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Growth and Barriers to Technology Adoption in Developing Countries: What about Cote d'Ivoire?

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1 Introduction

The Policies for Growth emphasizes the importance of productivity of countries. In fact, the cross-country differences in Gross Domestic Production (GDP) growth rates are mainly due to differences in productivity across countries. Otherwise, technological level of countries (i.e. degree of new technology adoption and diffusion and its effective use in a country) can explain much of the disparities in per capita income between countries. One can also notice that the new economic theory developed by [Acemoglu \(2008\)](#) focuses on the adoption of new technologies previously ignored by the [Solow \(1957\)](#). [Acemoglu \(2008\)](#) argues that, once we allow for relatively rapid diffusion of technologies, there will still remain technology or productivity differences across countries (beyond differences in physical and human capital). As noticed by [Acemoglu \(2008\)](#), the mains reasons are appropriateness of technologies and barriers of technologies to change.

However, in the context of developing countries, one can suppose that the former (i.e. appropriateness) is exogenous, while the latter (i.e. barriers) is endogenous. But in reality and fundamentally, the lack of appropriateness and the presence of barriers to technology adoption and diffusion in less developed countries depend on the incentives to adopt or the quality of institutions of these countries. The issue of institutions has been shown as the main barrier in the adoption and diffusion of new technologies, and then in poverty reduction for growth ([Acemoglu, 2008](#)).

The purpose of the topic is, firstly to understand institutionnal barriers related to technology transfer, adoption and diffusion, and secondly to make

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proposals, if necessary, to improve the quality of institutions, and then the effectiveness of production for economic growth in Cote d'Ivoire.

2 Institutional barriers to technology adoption and diffusion

Innovation and technology remain the main instruments to improve total productivity of factor and growth rate. At the firm level, the literature on industrial economics of innovation and growth argues that innovation is the cost of competitiveness (Kline and Rosenberg, 1986) and engine of growth (Bresnahan and Trajtenberg, 1995). But, in spite of the human skill of their nationals, developing countries seem so far off this reality; their firms do not create new technologies and innovations.

In the special case of Cote d'Ivoire, when we analyze institutions related to technology transfer, adoption and diffusion, the result is clear: an abundance of structures without well-defined objectives and rules about technology transfer and adoption. Generally, Cote d'Ivoire provides all required departments to do innovation and industrial policy; but these institutions do not work very well. For instance, the ministry of industry has the department of new industry and technology transfer; the department of industrial cooperation; the department of intellectual property rights; regulation committee, etc. The Ministry of high education and scientific research provides several services about valorization of research, diffusion of technology innovation, department of transfer and diffusion, invention, etc. Then sometimes there are overlapping and jurisdictional conflicts between different departments. Thus, the real problem is the implementation.

Another problem is the financing of public research activity. The private research is almost non-existent because of the absence of markets for credits and the lack of incentives to innovate. In Cote d'Ivoire, public policies neglect scientific research and specially fundamentals research; there is no think tank. The priority is given to development policies because of the burden of poverty. So knowledge creation is neglected. The researchers are not interested in finding something because they haven't got enough incentives from government.

Regarding the transfer of technology, this is not really a priority; for instance, if one visits the website of the most important public high schools (such as INP-HB, University of Cocody, University of Bouake, etc), one realizes how information and communication technology (ICT) is neglected by authorities. So, the main barrier in Cote d'Ivoire is public policy and the awareness of decision makers.

Other institutional barriers are corruption, misappropriation of public funds, lack of effective intellectual property rights enforcement, lack of enforcement contracting because of the bad quality of law institutions, etc. Since 2002, these barriers have been reinforced by the military and political crisis.

3 Propositions or Policies option

Obviously, to improve the institutional environment of technology transfer, adoption and diffusion, public decision makers must reorganize all things and focus on the quality of institutions related to technology for economic growth, banish corruption, redefine the rules of each concerned department, give priority to major technologies such as ICT because they have great impact on the activities of firms and their competitiveness.

Another policy is to give the priority to technology transfer and adoption and also to favor think tank and fundamental research. To do that, the government of Cote d'Ivoire should favor tandem Government (or public funds), Universities (or public research) and Firms (or private research) as proposed by the theory of triple helix model (Etzkowitz and Leydesdorff, 2000). This theory argues that the industry dynamics and innovation should be based on the industry-science-government relationship.

The previous proposition can lead to another one: develop and implement the concept of cluster in Cote d'Ivoire like in a developed country. The clusters can be used to monitor the effectiveness of technology transfer and adoption. It can also be used to initiate reflection about the own appropriate technology developed in Cote d'Ivoire.

4 Conclusion : the most appropriate policy

There is not one best policy, I think. We must combine the three propositions to give all opportunities for adopting new technologies, improving productivity, competitiveness of firms and then lead to poverty reduction by economic growth in Cote d'Ivoire.

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