

Original Paper

Industrial Policy and Promising Niches in Morocco.

A Quantitative Analysis

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Abstract

Since 2000, Morocco has launched important institutional and economic reforms based on strategies to correct market failures in important sectors of the economy. These strategies have included tax exemptions and other financial incentives, facilitating access to land and simplifying administrative procedures, and launching major public infrastructure projects, all of which have combined to create a new investment dynamic in strategic sectors such as agriculture, industry, and energy.

These efforts have affected many sectors: the Azur Vision 2020 plan for tourism, the Green Morocco Plan for agriculture, the Halieutis 2020 Plan for fishing, Maroc Plus Export for export, the Emergence Plan (2005) for industry followed by the National Pact for Industrial Emergence, 2009-2015 and the new Industrial Acceleration Plan, 2014-2020.

For example, to support the new Industrial Acceleration Plan, the government has provided a grant, a financial support of about 2% of GDP over 6 years. The government has also offered ad hoc support to attract foreign investors in large private projects likely to generate significant positive externalities. One example is the project to set up a Renault Company plant in Tangiers, which aims to produce and export 400,000 cars per year (World Bank, 2017).

This note highlights the industrial sectors that can offer the best potential for growth, attract private investors and contribute to the creation of decent jobs. It will also identify ways to accelerate investment in Morocco. These industrial investments may include purely private investments or those made with the support of international financial institutions. The note analyzes investment and sectoral integration opportunities using the input model (outputs and employment elasticity indicators), the evaluation of the industrial acceleration plan, and sets out the measures taken by the CVE to promote VSEs. Only one classic sector is selected is highlighted for their investment potential and their

commitment to reform in the sectors. It is the food industry.

The note follows the diagram below:

- 1) An introduction to the economic, political and social frameworks, including key indicators*
- 2) A sector analysis to identify one to three sectors that are likely to be the subject of accelerated investment and in which reforms will have a particularly high chance of improving the business and investment climate and having an impact on development.*
- 3) A mapping of the most relevant initiatives, technical assistance, grants and loans, and investments by donors and other stakeholders, such as development finance institutions. In the selected sector(s).*
- 4) An analysis of the existing reform agenda in the respective sector(s) and the identification of areas where there is a high likelihood of effective cooperation to support the implementation of these reforms.*

Keywords

Development strategy, Industrial policy, Industrial investments, Agri-food industry

1. Introduction

1.1 Recent Economic, Social and Political Developments

During the 1990s, Morocco implemented a series of major institutional and economic reforms that made the country politically stable and helped it withstand the destabilizing effects of the Arab Spring. Political reforms led to the adoption of a new constitution in 2011, followed by initiatives to improve justice, public administration, fight corruption, and strengthen governance, transparency, and ethics in public life. The country is also committed to regionalization of public policies and decentralization of administration to ensure integrated and sustainable regional development. This reform dynamic has been further accentuated by the King of Morocco who, in his 2019 throne speech, stressed that “... the challenge is therefore to rebuild a strong and competitive economy, encouraging private initiative, while launching new productive investment plans and creating new job opportunities”.

Over the past two decades, Morocco has achieved relatively strong economic and social results thanks to significant public investment and structural reforms aimed at: (i) stabilize the macroeconomic framework by reducing internal and external vulnerabilities, including through the gradual removal of subsidies on energy products and certain foodstuffs; (ii) improve the public financial management framework through the adoption of a new organic finance law in 2015; and (iii) support the diversification and competitiveness of the national economy. Morocco has also strengthened its sectoral policies through sector development plans aimed at enhancing the potential for economic growth and job creation, including in high value-added manufacturing sectors such as automotive, aeronautics, and pharmaceuticals. The Moroccan economy has shown appreciable resilience in the face of an international context characterised by a succession of crises. The real GDP growth rate has improved from an annual average of 3.1% during the 1990s to an annual average of nearly 4.2% between 2007 and 2018, supported by the dynamism of the tertiary sector, which recorded an increase in its value added of 4.2%, contributing 2.1 points to GDP (Figure 1).

The secondary sector also showed a similar trend, with a 3.3 percent increase in its value added, contributing 0.9 points to economic growth, while the value added of the primary sector increased by 4.4 percent, contributing 0.6 points to GDP growth (DEPF, 2019).

However, job creation remains variable and fluctuating. Overall, the last two decades have been marked by rising employment in construction and the tertiary sector at the expense of other sectors, suggesting that the Moroccan economy is suffering from “Dutch disease” (World Bank, 1999).

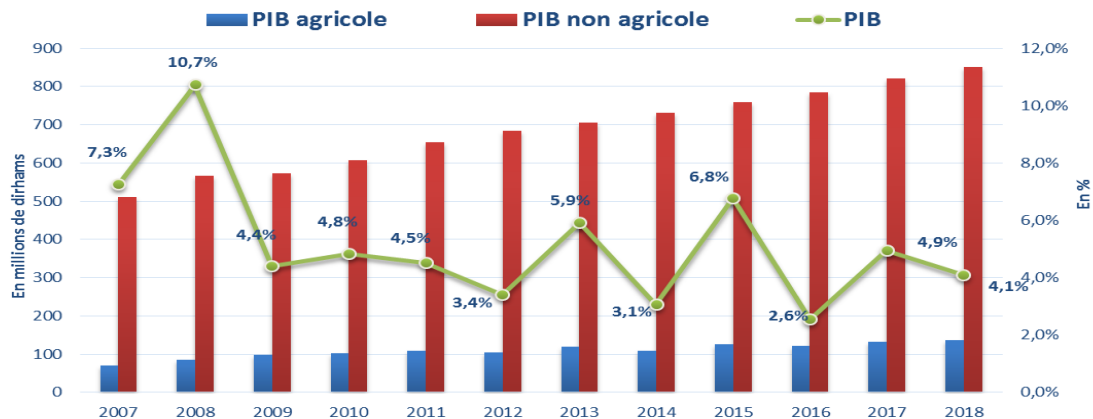


Figure 1. High Volatility of GDP and Its Components, 2007-2018

Source: Prepared by the author, HCP Data.

Essentially its public component, with a contribution of 1.2 points (general government budget and public enterprises).

The good performance of economic activity is also driven by strong domestic demand, in particular household consumption demand, which remains by far the main engine of growth between 2007 and 2018, contributing 2.4 percentage points to GDP, followed by gross fixed capital formation (GFCF), essentially its public component, with a contribution of 1.2 percentage points to GDP (general government budget and public enterprises). On the contrary, external demand moved in the opposite direction, as the contribution of net foreign trade was negative, withdrawing 0.3 points from GDP, despite a 6% increase in exports between 2007-2018. This situation reflects the strong propensity to import and the national economy's dependence on the outside, with a tripling of the value of imports since the beginning of 2007. Imports of equipment by the State have aggravated the budget deficit, which reached an average of 4 percent between 2007 and 2018. In other words, the “twin deficits” have increased but remained sustainable.

Over the last ten years, supply has not only grown moderately but has also been quite volatile, slowing down over the last three years and not being transformative enough. As a result, it has not been strong enough to generate enough jobs in the formal economy.

The current Covid-19 pandemic has triggered a brutal recession, the first since 1995. The economy is likely to suffer the double impact of internal and external economic shocks like other countries.

1.2 Limited Impact of the Investment on the Economic Activity

While domestic demand has been the main driver of economic growth for many years, the impact of the investment effort should not be ignored, even if it is limited. Total investment reached 33.5 percent of GDP in 2018, which is quite high compared with MENA countries with similar incomes. This is due to large public infrastructure projects (such as highways, airports, and the Tangier-Med port).

However, Morocco suffers from low investment efficiency for projects carried out by the government and public enterprises (HCP, 2016). As a result, it has not yet achieved significant productivity gains, and its impact on the Moroccan economy in terms of growth and employment is still weak.

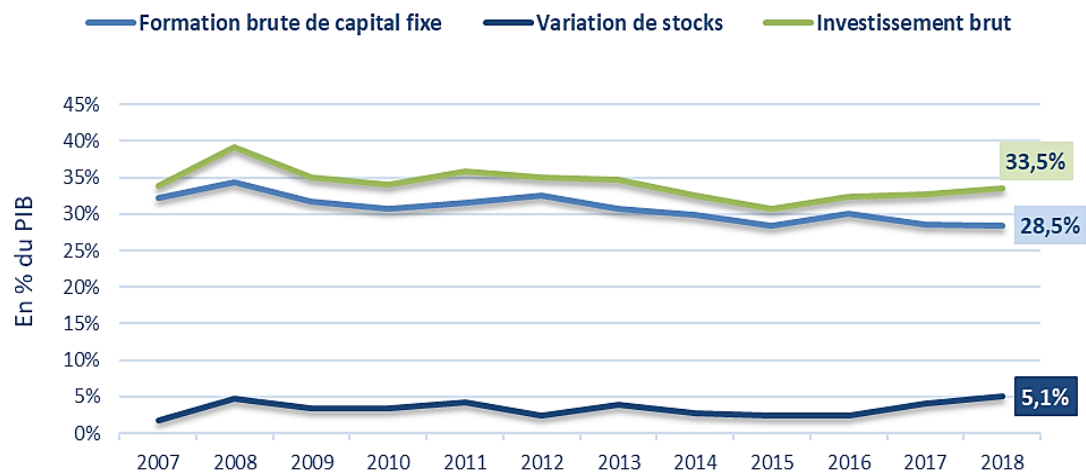


Figure 2. Stagnation of the Investment Rate 2007-2018

Source: Prepared by the author, HCP Data.

Job creation is concentrated in sectors where productivity gains are low. At the end of 2018, the Moroccan economy had generated about 7.1 million jobs outside agriculture. More than a quarter of this number (2.8 million) was created in just two sectors: construction and trade. Thus, the marginal capital-product ratio (MCR) is high compared with other countries such as Argentina, Chile, Malaysia, Poland, South Africa, Spain, and Turkey (HCP, 2016) with lower or comparable investment rates. Overall, the Moroccan economy is not achieving significant efficiency gains despite structural reforms. Morocco would significantly improve labor productivity if it improved marginal returns to capital.

There are two main reasons for Morocco's low investment efficiency: (i) crowding out investment concentration in infrastructure, in non-tradable goods and services sectors (sectors protected from competition), and in real estate at the expense of the productive sectors; and (ii) for investment directed toward the productive sectors, the weakness is due to a lack of competitiveness of labor input relative to Morocco's competitors (resulting from a relatively higher cost of living) and weak human capital (CESE, 2019).

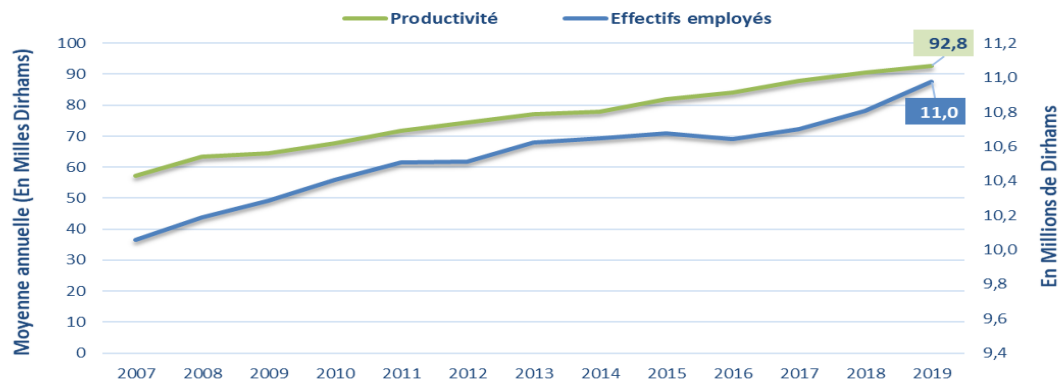


Figure 3. Trends in Labor Productivity and Employment 2007-2018

Source: Prepared by the author, HCP Data.

Human development Morocco recorded a significant reduction in poverty between 2007 and 2014. Poverty, as measured by the national poverty line, declined from 8.9 percent in 2007 to about 4.8 percent in 2014. Using the international extreme poverty line (US\$1.9 in PPP terms), poverty was virtually eradicated by 2014, reaching about 1 percent. Using the poverty line for lower-middle income countries (US\$3.2 in PPP terms), it fell below 8 percent. Overall, inequality has declined slightly, but not in all regions. The Gini coefficient declined slightly between 2007 and 2014, from 40.7 to 39.5.

In terms of perceptions, 39.3% of households believe that poverty has increased and 63.9% believe that inequality has increased. The perception of poverty is clearly high among poor and vulnerable households, but also among the middle class. 44% of middle class households perceive themselves as poor. This reflects a widespread sense of economic insecurity among middle class households, who see their incomes increasing more slowly than their expenditures, and who see a gap between what they pay in taxes and the services they receive.

In education, despite substantial investments over the last two decades, learning outcomes remain low and inequalities in educational attainment are still widespread. The country has about 1.1 million unemployed (about 10 percent of the working-age population). The unemployment rate for youth (15-24 years) is 19.9 percent; 21.7 percent for technical school graduates; and 24.6 percent for university graduates. In urban areas, the youth unemployment rate is nearly 40 percent.

In the field of health, Morocco is in demographic and epidemiological transition, and faces a double burden of disease, with both an increase in communicable diseases and an increased share of non-communicable diseases, which now account for 75% of deaths. It is estimated that human capital contributes 41% to per capita wealth, a level much lower than that of countries with a similar level of development. Indeed, the poor performance of human capital hampers productivity in Morocco-with a Human Capital Index (HCI, World Bank 2019) of 0.5, Moroccans born today will reach only 50% of their productivity potential. Morocco's future social and economic trajectory thus depends on its ability to accelerate progress in the accumulation and distribution of human capital.

In the coming years, the political scene will be defined by the legislative elections of 2021. The

evolution of Morocco's current social context will depend on the effectiveness of new development policies, including increased social spending in the 2021 and 2022 budgets, the king's call for a review of Morocco's development model, the launch of the third phase of the National Human Development Initiative, and increased attention to the social and economic integration of youth.

1.3 Satisfactory Attractiveness of FDI

It should be noted that Morocco's attractiveness for FDI reflects the progress made by the country in improving its general business climate. Indeed, net FDI inflows to Morocco have consolidated by 36% to reach a total of \$3.6 billion in 2018. As a result, Morocco ranks fourth in Africa in terms of FDI inflows, just behind Egypt, South Africa and Congo. In terms of geographical origin, Ireland is now the largest investor in Morocco, with a share of 20% of total FDI, after 10% in 2017 ahead of French, which comes in second place with a share of 17% against 23% in 2017.

Multiple instruments have been deployed to attract foreign investors, including the creation of modern industrial parks ("integrated industrial platforms"), tax incentives, direct grants, advantageous financing conditions and training aid. This effort [which began in 2000] has continued with the adoption in 2014 of the Industrial Acceleration Plan (PIA), which strengthens the existing system through Industrial Development and Investment Funds (with an envelope equivalent to 2% of GDP over the period 2014-2020) to provide subsidies to selected industrial branches, a new investment code, and the establishment of industrial ecosystems designed to create a new dynamic and a new relationship between large industrial groups and small and medium-sized enterprises (SMEs).

The real estate, banking and insurance, tourism, energy, and mining sectors have attracted the bulk of FDI since 2007. On the contrary, agriculture and fisheries, transport, education and skills development have attracted little interest from foreign investors.

Beyond the need to strengthen agriculture and food industry or trade, there seems to be strong evidence that the industrial sector and in particular its exporting branches are important for deeper, broader, and more sustainable integration into international value chains, including through greater sophistication and technological content of the country's exports (EESC, 2019).

1.4 Diversification of Production

Against a backdrop of slower growth in world trade, Moroccan exports continued to grow in 2018, rising 10.6 percent to 10.3 percent in 2017. This trend was accompanied by diversification of supply and market space. The number of export markets increased by 1.4 percent on average annually between 2007 and 2018 (from 149 to 185 markets), and the number of products exported increased by 1.6 percent on average annually between 2007 and 2018 (from 2,580 to 3,405 products). The changing composition of Moroccan exports has favored high value-added industrial branches (automotive, electrical...), at a time when the traditionally exporting sub-sectors (clothing, agriculture) have seen their weight significantly reduced.

The sub-sectors of agriculture, mechanical engineering and other manufacturing industries, electricity and water, and other non-financial services experienced high average annual growth rates between the

two periods: 2007-2012 and 2013-2018.

The weak economic growth is linked to the development of protected sub-sectors. A large share of Moroccan firms' profits comes from very high margins relative to other firms in the region, suggesting that these firms face lower levels of competition. Indeed, many local firms operating in profitable sectors benefit from tax exemptions (real estate, trade, agribusiness) or high tariff protection (consumer goods), contributing to high margins and revenue-seeking activities that reduce investment in more competitive and marketable sectors and block diversification and job creation (Achy, 2013).

This is confirmed by a study by the Royal Institute for Strategic Studies, which notes that protection, by reducing competition, has allowed monopoly rents to emerge. Profitable companies have benefited from abnormally high prices and excessive profits, not to invest in competitive product quality and the incorporation of new techniques, but to collect excessive profits (IRES, 2014). The deepening of reforms by opening up markets to more competition, allowing new economic actors to challenge these markets, is necessary because those that have been carried out have had limited impact.

1.5 Toward a Revival of the Moroccan Development Model

In 2019, the King of Morocco created a special sub-commission to elaborate a new development model for the country and defined the contours of this new model according to a participatory and inclusive approach. Morocco's current growth model has allowed a certain sophistication in the exchange of goods thanks to better infrastructure, but the country's presence in international value chains and the added value of its products is still low and the concentration on the European market is high. The emergence of new industries (automotive, aeronautics, and electronics) is encouraging, as these sectors are traditional growth drivers driven by productivity. However, Morocco's presence in these emerging sectors is still weak, and international competition is fierce. Going forward, Morocco's strategic trade investment initiatives with the EU and Sub-Saharan Africa should help strengthen its external competitiveness.

With a development model more focused on competitive markets and broader private sector development, Morocco's position between Europe and Africa and infrastructure growth could turn into decisive competitive advantages for the country (Karim et al., 2018).

To ensure diversification, this structural transformation should affect sectors such as agriculture, industry or services. The modernization of agriculture will have to accelerate, starting with its digitization and strongly developing the value of its products through a competitive and integrated agro-industrial fabric covering all territories. This will only be possible if there is massive access for small farmers to training and access to new production techniques (EESC, 2019).

1.6 Private Sector Dynamism

Create the conditions for the emergence of a dynamic and diversified private sector, capable of creating the jobs Morocco urgently needs, and enabling the existence of competitive markets. The currently limited dynamism of the Moroccan private sector (ADB, 2014) can be linked to: (i) the significant weight of the informal sector, which accounts for 40% of the economy, (ii) the large share of SMEs and

their inability to develop, (iii) the limited share of the private sector in total investment, (iv) the low sectoral diversification of investments, and (v) the limited growth of foreign direct investment, which is a source of modernity and dynamism.

The lack of dynamism of the private sector hinders the structural transformation of the economy and the productivity gains that are generally associated with growth and the creation of decent jobs.

1.7 Review of the Moroccan Industrial Sector

Until 1990, the industrial sector was marked by a strong concentration on traditional industries; today, it is characterized by a duality between traditional sectors such as textile-clothing in search of a new repositioning, and new emerging specializations such as in the automotive and aeronautics industries, the food industry, metallurgy and the pharmaceutical industry. With the implementation of the industrial acceleration plan 2014-2020, the industrial sector would be revived.

Given some positive sectoral dynamics, it is interesting to analyze why industry as a whole continues to make a small contribution to job creation throughout the country. In 2016, the industrial sector as a whole created 8,000 jobs. On the other hand, during the period 2009-2014, more than 130,000 net jobs were lost.

The ongoing restructuring of the industrial sector is creating jobs in new export activities, but on average more jobs are lost over time in traditional labor-intensive industries. The net negative employment effect of these movements is even more pronounced for unskilled workers, because the new job is more demanding in terms of skill level (the average worker in a wiring factory has a bachelor's degree). It is possible that this situation may evolve in a more favourable direction in the future (Ministry of Economy and Finance).

In the mining industry, the phosphate sub-sector has undergone major transformations over the last two decades. The objective for the sector, as set out in the 2018 strategic plan, is to consolidate Morocco's leadership in the global and continental market by doubling OCP Group's mining capacity and tripling its phosphate processing capacity by 2027.

It should be noted that the industrial acceleration plan 2014-2020 has succeeded in attracting several leading industrial groups and has helped improve product quality. In 2017, the share of exports with a fairly high technological content represented 55%, 17 percentage points higher than in 2007.

To support the industrial strategy, the Moroccan government has allocated 7.2 billion dirhams for the period 2015-2018. This amount has been used for the industrial development fund, human resources training and land mobilization.

The implementation of the 2014-2020 Industrial Acceleration Plan is based on the establishment of high-performance industrial ecosystems in order to create a new dynamic in the sector and strengthen its international positioning.

The incentive provided by this industrial policy is beginning to bear fruit in certain niches, particularly in the automotive and aeronautics sectors. The installation in 2011 in Tangier of a large-scale plant by the manufacturer Renault (with a production of 400,000 cars per year) has acted as a growth driver

while attracting in its wake many equipment suppliers.

Since its launch, 54 ecosystems covering 14 industrial sectors have been set up with 32 professional associations and federations. The implementation of these ecosystems has led to the signature of investment contracts, creating 2,911,76 jobs by the beginning of April 2019.

1.7.1 Automotive Sector

The automotive industry has grown at sustained levels over the past decade. Indeed, this industry has strengthened its position in the global value chain of the automotive industry with a production exceeding 402,000 vehicles in 2018 against 376,000 in 2017 and a local integration rate of over 50.5% making Morocco the 2nd largest car manufacturer in Africa.

Similarly, for the Renault project, which has enabled national automobile production to increase to nearly 345,000 vehicles in 2016 and create 7,100 direct jobs, the companies are not strong and not enough to have a macroeconomic impact on growth.

In 2018, the contribution of the automotive industry to total value added remains low and does not exceed 2%. However, the industry's expansion should continue, following the announcement, from 2015, of the installation of a plant of the Peugeot-Citroën group.

Thus, since 2014, the automobile has become Morocco's leading export sector and accounts for 20% of the country's total exports. But the industry is also subject to vulnerabilities. For example, due in part to the decline in demand related to the COVID-19 pandemic, the automotive industry is forecasting a 20 to 25 percent decline in activity in 2020 compared to 2019. In 2019, export sales of the automotive industry amounted to about 80 billion dirhams. Before the start of the COVID-19 pandemic, the sector expected to generate between 110 and 120 billion dirhams by 2020. Due to the current pandemic, this target has been considerably revised downwards. The automotive industry now hopes to reach only 100 billion dirhams by 2022 (Ministry of Industry and Trade, 2019).

Thus, since the launch of the Industrial Acceleration Plan until 2018, the sector has created more than 100,000 jobs, exceeding the target of 90,000 jobs initially planned for 2020. At the end of 2019, the export turnover of the sector reached MAD 48.92 billion against MAD 47.87 billion in 2018.

1.7.2 Aeronautics Sector

The year 2019 saw the start of the Boeing ecosystem with ten direct and indirect suppliers. Among these, two operators (Hutchinson and Morocco's TDM Aerospace) have been awarded Tier 1 contracts (direct suppliers) by Boeing. At the end of August 2019, the sector recorded an export turnover of MAD 10.46 billion against MAD 9.42 billion a year earlier.

It should be recalled that the objective for 2020 is to create 31,700 new jobs in the sector and to achieve an additional export turnover of 27 billion dirhams.

Encouraging developments have been observed in the aerospace cluster near Casablanca, centered around engines such as Bombardier, Safran and Boeing. The impact of these investments is significant in terms of employment (85,000 in the automotive sector and 11,000 in the aeronautics sector), as well as in terms of exports.

Today, more than 140 companies operate in the aeronautics sector in Morocco. The sector employs 18,000 people and the annual export turnover is around 18 billion dirhams.

The Moroccan aeronautical platform is recognized worldwide by its production capacity and skills. Nevertheless, it is necessary to improve and develop new technologies. The aviation industry has an integration rate of 38% at the beginning of 2019.

However, until now, the industrial strategy has not had the expected reindustrialization effects. Indeed, an industrialization strategy cannot be reduced to simple sectoral support policies, but must also be based on cross-cutting policies that create a fertile environment for all players. Moreover, the objective of increasing manufacturing value added to 23 percent of GDP by 2020 and creating 500,000 jobs over the period 2014-2020 seems unrealistic given that industrial value added does not exceed 2.5 percent per year.

A parallel and complementary growth path supported by “positive distortion” of investment has emerged and can be accelerated by trade and investment in services. The country will become Africa’s leading automobile manufacturer by 2020 thanks to French and Chinese FDI, as well as the planned development of competitiveness clusters in aeronautics, fertilizers and textiles. The challenge is to integrate local SMEs into the value chains of these industries.

1.8 Morocco’s New World Professions

Morocco’s growth model has allowed for a sophistication of merchandise trade through infrastructure, but its presence in high value-added chains is still low and concentration in the European market is high. The emergence of new industries (automotive, aeronautics, electronics) and leadership in some niche value chains (fertilizers) are encouraging, as these sectors are traditional drivers of productivity-led growth. However, Morocco’s presence in these emerging sectors is still weak, and international competition is fierce. Going forward, Morocco’s strategic trade and investment initiatives with the EU and Sub-Saharan Africa should help strengthen its external competitiveness (World Bank, 2019).

The creation of industrial investment funds provides incentives for Moroccan investors to join the industrial sector. The investment funds that exist today require mature companies, of which there are not many in Morocco. There is a need for investment funds tailored to the specific needs of sectoral investments and with less stringent access criteria.

The “MNW” (Careers in Morocco’s New World), but also other sectors, could also benefit from targeted actions by the state towards activities deemed a priority in terms of know-how and technology, as well as a better involvement of Moroccan investors (CESE, 2019). Morocco has made the new world professions the spearhead of its industrial strategy, which has enabled it to make significant progress in the automobile, aeronautics, renewable energies and the food industry.

Morocco has chosen to focus on new global businesses, and the results obtained have proved him right. Whether for the automotive sector, aeronautics, renewable energy or agricultural industry, the Industrial Acceleration Plan (IAP) 2014-2020 has boosted the performance of these sectors by attracting

significant foreign direct investment (FDI) which has significantly increased their productivity, quality standards of processes adopted and, thereby, their export potential. Result: a trade balance that is recovering after years of tension that kept them in a situation of unsustainable imbalance. The operators present, as well as those who will realize their installation in Morocco in the coming months, are unanimous in saying that the kingdom presents unprecedented opportunities and a continental anchorage that makes it an essential partner for any structure with African ambitions. In just one year (July 2016 to July 2017), Morocco has managed to become the 2nd largest exporter of cars in Africa, to attract a global giant like Boeing, to establish itself as the African model of reference in renewable energy and to conclude the first program contract relating to the development of food industries.

2. Literature Review

2.1 Propagation of Shocks and Key Sectors in Input-Output Analysis. A Literature Review

The modern global economic system is a highly interlinked network composed of several heterogeneous industries connected within and across different countries by means of input–output trade linkages. Several studies pointed out that the structure of this production web is crucial in establishing whether and how microeconomic local shocks can propagate throughout the economy and lead to significant aggregate fluctuations (Carvalho, 2014). Therefore, understanding the structure of this production network is of a foremost importance to design predictive tools and better inform regulators on how to dampen aggregate variability and reduce the likelihood of systemic risk.

Since the contributions of Leontief (1936) and Hirschmann (1958), the idea of input–output linkages as a key channel through which shocks propagate throughout the economy has been explored mainly in the real business cycle literature (e.g., Horvath, 1998, 2000; Long & Plosser, 1983; Shea, 2002). Recently, several papers have revisited the argument, proposing new approaches and perspectives (see Roson & Sartori, 2016 for a wide review). For example, Gabaix (2011) finds that the distribution of firm size in an economy is typically fat-tailed. A degree distribution is fat-tailed when there are only a few industries which have several connections to many other industries. Hence, any shock affecting these central sectors would be able to propagate and generate macrodisturbances. Under these circumstances, the central limit theorem breaks down, and idiosyncratic shocks to large sectors or firms affect aggregate outcomes. Building on Gabaix's (2011) “granular” hypothesis, Carvalho and Gabaix (2013) interpret the recent rise of macroeconomic volatility as a direct consequence of the increase in the size of the financial sector. Further important theoretical contributions in this direction were made by Acemoglu et al. (2012), Acemoglu, Akcigit and Kerr (2016), Acemoglu, Carvalho, Ozdaglar and Tahbaz-Salehi (2017), Carvalho (2014) and Carvalho, Nirei, Saito and Tahbaz-Salehi (2016), who focused on the impact the topology of the economic network has on shock propagation. In particular, in their seminal work, Acemoglu et al. (2012) find that the existence of relatively few, “dominant”, suppliers of intermediate factors fosters the amplification of sectoral shocks. The authors propose to interpret the input–output structure as a (weighted) network, where the nodes correspond to the sectors

and the links to the input–output trade flows. In such a framework, the relative importance of an industry as a supplier for other industries is captured by the sum of weights of all outgoing links, that is what is known in network theory as the weighted degree or strength of a node. Studying the distribution of degrees in the economy and the “fat-tailedness” of that distribution, Acemoglu et al. (2012) conclude that the asymmetric and fat-tailed distribution of the input–output network connections serves as the micro-origin of the macroeconomic fluctuations.

Most of the empirical works in this field focused on a single national economy, whilst much less attention has been given to the cross-country transmission of shocks, which is crucial from a Brexit perspective. However, there are exceptions. For example, Alatraste-Contreras and Fagiolo (2014) investigate how economic shocks propagate through the input–output network connecting industrial sectors in Europe. They show that the more a sector is globally central in the country network, the largest its impact. Similar results are stressed by the recent and growing literature on trade in value added and its implication on the transmission of shocks via international trade (e.g., see Garbellini & Wirkierman, 2014; Johnson & Noguera, 2012; Nagengast & Stehrer, 2016; and Tukker & Dietzenbacher, 2013, among others). Building on this literature and on Gabaix (2011), Di Giovanni and Levchenko (2012) and Eaton, Kortum and Sotelo (2012) show that international trade amplifies the “granularity” of an economy and hence its sensitivity to sectoral shocks.

The common theme across the literature reviewed is that whenever few hubs dominate the linkage structure in the economy, an idiosyncratic shock which hit these hubs will result in sizable aggregate fluctuations. Therefore, from a Brexit perspective, it is of primary importance to study the structure of the European production network (EPN), finding out if key sectors exist and identify them in order to understand which sectors should be safeguarded. Further, a key sector analysis would allow policymakers to better understand which sectoral tariffs would have a more distortive impact.

To date, many studies have been conducted on the economic impact of Brexit (see the special issue edited by McCann, 2018, and the recent mini-symposium edited by Greenaway & Milner, 2019, among others). Just a few have emphasised the relevance of input–output linkages (e.g., Vandebussche, Connell, & Simons, 2017; Cappariello, Damjanovic, Mancini, & Vergara Caffarelli, 2018; Chen, Los et al., 2018). Nobody focused specifically on the analysis of the key sectors in the EPN. The present study aims to fill this gap in the literature.

The identification of key sectors in an economy has been one of the most important research topics in input–output analysis, for a long time (see Miller & Blair, 2009; Temurshoev & Oosterhaven, 2014 for a wide review). Since the seminal works of Rasmussen (1956), Chenery and Watanabe (1958) and Hirschmann (1958), this strand of input–output literature has often focused on the number, strength and structure of intersector linkages (Los, 2004; Yotopoulos & Nugent, 1973). After the first introduction of the linkage measures, several changes have been proposed (Jones, 1976). For example, the eigenvector method of backward linkages proposed by Dietzenbacher (1992), which is based on the reasoning that industries with more linkages should be weighted more (Luo, 2013). This method is similar to the

eigenvector centrality long used in network theory and social network analysis, according to which nodes are considered to be central in the network if their connections in the network are themselves well-connected nodes (see Alatraste-Contreras, 2015; Garc áMu ñiz, Raya, & Ramos Carvajal, 2008, 2011 and Gurgul & Lach, 2018 for a discussion on the similitudes between input–output linkage measures and network centrality measures). One drawback of the eigenvector method is that it does not penalise the distant connections (Newman, 2010). Therefore, its variations such as Katz Bonacich centrality (Bonacich 1987; Katz, 1953) and PageRank centrality (Brin & Page, 1998) have been preferred in recent studies on input–output networks (Acemoglu et al., 2012; Carvalho, 2014; Cerina, Zhu, Chessa & Riccaboni, 2015).

All these measures generally identify the key or strategic sectors in the network. However, focusing on Brexit as a trade shock, we are mainly interested in the input–output trade connections between the UK and European countries.

2.2 Input-output Analysis to Assess the Effect of Investment in the Industrial Sector on other Sectors

To select the sectors with the best opportunities for accelerating investment and growth, we began with an initial list of 20 subsectors (see below), and applied a methodology based on the production and employment multipliers of sectoral uses of the Moroccan economy's final demand, employment growth elasticities, sectoral contribution to total value added, labor productivity, sectoral contribution to total exports, and foreign investment attracted over the two periods 2007-2012 and 2013-2018.

2.2.1 Multiplier Approach

Final demand multipliers are a traditional application of Wassily Leontief's input-output theories. In the current application, a series of input-output tables for Morocco at constant prices for the years 2007, 2012 and 2018 have been used to estimate changes in the impact of one or the other component of final demand (changes in public expenditure, investment, exports, etc.). They represent the ratio between the total effects of a change in final demand, reduced to the initial effects of this change.

The multiplier indicates the production (or employment) effect in the sector concerned where the investment is made (direct effect), and the production (or employment) effect generated in the other sectors related to it (indirect effect). Only the sum of the two output or employment effects is considered and interpreted in this input-output analysis.

Note that the production multiplier of demand in the Moroccan economy increased from 1.74 in 2007 and 2012 to 1.58 in 2018. This means that in 2007, production in the economy as a whole increased by an average of 1.74 million dirhams in response to an increase of 1 million dirhams in final demand, and that this effect was reduced to 1.58 million dirhams in 2018. Figure 4 below shows the output and employment multipliers in 20 sub-sectors of the economy.

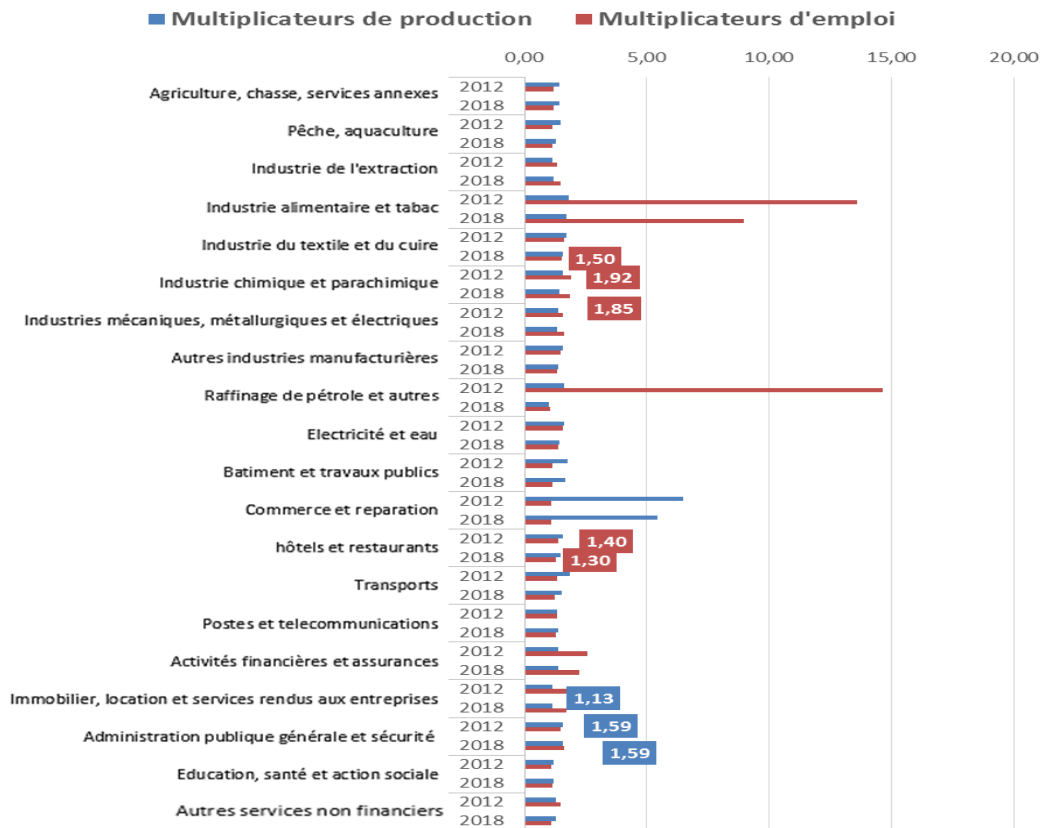


Figure 4. Multipliers of Production and Employment by Sub-sector, IO 2007, 2012 and 2018

Source: Results of the Inputs-Outputs Model.

The sectors with the largest production multipliers are trade and repair and the food industry and those with the largest employment multipliers are the food industry and financial and insurance activities, and on this basis the following sectors: Trade, food industry and financial sector.

Employment multipliers are used to estimate the importance of an industry in terms of employment. The employment multiplier for the year 2007 recorded 2.70 million jobs created in the economy, directly and indirectly via the supply chain, following an increase in final demand of one million dirhams. In 2012 and 2018, 2.75 million and 1.77 million jobs were created respectively in the economy.

The employment coefficient is the inverse of labor productivity and is the main determinant of the employment multiplier. It helps explain why several very labour-intensive industries such as the agri-food industry, oil refining in the past, financial and insurance activities, and real estate and business services leasing have the highest employment multipliers.

Financial activities and real estate have high employment multipliers but the lowest output multipliers in the economy, while the real estate sub-sector has high output multipliers and one of the lowest employment multipliers.

Sectors not exposed to international competition (real estate, trade, and services) could expand their

profit margins by adjusting their prices upward in response to growth in domestic demand and credit expansion. Some government programs have amplified this phenomenon by providing benefits and subsidies to these sectors. In real estate, tax incentives for social housing developers in particular have reached 1 percent of GDP, attracting a large number of investors to the sector (Ministry of Economy and Finance, 2015).

This difference in profit margins between protected and exposed sectors is reflected in the evolution of value added prices. Since 2007, the price of value added in the textile and clothing subsector has not increased, while that of the construction sector has increased by 50% and that of hotels, restaurants and trade by 60%. In this context, operators, especially investors, have rationally decided to withdraw from the exposed sectors of the economy to turn to the protected sectors where profits are assured in the short term.

In addition to focusing on attracting FDI, Morocco should also strive to create an endogenous growth dynamic based on Moroccan business actors to ensure the sustainable development of domestic industry [because this would also strengthen the country's capacity to absorb the development momentum that can be provided by foreign partnerships].

a. Impact of the Reversal in the Automotive Industry on other Industrial Sectors and on all Economic Sectors

On the other hand, the input-output table for 2018 the automotive industry is proving to be a driving force for other branches of industry. The rate of integration of the automotive sector [with other industries] is 55% with a target of 80%, with an integration engine and upstream integration toward raw materials; this global trade represents an investment sector for Moroccan capital.

b. Impact of Renewable Energies Using Dynamic Input-output Analysis

The energy strategy of the NOOR Plan (I, II, III, IV) of the Moroccan economy for the next few years provides for raising the contribution of solar energy to 14% of the energy basket [production or consumption]. The baseline scenario of investment in the NOOR solar plan would allow an increase in national production of 28.8 billion dirhams between 2018 and 2030, distributed between the distribution of an equivalent of 16.4 billion dirhams as direct impact of investments and 12.4 billion dirhams as indirect impacts. National value added would gain MAD 11.5 billion (more than 1% of total GDP) during this period. The creation of new jobs at the national level would exceed 73.3 thousand between 2020 and 2030, including 43.3 thousand of direct creation and 30 thousand of indirect creation.

The sectoral distribution of production, which would be created following the investments of the NOOR plan, would benefit more to the manufacturing industry which would see its production increase by 12.5 billion dirhams over the period 2020-2030. The production of the construction sector would increase by 11.8 billion dirhams, and the services sector would generate an additional production of 2.7 billion dirhams.

At the national level, investment in solar energy would create nearly 73,000 new jobs between 2020

and 2030. In the power plants built, these investments would create 7.3 thousand jobs directly.

Thus, the direct and indirect impact on the national production would create 66 thousand jobs, including 36.6 thousand directly to meet the investment needs in the solar energy sector and 29.3 thousand indirectly as a consequence with a dynamic of spreading the effects of these investments throughout the national economy.

2.2.2 Employment Elasticity Approach

The strongest employment responses to sectoral output growth are observed in banking, insurance, real estate, agriculture, forestry, fishing, and some branches of manufacturing industries. Other sectors such as construction, hotels and restaurants have lost some of their employment potential to the extent that negative employment elasticities have been observed.

An examination of the two indicators (multipliers and employment elasticities) shows that the sectors with the greatest employment potential are not necessarily those that create the greatest growth potential. This is the case, for example, in the food industry or the construction industry.

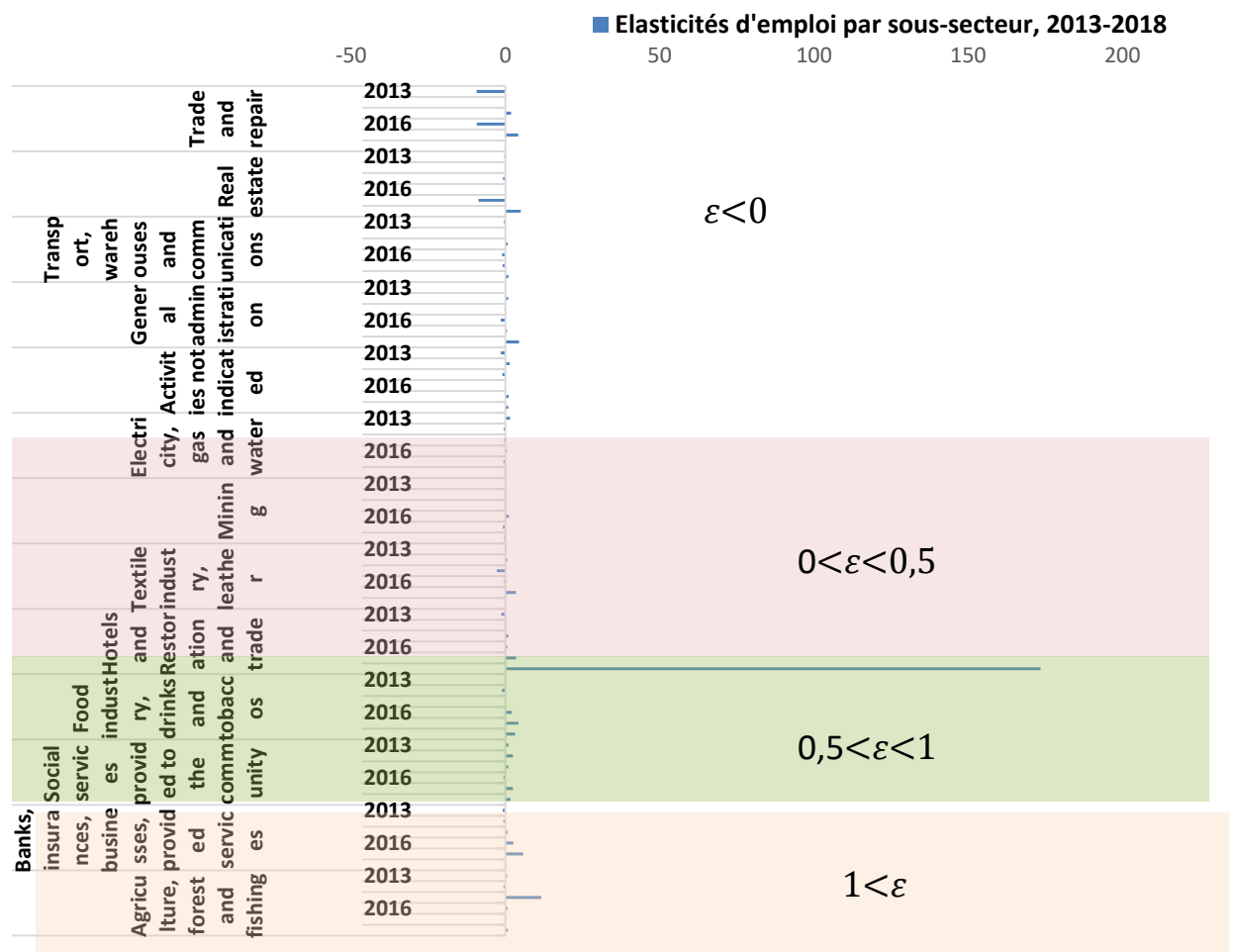


Figure 5. Employment Elasticities by Sub-Sector, 2013-2018

Source: Author's calculations, HCP data.

Table 1. Job Elasticities by Industry Sub-Sector, 2013-2018

Sub-sectors	2013	2014	2015	2016	2017	2018	Average 2013 - 2018	
Mines	1,46	-0,57	-0,47	0,46	-0,65	0,26	0,05	
Textile and leather	0,09	-0,04	-0,05	1,11	-0,86	-0,40	0,05	$\varepsilon \inf \grave{a} 0,5$
Agrochemical industry	-1,37	0,00	0,96	0,59	3,44	173,44	0,72	ε entre 0,5 et 1
Other industries	0,55	-0,62	11,60	0,71	0,30	0,74	2,51	$\varepsilon \sup \grave{a} 1$
Total	0,23	0,13	0,06	-0,15	0,10	0,26	0,08	

Source: Author's calculation based on HCP data and GIZ Methodology, p. 05.

3. Critical Reading of the New Politics of Made in Morocco

It is true that one cannot compare the Moroccan economy to that of Germany or Japan, which is why in RFL 2020 This is a trend that has had to be initiated for years since the State wastes just as much as households and businesses. The economic model based on consumption has only been able to drive economic growth by 3 points? The trade balance is structurally in deficit (twin deficits). Switching to a production model implies privileging the “made in Morocco” or at least for the moment limiting imports to the strict necessary. It is the logical translation of a path of industrialization of substitution and privilege of all that is Moroccan business. It is a good start.

According to official government estimates, it is an amount of 34 MMDH that the State intends to save by substituting locally produced goods for imported products. As a result, several sectors will have to redirect their exports to the domestic market.

An incentive system will be put in place. Thus, several mechanisms will be operational from January 2021 in order to boost the “Made in Morocco” and stimulate production and job creation. In this context, the tax administration will have to deploy a mechanism to enable SMEs to move out of the informal sector, as well as the regularization of the tax situation of companies affected by non-payment of taxes. Indeed, the government believes that the mechanism currently in force, relating to the voluntary regularization provided for in RFL 2021, sends investors a message that the constraints and the fiscal and economic reality of the company are taken into consideration and that a transition period is necessary to “turn the page” and start afresh. Improving the fiscal governance of the targeted SMEs therefore requires the subscription to corrective declarations to the tax authorities. These include returns that under-report turnover and the calculated taxable base. The approach proposed in this respect by the regularization procedure concerns the spontaneous payment of additional duties, which should be made in two installments next September and November.

In addition, a study conducted by the Moroccan Association of Marketing and Communication (AMMC) revealed that less than 40% of Moroccans trust “made in Morocco”. Moreover, this study showed that Moroccan brands are more appreciated in French-speaking African countries than in

Morocco.

Among the main obstacles identified in the study conducted by the AMMC, respondents cited the lack of stability in product quality, lack of innovation, an after-sales service deemed ineffective, etc.. For this evaluation, four criteria were selected: investment attractiveness, tourism, perception of products & services and finally HR (proportion of executives & talents who export internationally). Conversely, Moroccan craftsmanship is popular. Indeed, 76% of respondents have a positive image of these products and believe that they are of good quality... so many points on which participants discussed during workshops to improve the attractiveness of brands and implement coherent strategies to make them “locomotives” internationally, etc...

It is the entire value chain that needs to be acted upon, starting with production, because manufacturers have not yet realized the importance of developing quality products because they are focusing above all on profitability. They are not going to be interested in targeting a niche market that may fail and they are going to privilege a mass market.

4. Support for Moroccan Industrial Enterprises

Indeed, the government will create a project bank composed of 100 companies, which will be involved in the effort to redirect exports to national markets. This substitution plan targets the textile, transport, mechanical, metal, plastic, electrical, electronic, food and semi-chemical industries. The measures taken to boost the morale of operators are based so far on the financing of more than 23,000 companies for an amount of 27 MMDH, or 98% of VSEs and SMEs that have opted for Damane relaunch.

As for Damane Oxygène, 50,000 companies have been financed for an amount of 18 MMDH of state-guaranteed credits. Note that the Executive's estimates about the impact of the substitution plan are around 34 MMDH. With regard to deficit reduction, the government is working on “innovative products through institutional partnerships, which should generate revenues in the order of 14 MMDH”, according to the elements described in the Executive's roadmap. It should be noted that the pressure on national foreign exchange reserves requires that measures be taken to encourage import substitution by local production.

At the end of its 9th meeting held on August 6, 2020, the Economic Intelligence Committee has developed a pact for economic recovery and employment, following a broad consultation with representatives of the private sector and banking sector. The priority in this framework is given in particular to industrial sectors, export-oriented, agriculture, real estate and tourism in addition to future investments in the green and digital economy. These measures concern in adjusted budget 2020:

- Strengthening of the guarantee mechanism for companies with the mobilization of 75 billion dirhams to be granted in the form of state-guaranteed credits for the benefit of all business segments. Within this framework, an amount of MAD 5 billion is mobilized for the benefit of the CGC from the available funds of the special fund for the management of the coronavirus pandemic in order to ensure satisfactory financing conditions for all enterprises negatively affected by the effects of the pandemic;

- Implementation of the “oxygen daman” mechanism, 49360 companies have benefited from exceptional overdrafts and this mechanism is extended until December 31, 2020 to real estate companies affected by this crisis with the granting of a guarantee of 85% of short-term loans granted;
- Launch of the “auto entrepreneurs covid-19” product. As of July 31, 2010, this product had benefited 3,210 auto entrepreneurs;
- the “daman relance” program, these two measures introduced in June 2020 are designed to boost business activity through the guarantee of loans to finance their working capital needs, repayable over a period of 7 years with a 2-year grace period;
- The “daman relaunch” product is deployed in favor of small, medium and large companies,
- launch of the program in 2020, of the integrated program of support and financing for businesses and following the high royal orientations announced during the opening speech of the 10th legislature this program aims to provide a solution to the problem of access to financing for young project leaders and VSEs. The agreements signed focus on three areas:
 - (i) the financing of entrepreneurship through the setting up of a “support fund for the financing of entrepreneurship” endowment of 8 billion dirhams over 3 years, (ii) coordination of stakeholders in the entrepreneurship ecosystem at the regional level, (iii) the promotion of access of rural populations and VSEs operating in the rural world to financial services in the broad sense and to the financing of their projects.

5. Recommendations

The only industrial sector to offer to investors is the food industry. Characterized by high production multipliers and/or satisfactory employment. It is a big sector creator of added values and jobs in Morocco. That is to say that they exert important spillover effects on the entire productive fabric. In addition, this sector will also benefit from developments in other sectors, particularly trade, which have shown high labor productivity. In addition, an effort of diversification and sophistication is observed since 2007 as evidenced by the sustained export rates.

This sector is experiencing a high rate of integration with each other. Indeed, the expected growth of the food processing industry in Morocco depends on the degree of access to quality and competitively priced energy. Indeed, energy is often the first or second item of expenditure in the food-processing industries, which can account for up to 20% of turnover. In order to increase their profitability, the food industries are called upon to create more added value with fewer raw materials. To this end, they must use more sophisticated processing technologies, but also more energy consuming. For example, the modernization of mango drying units with modern mixed ventilated dryers, powered by solar energy and gas, allows the production units to offer very high quality products, to operate all year round and to diversify the range of dried products (coconut, tomato, papaya, aromatic herbs, etc.). In other words, energy is a competitiveness issue that must be mastered to boost and sustain the Moroccan industrial fabric.

In addition, technological progress in these three sectors would be a catalyst for structural transformation. The creation, adoption and improvement of technologies contribute to productivity growth and the creation of added value in production processes in the agro-food sector.

It should be noted that in the agro-food sector, 8 agreements were signed on November 11, 2020 at the headquarters of the Ministry of Industry, Trade and Green and Digital Economy for the implementation of investment projects amounting to 620 million MAD which will create 1630 new jobs and generate additional revenues of more than 914 million MAD by 2023 out of a total of 17 agreements (investment of a total amount of 857 million MAD).

These projects concern the realization of industrial units of food production, particularly in the fishing sector, dairy industry, confectionery-biscuitry-chocolate factory and in the processing of citrus fruits, fruits and vegetables. These are the basic trends of the industry at the local and international level.

Below is the list of projects identified from interviews with experts and industrialists in the agri-food sector:

1. Production of processed cheese;
2. Production of cookies;
3. Production of cereal-based products;
4. Valorization and processing of dried fruits;
5. Production of tomato preserves and sauces;
6. Production of fruit preparations;
7. Production of pressed and cooked cheeses;
8. Production of pressed fruit and vegetable juices;
9. Industrial bakery;
10. Valorization and packaging of eggs;
11. Production of frozen fish and seafood;
12. Production of chips and other snacks;
13. Production of confectionery;
14. Production of chocolates;
15. Production of food additives;
16. Production of canned olives and capers;
17. Modern production of olive oil;
18. Production of canned and sterilized ready meals;
19. Freeze-drying of fruits;
20. Preparation and packaging of frozen pizzas;
21. Valorization and packaging of spices and aromatic and medicinal plants;
22. Processing of fruits and vegetables with high potential.

For investors in projects, Moroccan public authorities have provided grants from the Industrial Development and Investment Fund, Maroc-PME, the "ISTITMAR" program for SMEs and VSEs, the

Investment Promotion Fund, the Energy Development Fund, and the Finishing, Printing, and Dyeing Fund. In addition, financing mechanisms from the Caisse Centrale de Garantie (Central Guarantee Fund) are planned and training aid through the “IDMAJ” Program and the “TAEHIL” Program, direct training aid mechanisms are envisaged and the “INMAA” Program. Finally, tax benefits are granted to investors who choose these projects regardless of the sector of activity.

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Annexe 1. Multipliers of Production per Sub-sector, Input-Output 2007, 2012 and 2018

Codes	Sub-sectors	2007	2012	2018
G00	Trade and Repair	6,82	6,50	5,41
D01	Agro-alimentary Industry and Tobacco	1,84	1,83	1,70
I01	Transport	1,81	1,88	1,52
F45	building	1,78	1,76	1,67
D02	Industry of the Textile and Cooking	1,69	1,70	1,59
B05	Fishing	1,64	1,48	1,30
L75	General Public Administration and Safety	1,64	1,59	1,59
H55	Hotels and Restauration	1,56	1,55	1,48
D05	Other Industries Manufacturieres	1,56	1,56	1,40
D23	Oil Refining And Others	1,52	1,60	1,00
E00	Electricity and Water	1,47	1,64	1,42
D03	Chemical and Parchemical Industry	1,44	1,55	1,44
A00	Agriculture, Drives Out, Ancillary Services	1,41	1,44	1,41
D04	Mecanic, Metallurgic and electric Industry	1,37	1,37	1,36
J00	Financial Activities and Insurances	1,31	1,36	1,39
OP0	Other non financial services	1,30	1,30	1,27
I02	Posts and Telecommunications	1,27	1,32	1,40
C00	Industry of The Extraction	1,17	1,13	1,21
MN0	Education, Health and Social Action	1,14	1,17	1,20

K00	Real Estate, Hiring and Services to the Companies	1,13	1,13	1,13
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Source: Results of the IO Model using data of the Moroccan HCP.

Annexe 2. Multipliers of Employment, Input-Output 2007, 2012 and 2018

Codes	Sub-sectors	2007	2012	2018
D01	Agro-alimentary Industry and Tobacco	16,56	13,60	8,96
D23	Oil Refining And Others	10,02	14,66	1,05
J00	Financial Activities and Insurances	2,52	2,59	2,26
K00	Real Estate, Hiring and Services to the Companies	2,10	1,92	1,72
OP0	Other non financial services	2,00	1,47	1,08
D03	Chemical and Parchemical Industry	1,66	1,92	1,85
H55	Hotels and Restauration	1,61	1,40	1,30
D02	Industry of the Textile and Cooking	1,60	1,60	1,50
D05	Other Industries Manufacturieres	1,59	1,49	1,35
D04	Mecanic, Metallurgic and electric Industry	1,59	1,56	1,63
C00	Industry of The Extraction	1,47	1,35	1,46
L75	General Public Administration and Safety	1,39	1,47	1,63
E00	Electricity and Water	1,37	1,55	1,38
I02	Posts and Telecommunications	1,34	1,32	1,29
I01	Transport	1,33	1,32	1,25
F45	Building	1,21	1,15	1,14
A00	Agriculture, Drives Out, Ancillary Services	1,20	1,20	1,18
B05	Fishing, Aquiculture	1,18	1,13	1,15
G00	Trade and Repair	1,12	1,11	1,09
MN0	Education, Health and Social Action	1,08	1,11	1,14

Source: Results of the IO Model using data of the Moroccan HCP.