

**Full Length Research**

# **Economic and Social Transformations of Korea; Lessons for Developing Countries With a particular Relevance to Ethiopia**

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The economic and social transformations of South Korea since 1960 are one of the biggest success stories in the history of development. In just a few decades, South Korea transformed itself from an agricultural society to an industrialized nation exporting high-technology products within the same time gap, it could dramatically and successfully transformed itself from aid effectiveness to development effectiveness. Though, just like many developing countries, authoritarian rule was a norm in Korea, more than two decades of authoritarian rule South Korea changed relatively peacefully to a democratic society in 1987. In the face economic stagnation and enormous development problems: Poverty, inequality, a low life expectancy, illiteracy, and poor service delivery, Ethiopia is trying its best to transform itself to standard in which its citizens in every stage will be beneficiary. It can get valuable insights for its journey towards sustainable development. Accordingly, Ethiopia needs to take lesson in the specific areas in which Korea has been used. Among others, investment in infrastructure, building human capability, technology transfer, Export orientation, tax policy and administration, technology financing, industrial policy, foreign direct investment and others are the directions in which Ethiopia can take ultimate advantage.

**Key Words:** Social, Economic transformation, Economic Development, Lessons, Korea, Developing Countries, Ethiopia

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## **INTRODUCTION**

### **Background of the Study**

The transformation of the republic of Korea is almost unprecedented in the history of any society in its pace and scope which can offer invaluable insights and

lessons and knowledge that can be shared across the globe particularly with the developing countries of Africa like Ethiopia. In our history of memory, the republic of Korea was a home of very poor agrarian society, especially before the incidence of the Korean War in

1950. From 1945 to 1976, Korea was the recipient of nearly US\$13 billion of economic and military assistance, nearly all of it in grants, allocated under the willful hand of the US (Hyun 2012). Particularly, after its liberation in 1945, and following the World War II, Korea suffered a lot from an economic collapse and a civil war till aid became critical in averting a humanitarian crisis in the wake of World War II and the Korean War in a poor country that had just been freed of its colonial rule (ibid ,14). Hence, we can take that aid was one of the factors that played a significant role for the Korean spectacular development. This dramatic social and economic transformation of Korea can significantly offer lessons for developing countries in search of sustainable and broad-based development in which many are aspiring to achieve in Ethiopia.

### **OBJECTIVES OF THE STUDY**

The study has the following fundamental objectives

- 1) To identify some selected areas in which Ethiopia can take lessons from the spectacular development experiences of the Korean republic.
- 2) To assess the historical development of the Korean industrial policies and their implication to the development progress of Ethiopia.
- 3) To explore the factors which enable the Korean republic to embark on a level of social and economic transformation with in a relatively short period of time.
- 4) To suggest context specific and achievable recommendations from the growth experiences of Korea to the development policy planers of Ethiopia.

### **Research Questions**

- 1) What are some of the sectors in Korea in which Ethiopia can take lessons from it?
- 2) What the historical development of Korean industrial policies look like and their implication to the development progress of Ethiopia?
- 3) What are the factors which enable the Korean republic to embark on a spectacular social and economic transformation with in a relatively short period of time?
- 4) What specific and achievable recommendations can be drawn from case study in point to Ethiopia?

### **SIGNIFICANCE OF THE STUDY**

The study is very much important for development policy planners of Ethiopia to look for alternative ways of growth and development from the experiences of other countries, notably, from Korea; a nation where successfully transformed itself from the evils of poverty and inequality with in a limited decades. This trend should be adopted and lessons indispensable for Ethiopia

must be taken to alleviate the problems and make the people beneficiary from the fruits of development and globalization. Furthermore, researchers who are interested to study the growth and development trajectories of Korea and Ethiopia will find it helpful.

### **METHODOLOGY**

The study has relied completely on secondary data sources. For getting valuable insights, internet sources have been exploited and several international journals have been used. Therefore, document analysis has been the major tool of the study. The method followed throughout this paper is qualitative and descriptive in nature.

### **Introduction to Ethio-Korea Relations**

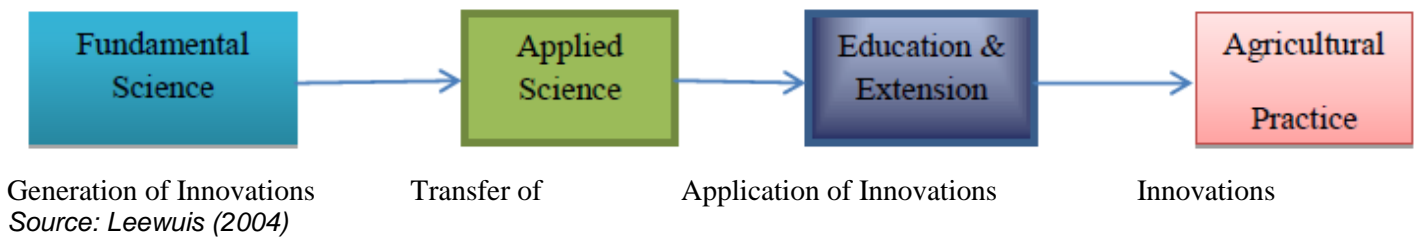
Korea has been assisting Ethiopia's development endeavors in various aspects. Currently, many Ethiopians are pursuing their studies in various universities of South Korea and more than 40 of them have studied public policy, development policy, and Korea's development history at the Korea Development Institute (KDI) School of Public Policy and Management, a Seoul-based higher education institution that has been playing a pivotal role in sharing the country's development experience with the developing world. Besides, a number of descendants of the Ethiopian veterans are also getting vocational training in various Korean institutions in a plan put forward by Lee.

Ethiopia considers South Korea as an important model for its economic development and the country draws heavily on the lessons of South Korea. It is, however, dismaying to learn that Ethiopia has not been able to attract Korean investors in sufficient numbers, particularly into the textile and leather industries towards which the country's industrial development strategy is geared for the right reasons.

This may be because investors are victims of the negative publicity surrounding the continent or the relevant government bodies have not done a good job of promoting the great resource potential and investment opportunities in the country. Given South Korea's untapped potential for technological transfer and development assistance, further strengthening the existing overall relations is of paramount importance in Ethiopia's bid to become a middle income country.

### **Food Security and Agricultural Technology Transfer**

Development of infrastructure, agricultural technology, and institutional establishment are major factors to achieve food security in developing countries. However, agricultural technology is critical to agricultural



**Figure 1.** The linear model of innovation

development. As Ethiopia has a huge potential for agriculture (MoFED, 2002; Daio, 2010), it is really very indispensable for her to take Korea as her best exemplar and consequently take lessons that will lead it to achieve an economic and social progress to a standard at which every citizen can be beneficial from such a development, at least in securing food. In this regard, one major advantage for the success of such a hypothesis is that Korea is willing to share its experience in agricultural development with developing countries. One such experience is the Korean Green Revolution that was able to help people escape from prolonged hunger and poverty in a short period of time (Rae Cho 2011).

### **New Approach to Technology Transfer to Developing Countries**

Like other industries of Korea, Ethiopia may learn some important lessons from the agricultural sectors of Korea, specifically from the Green Revolution and Samuel Movement program (Rae Cho 2011;4). Particularly, these two cases showed distinguished features that are appropriate to adopt in Ethiopia and other developing countries: political leadership; community participation; institutional building; technology development; strong support of international societies; agricultural infrastructure development; and parallel development of other industries. Above all, technology innovation will be the trigger of agricultural development.

To enhance the living standards of the people in developing countries with huge agricultural potential like Ethiopia, technology transfer is the short and easy mechanism. And to do that, we need a model.

### **The linear and 'top-down' model of innovation perspective**

#### **Transfer of Technology**

According to Leewuis (2004), the linear model assumes a one-way and uninterrupted flow of technologies from fundamental scientists, to ultimate users via various intermediaries and delivery mechanisms (Figure 1).

Technology is information that is put into use to accomplish some task (Eveland, 1987 cited in Rogers

2002); it is essentially information, knowledge about the physical world and how to manipulate it for human purposes (Rogers, 2002). According to Rogers (2002) Technology Transfer is the application of information into use. Transfer is essentially the communication of information (technology), a communication process through which the results of scientific research are put into use.

Agricultural extension is the defining metaphor for all technology transfer activities and models (Eveland, 1987 cited in Rogers, 2002). This is because the agricultural extension model was so successful, at least by reputation, in achieving its original objectives of increasing agricultural production in the United States (Rogers, 2002). Rogers argues the essential factors in the relative success of agricultural extension as a technology transfer system are two interrelated levels of extension specialists who link agricultural researchers with county extension agents, who then communicate with farmers; adequate funding for technology transfer and a research system oriented to finding solutions to farmers' problems (Rogers, 2002).

Biggs (1990) defines the technology transfer model the 'central source' model, in which the state supported research is the source of knowledge generation, innovation or new technology. Biggs further states that this 'central source' model led to hierarchical systems of research and extension, where communication and information flow was linear and unidirectional, from the researchers (the centre) to farmers (the periphery) via extension.

### **Policy implications of the Model**

Large number of research evidences indicate, that this model has strongly influenced and laid the basis for agricultural research and extension policies in developing countries. Arnold and Bell (2001 cited in World Bank, 2006) explained that the linear model of innovation mirrored the belief that "basic science leads to applied science, which causes innovation and wealth". The policy implications of this "science push" model was simple: "if you want more economic development, you fund more science".

Throughout Africa, Rolling (2006) asserts, most policy-makers, ministry officials, research administrators, economists, and researchers cannot imagine any other theory of innovation than the linear model and continue to adhere to it, even after years of failure in situations where it does not apply. Rolling argues that the production of agricultural technologies by research, even if they 'work' in the experiment station, is absolutely no guarantee for diffusion.

According to Leeuwis (2004), the role of communication in the top-down approach was looked at an 'instrumental' way, characterized by two important and interrelated features. First, instrumental forms of communicative intervention take place after the goals and corresponding policies and /or innovations have been defined by outside agencies. The prime idea is to persuade as many people as possible to accept a given policy or to adopt a given innovation. A second feature is that communication is used deliberately as a policy instrument (in conjunction with other instruments) in order to steer and direct human behavior, which is thought of as being largely predictable.

## **Factors Contributed to Korea's development**

### **ODA in Economic Development: the Case of South Korea**

For more than half a century ODA has been in operation in filling the resource gaps of the recipient developing countries. As repeatedly described above, up to early 1980s South Korea was one of the recipients of ODA and until 1970s ODA was one of its significant foreign financial sources. Turning to the case of Ethiopia, Ethiopia is one of the low-income countries where ODA plays important role in its economic activities.

Korea has provided a large share of bilateral ODA for the development of infrastructure while DAC member countries have provided it for the poverty reduction, social development and conservation of environment. Especially, Korea's bilateral ODA was channeled into the transportation, communication, and energy sector which would be expected to have a strong impact on economic growth for developing countries. Support to these sectors is also expected export expansion effect for the Korean company (Byoungki KIM, 2006). The share of transportation, communication, and energy sector was 34.3% in bilateral ODA in 2003.

Japan has also been providing a large share of bilateral ODA for economic infrastructure development. Considering the experiences of infrastructure investment in the early stage of economic development of Korea and Japan, aid for economic infrastructure is extremely important to attainment the main development targets in Ethiopia, such as urbanization, industrialization, equitable

income distribution, and sustainable economic development.

## **Export Orientation**

Apart from formal and informal institutions, the economic success of South Korea has been largely due to its consequent export policy (cf. World Bank, 1993). An export orientation seems to be a necessary (although not a sufficient) condition for economic growth. Countries which do not open up economically to the world market remain poor. Extreme examples are North Korea, Myanmar or Cuba (cf. Léon, 2011). Although this insight is not new to modern development economics, the case of South Korea and its counterparts in Asia, confirms that developing countries like Ethiopia have to buildup an export strategy framed by institutional reforms. As cited by Domjahn 2013, import substitution strategies and policies based on dependencies theories (cf. Cardoso, 1979) seem to be out-of-date in the light of the success of Korea.

Being a resource-poor country, Korea in the 1960s and 70s focused on three priorities: (i) export promotion to ameliorate chronic trade deficits; (ii) industrialization by mobilizing human resources; and (iii) wise use of foreign capital and technology (GRIPS dev.t Forum 2010). Five-Year Economic Development Plans set targets for economic growth and mobilized national resources and capabilities toward achieving them.

In implementation, action plans were formulated and then constantly adjusted in response to shifting domestic and foreign environments. Korea thus had a mechanism for flexible and adaptive implementation of the Plan rather than rigidly following pre-defined targets and policy tools. The role of the Korean government in development planning changed over time. In the 1970s, this was the period of Heavy and Chemical Industry (HCI) drive, the government intervened directly in the market for the execution of the Plan although the degree of official involvement varied among industries. As cited in (GRIPS dev.t Forum 2010;2), these industries include the promotional law targeted six strategic industries including industrial machinery, ship building, electronics, automobiles, steel, and petrochemicals. Among these, the government took full responsibility for initial investment in the steel industry. Meanwhile, the private sector took the initiative to develop other industries such as electronics, automobiles, and shipbuilding, with the government playing a facilitating role by, for example, assisting with finance and technology acquisition. From the 1980s onward, as private businesses grew and economic liberalization proceeded, the government began to play a less direct role.

As part of the country's environmental agenda, a

national committee known as Presidential Committee on Green Growth (PCGG) was established in February 2009 at the recommendation of the Presidential Council for Future and Vision. As indicated by (Green Growth Korea's Choice: Progress Report 2008-09), The objective of the national vision on "Green Growth" is to tackle the issue of climate change, environmental degradation and the depletion of energy resources. Unlike past approaches, however, green growth puts more emphasis on sustainable growth while reducing greenhouse gas emissions. In Korea's development architecture, this is an area where government must play a proactive role even though the present Korean economy is driven by the private sector. A large number of government ministries and agencies and public research institutions participated in developing the Green Growth strategy and its five-year implementation plan. All central and local government institutions are required to develop their own Green Growth Action Plans which must be approved by PCGG.

The need to see Green Growth is justified by two important implications. One is the increasing necessity of the GG strategy in the international arena in response to the risks and threats posed by the global warming and the consequent ultra-violet ray (UVR). The second one and the very justification to our case is related to one of the secrets and factors that brought about Korea's development; i.e. the effective use and implementation of ODA. One of the ten key policy agenda of the national strategy for Green Growth is ODA-related, namely, "becoming a role-model of green growth for the international community." To this end, performance indicators are set to increase the proportion of Green ODA from 11% in 2009 to 20% by 2013 and to 30% by 2020 (ibid;3). The Korean government has also proposed to the OECD/DAC to introduce new ODA classification to measure and encourage donor support to the sectors related to "Green ODA." See the chart below.

### **The importance building of capability**

Whether or not a heterodox approach is adopted, the ability of a given country to compete successfully, especially in the current globalized environment, is to build capability. That would require that countries invest especially in infrastructure (physical, institutional or human, etc.). However, the possibility of private capture of the returns from public investment, especially in relatively mobile human capital, may often result in a sub-optimal public allocation (Fosu, 2004). That is, the potential for emigration in the case of public human capital investment reduces the expected social return. In a number of developing countries, unfortunately, many individuals educated with public funds emigrate for

greener pastures. Whether or not such 'brain drain' is transformed to 'brain gain' eventually, it seems appropriate to wonder at what cost and how can such social capital loss be minimized, to begin with? An appropriate solution to the second query may rely on strategically providing the complementary business environment that increases human capital's derived demand, with greater priority accorded the demand side (Fosu, 2004).

Lee (2013) argues that Korea's development success was attributable in great part to the government's role in strengthening the capabilities of firms. Cognizant of the need to prevent potential 'government failure' (for state-owned enterprises), however, Lee also recommends that the strategy should be coupled with outward orientation that could 'curb the potential for rent-seeking' (ibid. 18). There is a potentially important lesson here. It is well-recognized in the literature that import-substitution strategies failed in many developing countries, especially in Africa, in great part because such strategies created rent seeking activities, with the resultant inefficiencies and eventual collapses of the protected firms. Outward-orientation would, thus, provide the discipline for firms to compete as the rent is whittled away by competitive forces.

The derivable lesson, then, is not necessarily that the government should target certain industries, as Korea seems to have done, but rather strengthen the business environment generally. Public provision of such physical and institutional infrastructures would induce productive private capital, which would be the complementary physical capital required to reduce the risk of (publically produced) human capital. That is, the strategy would serve to reduce the expected social capital loss by raising the likelihood of educated labour absorption through the increasing derived demand for labour (Fosu, 2004). Clearly, human capital development is an essential integral part of any successful development strategy. It is crucial, nevertheless, that the complementary business environment required to retain that capital also be created. Hence, the role of the immobile form of infrastructure is likely to be fundamental (ibid.). Human capital increase can be seen as an input to economic development, which made the shift in production structure to more sophisticated products possible in Korea. The expansion of the South Korean educational system was unique because of the rapid and sustained growth at all educational levels, which was strong enough to support sustained economic and industrial development." (Ramires & Rubio, 2010, p. 76f.).

It has been argued many scholars, that informal institutions shaped by Confucian ethics accelerated the human capital accumulation in South Korea. Human capital, in turn, was a key to South Korea's fast economic development (cf. Acevedo, 2008; Maksymenko & Rabbani, 2008; Lee, 2000).

The importance of human capital for economic development in general is widely accepted (cf. Bils & Klenow, 2000; Krueger & Lindahl, 2001; Prichett, 2001; Romer, 1989). "A greater amount of educational attainment implies more skilled and productive workers, who in turn increase an economy's output of goods and services. An abundance of well-educated human resources also helps to facilitate the absorption of advanced technologies from developed countries. In addition, the level and distribution of educational attainment has a strong impact on social outcomes, such as child mortality, fertility, education of children, and income distribution." (Barro & Lee, 2001, p. 541)

### Strategies to Build Domestic Capabilities

It is very important to briefly consider the strategies used by economies such as the Republic of Korea and Taiwan Province of China to build domestic technological capabilities.

The Republic of Korea and Taiwan Province of China, the technological leaders in the developing world, adopted highly interventionist strategies on trade and domestic resource allocation, with a clear preference for promoting indigenous enterprises and deepening local capabilities. Korea's rapid industrialization owed much to the developmental-state role played by the government has been extensively documented (Amsden, 1989; Chang, 1993; Wade, 1995; Kim, K.S., 1995 and 1997). They imported technology vigorously from leading TNCs, but assigned FDI a secondary role to technology import in other (arm's length) forms. Their export drive was led by local firms, and comprehensive policy support allowed local firms to build impressive technological capabilities. The domestic market was not exposed to free trade; a range of quantitative and tariff measures were used over time to give infant industries "space" to develop their capabilities. The deleterious effects of protection were offset by strong incentives (in the case of the Republic of Korea, strong pressures) to export and face full international competition (Westphal, 2002). During liberalization, the same careful strategic approach was used to ensure that no damage resulted to local enterprises; concomitantly, these enterprises were encouraged to go transnational and set up integrated production systems of their own.

The Republic of Korea went much further in developing advanced and heavy industry than Taiwan Province of China. To achieve its compressed entry into heavy industry, its interventions had to be more detailed and pervasive, along the lines of Japan but probably more comprehensive (Amsden, 1989; Westphal, 2002). It relied primarily on capital goods imports, technology licensing and other technology transfer agreements to acquire technology. It used "reverse engineering" (taking apart

and reproducing imported products), adaptation and own product development to build upon these arm's length technology imports and develop its own capabilities. It drew upon OEM contracts to access technologies and skills from TNCs (Cyhn, 2002). Its private sector R&D is now the most expensive in the developing world and second most expensive in the world as a whole. The Republic of Korea accounts for around 53 per cent of total private sector R&D spending in the developing world (UNIDO, 2002). The R&D risks undertaken by the chaebol were contained by the strict discipline imposed by the Government in terms of export performance, vigorous domestic competition, and deliberate interventions to rationalize the industrial structure. The Government also undertook various measures to encourage the diffusion of technology, putting pressure on the chaebol to establish supplier networks. Apart from the direct interventions to support local enterprises, the Government provided selective and functional support by building a massive technology infrastructure and creating general and technical skills.

### Lessons for Tax Policy and Administration

Korea's spectacular rise from an impoverished country in the 1960s to an economic power house in just a generation is an unprecedented success story in human history. In the early years, its socioeconomic conditions were similar in many respects to those of the East African Countries (EAC) member countries today. Korea's Gross Domestic Product (GDP) per capita grew from US\$130 in 1954 to about US\$19,115 in 2008. This growth was relatively well shared among its people, as evidenced by a Gini coefficient of 32 in 2008, which is equal to the European average. Korea implemented an export-oriented infant industry strategy to transform itself from a third world country into a first world economic power in one generation. In the 1960s, Korea's GDP per capita was similar to that of EAC member countries today and much lower than South Africa's. It was a fragile state, emerging from a devastating war with North Korea. It was also predominantly rural, with a large informal sector. This formed the project's rationale for inclusion of Korea's tax experience in the 1960s and 1970s.

Korea's tax reforms in those years consisted of three phases which successively focused on: improving policies and laws; efficient implementation; and strengthening equity and the introduction of Value Added Tax (VAT). First, until 1966, reforms concentrated on revising tax policies to increase revenue collection and support growth. This involved merging a number of taxes, increasing the share of indirect taxes and using tax incentives to support selected sectors. These measures, along with others, contributed to boosting growth, which reached 9.3% in 1963 and has since been sustained at

an average of 7.2%. But revenue collection still fell short of expectations. The focus therefore shifted from reforming tax policies to implementing them efficiently. Consequently, the second phase, from 1966 to 1974, focused on strengthening the tax administration. The creation of the National Tax Service (NTS), as a semi-autonomous body in 1966, initiated a period of rapid revenue growth. During the third phase, from 1974 to 1980, the importance of equity as an objective of tax policy increased and VAT was introduced. Government revenue increased from 9% of GDP in 1966 to 15% in 1980. Combined with a decrease in government expenditure, this enabled Korea to rapidly achieve fiscal balance, which was a priority strategic objective. Furthermore, tax incentives also contributed to stimulating growth, though to a much lesser extent than non-tax incentives, such as targeted credit subsidies.

### **Two lessons of particular relevance to Ethiopia emerge from Korea's tax experience**

First, Korea achieved faster results by focusing its tax policies on a few priorities fully aligned with its national development strategy. In the 1960s and 1970s, Korea's national strategy, on one hand, was to rapidly achieve fiscal balance with a small government budget, and on the other, to promote growth through an infant industry policy. To this end, it successfully implemented tax policies aimed at increasing adequate revenues to match low levels of expenditures by international standards, broadening the tax base, and providing incentives to strategic sectors. At the same time, less priority was given to other tax objectives, such as neutrality and equity. However, trade-offs in the tax space were largely made up in other policy areas, in particular through equity-oriented expenditure, rural development programs and growth. All this provided Korea with sustainable means to achieve equity. Ethiopia and other developing countries are also challenged by multiple tax objectives, which can be conflicting if pursued at the same time. For instance, exemptions can be necessary to provide safety nets or stimulate investments, but they conflict with the objectives of broadening the tax base and minimizing distortions. The priorities opted by Korea may or may not fit the strategies of Ethiopia. But prioritization and sequencing could help overcome the general problem of conflicting tax objectives.

Second, Korea broadened its tax base by making its tax administration simultaneously empowered and accountable. The National Tax Service (NTS) benefitted from full support by top Government officials. NTS was shielded from political interference in its operations, as illustrated from the President's personal support to the Commissioner against external pressure. In addition,

enforcement capability of the tax administration was dramatically strengthened. For instance, three years after its creation, NTS staff headcount increased by 70% to reach 0.3 staff for 1000 inhabitants, 5 times the EAC average. On the other hand, the President was personally committed to the success of the tax administration, approving targets himself and closely monitoring its performance. Operational empowerment and accountability for performance together helped Korea succeed in broadening its tax base. This is illustrated by a VAT Gross Compliance Ratio of 55%, which was achieved by 1978, against a range of 27% (Uganda) to 41 % (Kenya) in the East African Countries today.

One useful way to interpret these lessons is that part of Korea's success can be explained by a strong emphasis on implementation, over and above strategy and policies. In fact, many of Korea's policies and strategies have been adopted in Ethiopia and other EAC in one form or another. These include, for example, incentives to promote investment, simplified tax filings for small enterprises, and special initiatives for large tax payers. Korea, therefore, stands out for its emphasis on implementation rather than the nature of its policies. Indeed, focused and coherent strategies are a prerequisite for solid implementation. Likewise, empowered and accountable execution agencies are critical for effective delivery. Implementation plays a central role in Korea's experience in general, beyond the field of taxation. As an illustration, it is said that President Park Chung Hee, Korea's leader during its takeoff phase, allocated 20% of his time to decision making, and 80% to implementation. As a result, over his 18-year tenure, he spent about 119 days a year crisscrossing the country, demonstrating his commitment to results, monitoring them and listening to practical feedback from the ground.

### **FDI and Technology Policies in the Republic of Korea<sup>1</sup>**

For the Government of the Republic of Korea technology policy was very much a tool of broader industrial policy. It combined selective import-substitution with forceful export promotion, protecting and subsidizing targeted industries that were to form its future export advantage. In order to enter heavy industry, promote local R&D capabilities and establish an international image for its exports, the Government promoted the growth of giant

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<sup>1</sup>United Nations 2003. INVESTMENT AND TECHNOLOGY POLICIES FOR COMPETITIVENESS United Nations Conference on Trade and Development: Review of successful country experiences UNCTAD/ITE/IPC/2003/2

local private firms, the chaebol, to spearhead industrialization. One of the pillars of the Republic of Korea's technological strategy, and one that marks it off from the other NIEs, was the deliberate creation of these large private conglomerates. The chaebol were handpicked from successful exporters and were given a range of subsidies and privileges, including the restriction of TNC entry, in return for furthering a strategy of setting up capital and technology-intensive activities geared to export markets. The rationale for fostering size was obvious: in view of deficient markets for capital, skills, technology and even infrastructure, large and diversified firms could internalize many of their functions. They could undertake the cost and risk of absorbing very complex technologies (without a heavy reliance on FDI), further develop it by their own R&D, set up world-scale facilities and create their own brand names and distribution networks. Industry in the Republic of Korea built up an impressive R&D capability by drawing extensively on foreign technology in forms that promoted local control. Thus, it was one of the largest importers of capital goods in the developing world, and encouraged its firms to obtain the latest equipment (except when it was promoting particular domestic products) and technology. It encouraged the hiring of foreign experts and the flow (often informal) of engineers from Japan to resolve technical problems.

FDI was allowed only where considered necessary, and the Government sought to keep control firmly in local hands. Foreign majority ownership was not permitted unless it was a condition of having access to closely held technologies, or to promote exports in internationally integrated activities. The Government intervened in major technology contracts to strengthen domestic buyers, and sought to maximize the participation of local consultants in engineering contracts to develop basic process capabilities. In 1973, it enacted the Engineering Service Promotion Law to protect and strengthen the domestic engineering services sector, and the Law for the Development of Specially Designated Research Institutes to provide legal, financial and tax incentives for private and public institutes in selected technological activities. The Government supported technological effort in Republic of Korea in several ways. Private R&D was directly promoted by a number of incentives and other forms of assistance. Incentive schemes included tax-exempt TDR (Technology Development Reserve) funds, tax credits for R&D expenditures as well as for upgrading human capital related to research and setting up industry research institutes, accelerated depreciation for investments in R & D facilities and a tax exemption for 10 per cent of cost of relevant equipment, reduced import duties for imported research equipment, and a reduced excise tax for technology-intensive products. The KTAC (Korea Technology Advancement Corporation) helped firms to commercialize research results; a 6 per cent tax

credit or special accelerated depreciation provided further incentives.

The import of technology was promoted by tax incentives: transfer costs of patent rights and technology import fees were tax-deductible; income from technology consulting was tax exempt; and foreign engineers were exempt from income tax. In addition, the Government gave grants and long-term low-interest loans to participants in "National Projects", which gave tax privileges and official funds to private and government R&D institutes to carry out these projects. Technology finance was provided by the Republic of Korea Technology Development Corporation.

However, the main stimulus to the tremendous growth of industrial R&D came less from the specific incentives to R&D than from the overall incentive regime that created large firms, gave them a protected market to master complex technologies, minimized reliance on FDI, and forced them into international markets where competition ensured that they would have to invest in their own research capabilities. This is why, for instance, the Republic of Korea has 35 times more R&D by industry as a proportion of GDP than Mexico (with roughly the same size of manufacturing value-added), an economy that has remained highly dependent on technology imports.

The Government of the Republic of Korea intervened often in arm's length technology imports to lower prices and strengthens the position of local buyers, but in a flexible way that did not constrain access to expensive know-how. The licensing policy was liberalized over the 1980s as the need for increasingly advanced technologies increased. The regime encouraged reverse engineering and R&D by technology-importing firms to develop indigenous technological capabilities; many of the larger firms were later able to enter into collaborative ventures with world technology leaders on a more equal basis. In the field of plant and process engineering, the Government stipulated that foreign contractors transfer their design knowledge to local firms, which quickly absorbed design technologies in some process industries.<sup>2</sup> Even more so than Taiwan Province of China, the Republic of Korea was able to use imported technology to develop its domestic base of capabilities in advanced activities, rather than remaining passively dependent on inflows of foreign skills and innovations.

The chaebol soon developed sufficient international presence to manage their technology imports. However, SMEs had to be given continued assistance to search for and buy technologies overseas. Like Taiwan Province of China (and Japan), the Republic of Korea compiled a database on sources and prices of technology supply. This was linked to similar databases overseas and

<sup>2</sup> For a study of this strategy in the petrochemicals industry, see Enos and Park (1997).



provided on-line in major industrial centers. There was also a programme to increase SMEs' technological linkages with large firms (see below), but unlike in the case of Taiwan Province of China, this was directed mainly at local large firms rather than at TNCs. As with the other export-oriented countries, foreign buyers were a valuable source of technology<sup>3</sup>. The Government's export promotion efforts contributed greatly to this mode of technology acquisition. Several promotion measures were involved, including financial incentives, export targeting, other pressures to export (such as access to import licenses) and information support<sup>4</sup>.

The Korean Overseas Trade Agency (KOTRA) played a significant role in providing contacts and market intelligence, and bringing together foreign buyers and Republic of Korea suppliers. The chaebol themselves were instrumental in promoting exports by other firms via their trading arms, modeled on the Japanese *sogoshosha*. These had the financial and marketing strength to be able to substitute for foreign trading companies that small exporters in Taiwan Province of China had to rely on (above), and contributed to the superior ability of the Republic of Korea to establish its own brand names in international markets.

The Republic of Korea's policies to selectively encourage activities and firms via credit allocation and subsidization were inherent to its industrial policy from the start (Amsden, 1989; World Bank, 1993). As the industrial sector matured and entered more demanding areas of technology and the Government reduced the direct allocation of credit, its role in technology financing increased rather than decreased (Song 1995). This emphasis was also aided by the fact that the emerging "rules of the game" made other forms of subsidies and grants to industry unacceptable, while technology financing remained a permissible form of intervention.

The Government of the Republic of Korea provided technology financing in the form of both grants and loans (often directed and subsidized). A variety of institutions,

such as venture capital companies, banks, credit guarantee companies and others were used to channel funds to a variety of users in a variety of forms. These three forms of technology financing -subsidies, loans and institutional support -are described in turn.

### Subsidies

There are three main forms of subsidies for technological effort: the Designated R&D Program (launched in 1982), the Industrial Technology Development Programme (1987) and the Highly Advanced National Project (1992). Together these have contributed large sums of money for research approved or targeted by the Government, conducted by firms on their own, by research institutes on their own, and by firms in collaboration with research institutes.

### Loans

The Government of the Republic of Korea set up three funds to provide loans, usually at subsidized rates<sup>5</sup>, for technology development. The first was the Industrial Development Fund, providing low-interest loans for long-term productivity improvement and technology upgrading in high -technology industries. Several banks were used to channel the funds, which could total up to 70 per cent of the approved projects for large companies and up to 100 per cent for SMEs. The loans are given for five years, with a two-year grace period, and an interest rate of 6.5 per cent. The total funds disbursed during 1990–1994 came to around \$618 million. The second fund was the Science and Technology Promotion Fund, started in 1993 to fund firms and research institutes undertaking HAN projects (noted above). Loans could total up to 80 per cent of the total value of the project, up to \$1.3 million per project and \$3.8million per firm. They are for seven years, with a grace period of three years and an interest rate of 6 per cent. In its two years of operation the fund has offered \$255million. Third, an SME Foundation Formation Fund was set up as recently as 1994 to support technology development and environmental investment by smaller firms. The fund could finance 100 per cent of approved projects at an interest rate of 8.5 per cent over 10 years, with a grace period of three years. In 1994 this fund provides \$400 million.

### Financial institutions' technology financing

The Republic of Korea has the largest and most successful venture capital industry in the developing

<sup>3</sup>Rhee et al. (1984).

<sup>4</sup>Export promotion was implemented by general measures such as devaluation and general tax incentives, as well as by discretionary measures such as access to restricted imports and direct cash subsidies. The State-controlled banking system was used to channel funds into export support, and export performance increasingly became the criterion for credit worthiness. These incentives were backed by powerful direct pressures to export: regular meetings between business leaders and the Government and detailed targeting of exports at the industry and firm levels (backed by threats of tax auditing and restrictions on imported inputs for poor performers). The export drive also received considerable support from institutional measures such as support for the giant trading and producing conglomerates, assistance to testing and quality assurance services, export marketing information, design assistance, and so on. Overt subsidies declined over the 1980s, but institutional support and the indirect influence of the Government continued strongly.

world. Starting with the launching of the Republic of Korea Technology Development Corporation (KTDC), a joint effort by the Government and the chaebol, in the early 1980s, several private venture capital funds were set up. There are 58 venture capital companies in the Republic of Korea today, which disbursed loans and investment funds amounting to \$3.5 billion during 1990–1994 (85 per cent of this was in the form of loans).

A number of banks (Korea Development Bank, Industrial Bank of Korea, the Kookmin Bank, the Korea Long-Term Credit Bank and others) lend money to firms and research institutes for technology development. The State-owned KDB, for instance, offers three kinds of finance: Technology Development Loan, High-Technology Industry Promotion Loan and Production Technology Development Loan. These three instruments lent \$ 3.4 billion during 1990–1994, with 40 per cent going into the High-Technology Industry Promotion programme. Both this programme and the Production Technology Development Loan are for firms approved by the Ministry of Trade, Industry and Energy; finance is provided for eight years with a three-year grace period and a subsidized interest rate of 8 per cent. The Industrial Development Bank of Korea offers Technology Development Loans for SMEs, which amounted to \$560 million during 1990–1994. These loans are for developing new technologies or improving upon imported technologies, and IDB offers up to 100 per cent of the cost of the project at 8.5 per cent interest (over 10 years with a three-year grace). Other banks also offer similar loans to SMEs.

The Korea Technology Credit Guarantee Fund (KTCGF) offers credit guarantees for loans made to help firms develop or commercialize new technology. It concentrates on SMEs (firms with fewer than 1,000 employees) in new technology industries, as well as research institutes that need funds for technology development. The total value of its guarantees between 1990 and 1994 was about \$8 billion. The fee charged is 1 per cent of the value guaranteed for SMEs and 1.5 per cent for larger companies.

The scale of technology financing in the Republic of Korea is truly impressive, although the Government feels that it is still inadequate for its needs. This accounts for the constant setting up of new schemes, targeted at smaller firms and the fostering of collaboration with research institutes. The figures also indicate that there is tremendous technological dynamism in the SME sector, although the chaebol continue to account for the bulk of R&D expenditures. The extent of selectivity in technological activity remains very high, with no remission in the strategy of identifying and targeting specific areas for research activity.

The Asian crisis, however, has forced technologically sound but financially weak the Republic of Korea firms to invite FDI to cope with pressing cash flow problems. They

put not only peripheral but also core businesses up for sale. Consequently, unlike China and South-East Asian economies that witnessed sharp falls in FDI (e.g. Singapore 24.8 per cent and Taiwan Province of China and Malaysia 19 per cent in 1998), the Republic of Korea had a sudden increase in FDI. Thus, FDI in manufacturing rose from \$2.3 billion in 1997 to \$ 8billion in 1998 and to \$15.5 billion in 1999. The lion's share of the new FDI took the form of mergers with and acquisitions of existing Republic of Korea firms. Hewlett-Packard purchased a 45 per cent stake in its Republic of Korea subsidiary from its joint venture partner, Samsung Electronics, for \$36 million. Dow Chemical took over Ulsan Pacific Chemical by purchasing a 20 per cent stake. Philips purchased a 50 per cent stake in LG's highly profitable flat panel display business for \$1.4 billion. Volvo purchased Samsung's construction machinery division for \$730 million.

If assets sales are included, the Republic of Korea's top five chaebol raised over \$7.4billion in the year after the crisis. The Republic of Korea's economy will now be far more linked with foreign multinationals than before. But in most recent cases the FDI transfers neither new processes nor new product technologies. It does transfer managerial capabilities, which introduces transparent and accountable management systems, which Republic of Korea firms previously lacked.

Some TNCs have also started to conduct R&D locally. Thirty -nine TNCs, or 1.4 per cent of the total number of TNCs operating in Republic of Korea manufacturing, have set up R&D centers. Thirty -three of these were established in the 1990s, after the Republic of Korea had developed a significant R&D base. TNC R&D units, however, account for less than 1 per cent of the total number of corporate R&D centers. Most of TNC R&D involves adapting products to local markets, which suggests that local innovation by TNCs is fairly insignificant compared with that of domestic firms.

Patent registration in the United States is often used as a measure of international competitiveness. The cumulative number of patents granted to nationals of the Republic of Korea by the United States between 1969 and 1992 was 1,751 compared with 4,978 for Taiwan Province of China. However, the Republic of Korea jumped from 35<sup>th</sup> place in the number of patents in the United States (among 36 countries listed in an NTIS report) in 1969 to 11<sup>th</sup> place in 1992, giving an average annual growth rate of 43 per cent (NTIS, 1993). This growth rate was the highest of the countries in that report. A more recent report shows that the Republic of Korea jumped to sixth place in 1999, with 3,679 patents, after only Japan, Germany, Taiwan Province of China, France and the United Kingdom. Samsung Electronics, the most R&D - intensive firm in the Republic of Korea, ranked fourth with 1,545 US patents, coming only after IBM, NEC and Canon. These figures again indicate how

rapidly the Republic of Korea has gained in technological competitiveness.

The Government of the Republic of Korea invested in a large array of technology infrastructure institutions. In 1966 it set up KIST (Korea Institute of Science and Technology) to conduct applied research of various kinds for industry. In its early years, KIST focused on solving simple problems of technology transfer and absorption. In the 1970s, the Government set up other specialized research institutes related to machinery, metals, electronics, nuclear energy, resources, chemicals, telecommunications, standards, shipbuilding, marine sciences, and so on. These were largely spun off from KIST, and by the end of the decade there were 16 public R&D institutions. In 1981 the Government decided to reduce their number and rationalize their operations. The existing institutes were merged in to nine under the supervision of the Ministry of Science and Technology. KIST was merged with KAIS (Korea Advanced Institute of Science) to become KAIST, but was separated again -as KIST -in 1989.

The Government's strategic thrust in this sphere was mainly a series of National R&D Projects launched in 1982. These were large-scale projects which were regarded as too risky for industry to tackle alone but which were selected as being in the country's industrial interest. National Projects were conducted jointly by industry, public research institutes and the Government, and covered areas such as semiconductors, computers, fine chemicals, machinery, material science and plant system engineering. "Centres of Excellence" were formed in these fields to boost long-term competitiveness. National Projects were a continuation of the strategy of interventions to identify and develop the country's dynamic comparative advantage, orchestrating the different actors involved, underwriting a part of the risks, providing large financial grants and filling gaps that the market could not remedy (for data on the amounts involved see above on technology financing).

Other policy measures to stimulate technological effort in the Republic of Korea were more addressed to static market failures. These included the setting up of Science Research Center and Engineering Research Center at universities around the country to support R&D activities, the common utilization of advanced R&D facilities by smaller private firms, and the construction of science towns. Daeduk Science Town has been under construction since 1974, and a large number of research and educational institutions are already well established there. The construction of Kwangju Science Town has started; others such towns are planned. Technology diffusion was advanced by the Korea Institute for Economics and Technology, which collected, processed and disseminated scientific and technical information to industry.

Since the early 1980s a number of laws have been

passed to promote SMEs, leading to a perceptible increase in their share of economic activity (over 1975–1986 the share of SMEs in employment, sales and value added rose by at least 25 per cent). This policy support was crucial to the reversal in their performance: it covered SME start-up, productivity improvement, technology development and export promotion. A host of tax incentives was provided to firms participating in these programs, as well as finance at subsidized rates for using support services, credit guarantees, government procurement and the setting up of a specialized bank to finance SMEs. A number of other institutions were set up to help SMEs (such as the Small and Medium Industry Promotion Corporation to provide financial, technical and training assistance and the Industrial Development Bank to provide finance). The Government greatly increased its own budget contribution to the Programme, although SMEs had to pay a part of the costs of most services provided to them.

To promote subcontracting to SMEs, the Government enacted a law designating parts and components that had to be procured through them and not made in-house by large firms. By 1987 about 1,200 items had been designated, involving 337 principal firms and some 2,200 subcontractors, mainly in the machinery, electrical, electronic and shipbuilding fields.

By this time, subcontracting accounted for about 43 per cent of manufacturing output and 65–77 per cent of the output values of the electrical, transport equipment and other machinery industries. Generous financial and fiscal support was provided to subcontracting SMEs to support their operations and process and product development. In addition, subcontracting SMEs were exempted from stamp tax and were granted tax deductions for a certain percentage of their investments in laboratory and inspection equipment and for the whole of their expenses for technical consultancy. Subcontracting promotion councils were set up by the industrial subsector and within the Korea Federation of Small Business to help SMEs in contractual relationships, arbitrate disputes and monitor contract implementation.

### **Industrial Policy**

For any country, one of the most important problems in development is how to transform traditional agriculture economy (society) to the one where manufacturing industry leads the whole economy. In other words, development or modernization means the industrialization. Because of this, industrial policy is at the core of the development policy and Korea was not an exception. On the other hand, industrial policy is not so important in the advanced economy.

In this respect, Korean government adopted very aggressive export drive policy with the strong protection

and regulation on industries from the beginning of the development. All of the monetary, fiscal policy tools were used to support the export industry and such key industries as cement, fertilizer, oil refining. Thanks to such policy, manufacturing sector grew at more than 19% annually during 1963–73.

Measures to promote export industries could be summarized as follows: 1) Exporting firms were allowed to retain foreign exchange earnings for the purchase of imports 2) Exporting firms were exempted from import controls and tariffs 3) The state-controlled banks provided financial support for exporters at preferential rates 4) Tax incentives were granted to exporters 5) Fiscal policy focused on generating surpluses that could be channeled to key industrial firms 6) A sliding-peg system of exchange rate adjustment was adopted to prevent a real appreciation of the Korean won 7) The government set export targets, which influenced firm behavior 8) Successful exporters received awards from the president.

### **Major Economic Development Strategies in Korea (1960s-1970s)**

#### **Government- led economy**

- Government initiated economic policy to early take-off by strong leadership
- Government intervention, to some extent
- Selection & concentration in resource allocation

#### **Export promotion toward global market**

- Insufficient natural resource and limitation of domestic market
- Developed from light & labor intensive industry to advanced capital industry
- Import raw and intermediate materials assembly and processing export final goods

#### **Technology innovation by education and training**

- Knowledge and technology is a key factor for economic development
- Importance of human capital through education and training
- Lessons for Developing Countries Intensive support by government for fostering technical man-power

### **CONCLUSION**

With regard to tax reforms, they have significantly contributed to Korea's successful development. They helped Korea rapidly achieve fiscal balance and

promoted savings and investment through incentives. However, one of the key reasons for the success of Korea's tax reforms was their full integration into the broader national strategy.

This study found two lessons of particular relevance to Ethiopia. First, Korea achieved faster results by focusing its tax policies on a few priorities fully aligned with its national development strategy. Second, it broadened its tax base by making the tax administration both empowered and accountable.

One useful way of interpreting these lessons is that part of Korea's success can be explained by a strong emphasis on implementation, beyond strategy and policies. In fact, in one form or another, many of Korea's policies and strategies have been traditionally adopted in Ethiopian system. Incentives to promote investment (allowing investment projects sites free), simplified tax filings for small enterprises (tax free import and export for two years for those who start newly), and special initiatives for large payers. But what made Korea effective unlike Ethiopia is its emphasis on implementation rather than the nature of its policies. Indeed, focused and coherent strategies are a prerequisite for effective implementation. Empowered and accountable execution agencies are critical for efficient delivery.

The major finding of the paper is that in the countries where there is a sound economic policy, competent and accountable government institutions, ODA plays catalyst role in promoting economic development and solving economic social problems. This clearly shows that the effectiveness of ODA depends not only on the external factor but also on the internal factors.

### **Policy implications of the Study**

1. It is necessary to have the central government with the strong economic leadership. It does not mean that the political dictatorship is inevitable as was the case in Korea. Rather it means that the leadership with the vision on the market economy and the government which supports that efficiently is the minimum requirement for the development. In this regard, the leader should have good knowledge, vision, and the passion for the sound market economy. In this case, it is worth of citing the leadership role played by Park Chung-hee (1961--1979). Despite a number of criticisms by different historians, as 'a harsh authoritarian system, this was a time in which Korea emerged as one of the strongest industrialized countries. The eighteen years of Park period laid the economic foundation for the accelerated modernization of South Korea, as a result of which Korea has been transformed from a weak state in the periphery of East Asia (Khaled 2007).
2. Government –led economy: Government-led

economy is affordable at the beginning stage.

3. Establishment of the well drafted economic plan in which the purpose of the development plan and the intention of the government is clearly stated is needed. It is inevitable to have the guidance and control by the leader group with the well -designed plan under the situation that the market is not functioning properly. It is needed to establish the market itself in the long run. To design the plan properly, it is essential to have qualified economists and technocrats with the good knowledge about the market economy.

4. Outward oriented development strategy is the most proper one. For this strategy to work, massive influx of the foreign capital, the promotion of the export with the support of the monetary and fiscal policy are needed, and the occasional government intervention on the foreign exchange market may be inevitable in spite of its negative effects in the long run. It should be noted that the demand for the foreign currency is likely to be very high in underdeveloped countries.

5. Selection & concentration in resource allocation:

6. Upgrade technology and skill: Increase public investment for technologies and skills

7. Investment in infrastructure: Improve infrastructure, especially transportations and energy which in turn will facilitate industrialization and halting the bottlenecks.

8. Setting up of Science Research Centers and Engineering Research Centers at universities: It is worth of mentioning the Korean historic success that Working with government-supported research and development organizations (ranging from the Korean Institute of Machinery and Metals to the Electronics and Telecommunications Research Institute), Korean companies were able to assimilate and improve upon a variety of technologies that helped them leapfrog the learning curve and become world-class firms such as Hyundai and Samsung.

9. Wise decision with regard to the international financial system: An important historical phenomenon not to pass unnoticed is The Korean government's willingness to reject import substitution and embrace trade radically altered the country's economic trajectory. From 1960 to 2005, Korea's average standard of living increased twelvefold, with imports and exports working together to drive productivity gains from comparative advantage. Korean exports increased from 4.8 percent of GDP in 1963 to 34 percent in 1980. Over the same period, imports as a fraction of GDP rose from 15.9 percent to 41.4 percent. It bears emphasizing that Korea's trade balance was negative in both 1963 and in 1980. Indeed, between 1965 and 1990, Korea grew by 7.1 percent per year while running persistent trade deficits (Chari and Peter Blair Henry 2013).

We can infer some valuable insights from the experiences of Korea for the policy implications for

development policy planners of Ethiopia. Though this kind of development lessons needs the consideration of various situations including at the ground, the political and social orientation, historical, cultural, philosophical and educational (the level of understanding of the people) development levels of the society under consideration, the researcher doesn't see such a gap and very much distinct characteristics for the Ethiopian society to install the above mentioned implications in the policy arena of the country in question.

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