, particularly with the implementation of the Green Morocco Plan, have been offset by losses in structural change.

For their part, manufacturing industries show a positive contribution to the intra-sectoral component (0.6 points) and negative (-0.2 points) for the structural component, or 0.4 in total. It should be noted that this sector has consolidated its intra-sectoral contribution, rising from 0.2 to 0.5 and then to 1 point respectively during the three sub-periods 1990-1990, 2000-2007, and 2008-2018, against the stagnation of the structural component between -0.1 and -0.2 point over the same period.

On the other hand, the construction sector recorded an average annual contribution of 0.2 points despite a period of declining productivity in the 1990s. The sector subsequently benefited from a reallocation of labor from other sectors to the same degree as an improvement in intra-sectoral productivity, particularly during the period 2000-2007. The performance of the construction sector can be attributed to the dynamics of the sector in the 2000s, with the launch of major construction and infrastructure projects (roads, ports, industrial zones, etc.), as well as programs to build new towns and combat substandard housing.

Tertiary activities represent the main contributor to total productivity and structural change, and their contribution to overall productivity was 1.7 points over the period 1990-2018, including 1 point as intersectoral gains. Thus, the

productivity dynamics within this sector benefited more from the reallocation of labor from other sectors than from intra-sectoral productivity growth.

7. Conclusion

The Moroccan economy has experienced a productivity gain of nearly 2.6 percentage points, as an annual average over the period 1990-2018, of which a large part is attributable to the internal component (capital accumulation and technological change), whereas structural change has contributed little to overall labor productivity growth. Thus, the Moroccan economy could have achieved a much higher rate of productivity growth if the structural change had been given greater weight.

Thus, accelerating the process of structural change in the Moroccan economy requires catching up on the delay in integrating into the formal sector the labor force absorbed by the informal sector, which still plays an important role in the Moroccan labor market. Indeed, according to the National Survey on the Informal Sector conducted by the High Commission for Planning (HCP) between 2013 and 2014, the informal sector employs 2.4 million people representing 36.3% of non-agricultural employment at the national level and contributes 11.5% to the national GDP. In addition, improving the competitiveness of industrial companies is a guarantee of success to establish a powerful industrial base developing the exportable offer, and being able to meet local demand, relying more on industrial ecosystems and activities that focus on the digital.

References

Ait Ali. A and Msadfa. Y, La transformation structurelle au Maroc et Chaînes de Valeurs Mondiales : Une vulgarisation du débat. *Policy Center for the New South*, PP-19/03. 2019.

FEMISE, Structural Transformation and Industrial Policy: A Comparative Analysis of Egypt, Morocco, Tunisia and Turkey, and Case Studies. 2012.

Gbemenou.S.B, Aloui.O and Doukkali.M.R, Ouverture commerciale, transformation structurelle et croissance de la productivité : Le cas du Maroc, *Critique économique* n° 38-39. 2019.

HCP, Etude sur le Rendement du Capital Physique au Maroc. 2016.

Kuznets.S.. Modern economic growth: Findings and reflections. *American Economic Review*, 63(3):247–58. 1973.

Lectard.P., Chaînes de valeur et Transformation structurelle soutenable. *Working Paper* N° 292, Banque africaine de développement, Abidjan, Côte d'Ivoire. 2017.

Lewis.W.A, Economic Development with Unlimited Supplies of Labour, *The Manchester School*, May, 1954.

Marouani.M.A and Mouelhi.R, Contribution of Structural Change to Productivity Growth: Evidence from Tunisia. *Working Paper UMR DIAL*. 2015.

McMillan.M.S and Rodrik.D, Globalization, Structural Change and Productivity Growth. *NBER Working Paper* No. 17143 Juin 2011 JEL No. O1. 2011.

OCDE, Examen multidimensionnel du Maroc : Volume 2. Analyse approfondie et recommandations. Les voies de développement, *Éditions OCDE*, Paris. 2018.

Rodrik.D, The real exchange rate and economic growth, *Brookings Papers on Economic Activity*, pp. 365–412. 2008.

Stöllinger.R (2016), Structural change and global value chains in the EU', *Empirica*, Vol. 43, No. 4, 2016, pp. 801–829. 2016.

Teignier.M, The role of trade in structural transformation, *Journal of Development Economics*, Journal of Development Economics Vol 130, P 45-65. 2017.

Uy.T, Kei-Mu.Y et Zhang.J, Structural Change in an Open Economy, *Federal Reserve Bank of Minneapolis*, Research Department Staff Report 456. 2013.

Biography

Taoufiq Yahyaoui is professor of economics at the Faculty of Law *Agdal-Rabat* (Morocco) and Head of the Master's "Economics of Territories" at the same Faculty

Soussi Outmane Noufail is professor of econometrics and data analysis at the Faculty of Law *Salé* (Morocco)

Abdelghani Bensaïd is Ph. D student at the Faculty of Law *Agdal-Rabat* (Morocco). He works on issues of global value chains