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主 論 文 の 要 旨

論文題目	Industrial Policy, Productive Transformation, and Pro-poor Growth in the Democratic Republic of Congo
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論 文 内 容 の 要 旨

Industrial policy is once again at the top of the policy agenda as there is a growing consensus on the role of well-coordinated and targeted measures in fostering structural change and industrialization. Various industrial policies that have been implemented in the emerging economies and the rapid economic growth and structural transformation that resulted were intriguing factors to a point of inspiring the undertaking of this research. While the current growth path of resource-rich countries in Africa has been jobless and inequality increasing and the policy direction is clear for diversifying away from natural resources, there has been little quantitative analysis of alternative growth strategies in Africa, and it is not clear to what extend these policies can be inclusive. This dissertation thus aimed to contribute to this growing area of research by providing empirical evidence on the potential of industrial policies to boost productivity growth and enhance the process of productive transformation necessary for pro-poor growth in the Democratic Republic of Congo (DRC).

I chose to organize the dissertation into two policy oriented parts. The first part included two chapters that conducted a growth identification analysis to ascertain development paths for DRC to achieve a productive transformation and improve the living standard. The second part included three chapters and positioned the dissertation in relation to key policy lessons from emerging and fast growing East-Asian economies, as reflected in the recent literature on structural transformation and economic development. The overall structure of the dissertation took the form of seven chapters, including the introductory and the concluding chapters.

The investigation started in Chapter 2 with an exploration of the links between productive transformation, employment creation, and prod-poor growth. This chapter provided an important opportunity to advance the understanding of how mining based growth affects industrial

transformation and income distribution. By using a latest available national accounts and household survey data, I constructed a Social Accounting Matrix (SAM) for DRC and developed a Computable General Equilibrium (CGE)-Microsimulation model to investigate why DRC, a country which has a strong comparative advantage in minerals, should diversify away from mining. The findings suggested that mining will remain the key driver of DRC exports for a very longtime but not possibly the source of economic growth. The most plausible reason is the existence of the Dutch Disease and the structural change that it generates. Because of mining boom, the real exchange rate appreciated so much so that it damped exports and the production of other tradable sectors, especially import-intensive manufacturing sectors. The deindustrialization, that resulted, increased inequality, especially in the urban area, because mining is a very capital- and export-intensive sector with little employment elasticity and no linkage with the domestic economy. Moreover, the findings highlighted the possible role of artisanal mining and demand for domestic agricultural and food products in improving the welfare of poor rural households. Furthermore, the current findings clearly supported the relevance of mining rents to promote structural change and diversification.

Building on that investigation, I devoted Chapter 3 to the design of an alternative development strategy based on DRC's economic structure and market prospects. The methodological approach taken in this chapter is a field of influence approach based SAM data constructed in Chapter 2. The key strength of this chapter was that I applied the minimum information decomposition of the Leontief inverse to design appropriate development policies based on the field of influence of changes. The findings highlighted the importance of creating agricultural value chains and establishing a competitive agro-food industry in DRC. The analysis suggested that increasing value addition in and processing capacity of agricultural products will generate the most important volume change in the economy, and improving efficiency of financial intermediation will have an important additional scale effect, meaning that policies that promote its efficiency would have the highest potential to reinforce the impacts of agro-food development. The findings also pinpointed the role of investment in transportation infrastructure and trade institutions in creating domestic and regional markets for competitive agro-food products. The investigation of the strength of the linkages between different sectors revealed that inter-industrial linkages are very low. The findings indicated that although mining is a weak sector, it remains necessary for export expansion and economic growth.

Building on the observation that DRC should create agricultural value chains, Chapter 4 examined policy options to promote agricultural led growth and structural change. The research questioned the best or worse models for pro-poor agriculture modernization. The findings indicated that labor-using technological change generates absolute and relative pro-poor effects

whereas capital-using technological change leads to immiserizing growth. The results of this research supported the idea that poverty reduction led by large-scale investment in agriculture depends on initial distribution of land. One major implication which followed from these results is that, given high inequality in assets, redistribution of land matters as it affects how well the poor connect to the growth process. More importantly, the results suggested that labor-using technological change can be independently sufficient for reducing poverty via the income growth effects. However, the findings showed that agriculture alone cannot generate strong growth outside agriculture.

The findings suggested that reducing trade margins should be implemented simultaneously with institutional reforms and policies that increase farmers' market power and improve marketing efficiency. On the other hand, reducing chemicals' distribution costs increases access to market for both producers and consumers, and it leads to an increase in income for all labor types. This study also highlighted how securing tenure among smallholders and improving access to land for women are important for pro-poor agricultural modernization. I found that participation in off-farm activities has positive spillover effects on pro-poor agricultural technological change in rural areas, while every advance in post-primary education and credit for purchasing farm tools lead to higher pro-poor welfare gains.

Based on the insights from establishing a competitive agro-food industry in DRC, Chapter 5 examined the extent to which diversification into higher value of agro-food products promotes industrial development and the potential of institutional reforms that achieve efficiency gains in agro-food marketing and transportation. This chapter built on policies that have been proven to be relevant for engineering productive transformation, such as diversification into higher value products and skill upgrade, as well as those that are likely to strengthen competitiveness of DRC agro-food products. There are two important areas where this study made an original contribution to economic policy development and management. First, this study has attempted to incorporate the concept of diversification into high value added products into a CGE model. Second, the study has gone some way towards enhancing the understanding of the economy-wide and distributional effects of efficient marketing and transportation of agriculture and food products.

The investigation of diversification into higher value agro-food products has shown that this policy has strong absolute pro-poor effects and almost certainly first-order relatively pro-poor. Households below the 15th percentile benefited less than the average due to impact of the policy in urban incomes and increased in demand of manufacturing products. The findings also supported the relevance of skill upgrading by showing that labor upskill has not only strong absolute and

relative pro-poor effects, but also the potential to lead to income convergence, where poor households' gains were higher than the richer ones.

The analysis has revealed the underestimated contribution of agro-food marketing and transportation efficiency. The major finding was that marketing efficiency favors the middle class and farmers with large share of marketed commodities. With regard to transportation efficiency, the analysis found that efficiency growth in transportation of agro-food products generates strong pro-poor effects in absolute and relative terms, and is likely to be particularly effective in leading to income convergence. The analysis pointed that improved transportation efficiency has the potential not only to increase income and employment, but also to provide positive price impacts for both agro-food producers and consumers and benefits to all households - particularly for low-income households.

The research showed in Chapter 6 that DRC markets are not well integrated. The integration with the world market occurs for high imported commodities goods such as rice and wheat for Kinshasa. Domestic markets are imperfectly integrated, and price transmission between integrated markets is very low. The second interesting finding was that the existence of one-way causal relationship from food retail to wholesale price in Kinshasa, implying that retailer set the food price that wholesalers would have to follow. With regard to reforms to increase market integration, the findings indicated that agricultural and food trade liberalization has a small positive effect on welfare because transaction costs are very high, whereas the initial tariff rate, import penetration ratio, and extent of exports are very low. A reduction in transportation and trade costs for agricultural and food products generates higher welfare gains than trade liberalization and increase producers' gains and boost agricultural exports. The simulation also underscored the importance of sequencing reforms, as additional synergic effects may results from the interaction of policies. In particular, the results suggested that infrastructure development – aiming at reducing transportation costs – is a strong complement to diversification as it produced synergetic effects in exports, investment, and capital return. Correspondingly, policies directed towards reducing marketing costs – such as cutting the middle man – are likely to be complementary to diversification. However, the results at this stage suggest that agricultural trade liberalization may not be necessarily complementary to diversification, meaning that these two policies combined do not produce additional gains.

The final chapter, Chapter 7, drew upon the entire thesis, tying up between the research questions and empirical findings. It discusses the limitation of the study and includes a discussion on the implication of the findings for better design and implementation of industrial policy in DRC. This chapter ends the dissertation with possible extension for future research.