

Large-scale Technology is at Heart of Economic Structural Transformation in Ethiopia

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May 14, 2011

In the European history, large scale technologies have played central role in the structural transformation the economy and society. The introduction of threshing machine, iron plows, seed drills and other important tools in the 18th century could increase the scale in agriculture. In the industrial sector, the technologies of the industrial revolution related to textile, iron production, mining, and steam power have led to an increase in the scale of production. Much later on, during the time of the second industrial revolution the introduction of new technologies such as steel, concrete, chemicals, paper and internal combustion engines led to even larger scales of efficient production. The introduction of influential technologies both in the agriculture and manufacturing sectors increased the scale of production and required large capital investment.

My point of argument is that large scale technologies are the origin of economic structural transformation in a given country. Large scale technologies are the means for the reallocation of resources between and across sectors, particularly in a country such as Ethiopia where there is high population growth and pressure. I am of the opinion that incremental approach to technological change in a model designed for small scale production does not help us to cope up with the demand and speed of growing population of the country (for details of my argument see references). According to the projection made by Ethiopian Central Statistic Authority (CSA), the Ethiopian population increases at a rate reaching a minimum of 2,3% during the 2015-2020 period (World growth rate is 1.14%), adding some two million people every year. This means Ethiopian economy will labor under the burden of rapid population growth for decades to come.

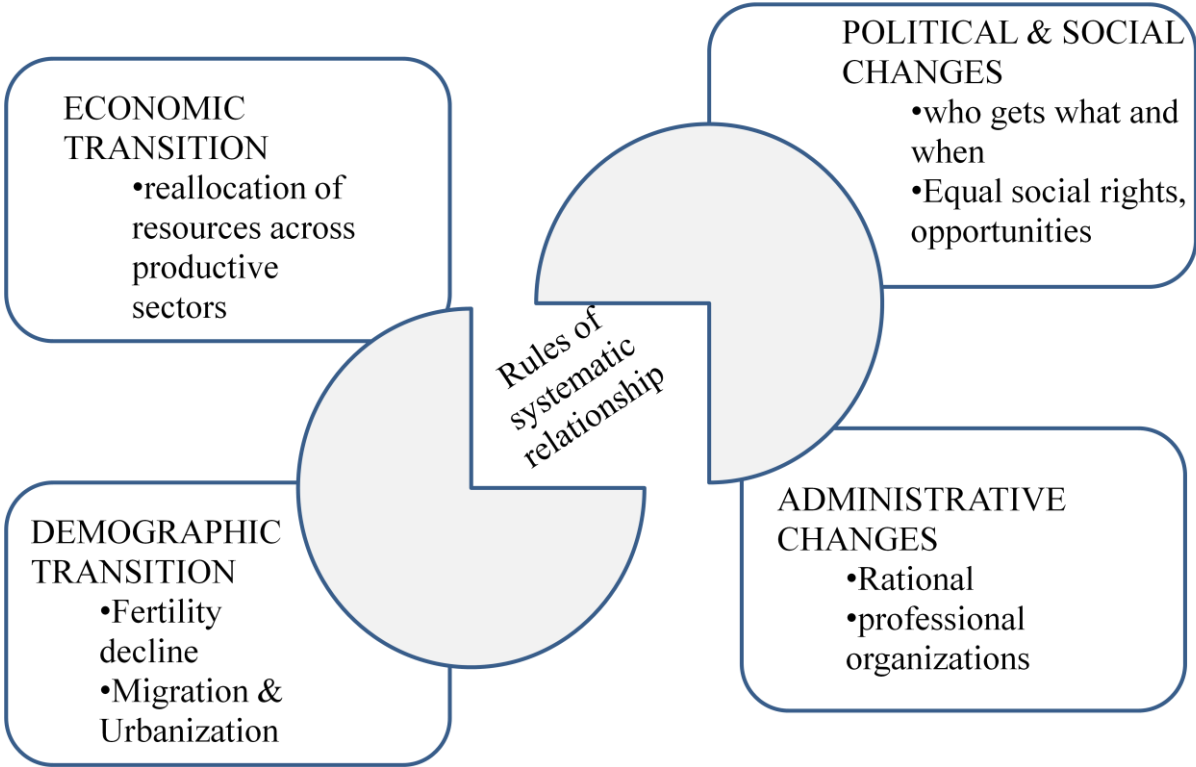
Without transforming the economic structure through the use of large scale technology, we Ethiopians will not be able to create productive employment and reduce poverty for a

growing population. Industrial decentralization, which I advocated in my previous postings (see references), is associated with the introduction of a series of economically viable large-scale technologies. Large scale technologies not only introduce new manufacturing industries in small and medium towns of the country, but they also they move the existing non-farm economic activities of subsistence households to the market.

From this perspective the current debate on programs of the Growth and Transformation Plan, Millennium Dam and large scale agricultural investment projects should be welcomed. For the first time the Ethiopian public started to discuss on new and large scale technologies, particularly in the energy and infrastructure sectors. Given the percentage of the value of import of raw material and semi-finished goods, I wish we also have import-substituting Millennium style projects in the metal and chemical fertilizer industries.

Embarking on new and large scale technologies has the advantage to make us think and act differently. There is a systematic relationship between the structural change in the economy and other core areas of policies: political & social change, administrative change, and demographic transition (see figure)

Figure: Structural Transformation as four-fold Systematic Relationship and Process



These core policy areas are linked: administrative change is required to implement economic structural policies, structural change is crucial for economic growth, and without economic growth a country rarely has much success in the program of social equality and opportunity for all. Demographic transition is necessary for taking advantage of labor force growth, for saving and investment in technologies. But at the current level of our development, there is no systematic rule based relationship between the suggested core areas. Introducing new and large scale technologies in Ethiopia will force us to think about the requirements and systematic dependency relationship between the parts of transformation. Development plans and policy reform suggestions will not be introduced in isolation and unsynchronized form.

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