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Industrialization Processes of Turkey and South Korea

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ABSTRACT

South Korea and Turkey despite their different backgrounds can be compared with respect to their industrialization processes. Historical observations underline the fact that, South Korea and Turkey followed similar industrialization strategies with different implications. While 1950s point out the Turkey's economic performance over Korea, the trend shows that Korea managed to outperform Turkey in most of the indicators when we come to 2000s. Although the first three or four decades of the republican era in Turkey realize different industrialization policies, in general Turkey's industrialization process can be divided into two main parts; import substitution polices of the post 1960 era and the export promotion polices after 1980s. On the other hand case of South Korea underlines a similar movement at the first glance; however background of South Korea case is different. A mixed industrialization process is followed which aimed to generate a competitive and strong domestic industrial environment. We observe that the early import substitution policies of South Korea worked on behalf of the coming export promotion strategies. Overall this research underlines the importance of the different industrialization policy implementation in two emerging economies as to understand the recent differences in the economic environments.

JEL Code: O14, O21, O57

Keywords: industrialization, import substitution, export promotion, investment strategy

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1. Introduction

Industrialization stands as a significant milestone for developing economies. Mainly the ability to generate employment and increasing potential of value added of industrialization causes a separate analysis for developing economies. Overall historical observations may signal that a common pattern can not be constructed for developing economies as a whole. But what can be signaled is just a number of strategic policy implementations. Broadly speaking two major policy implementations are observed to be followed by developing economies in their transition paths; Imports Substitution Policy and Export Promotion Policy (Berksoy; 1982). In fact, there exists implementations that try to follow both policies in a continuous path, but reality is that most of the developing economies because of the rigidities of their internal structures can not sustain a continuous path by using these strategies during their industrialization process.

Taking into account the significance of industrialization for developing economies, this research observes the industrialization processes of two economies; Turkey and South Korea. The reason of choosing these two economies is that; despite their different historical backgrounds, the implemented policies in Turkey and South Korea can be useful to develop some lessons. What mainly distinguishes Turkey and South Korea is the timing of the industrialization strategies and the continuity of the policy implementations. In fact Turkey followed different forms of pure import substitution policies up to 1980s (Yenturk and Kepenek; 2004). Only after the economical conflicts of 1980s, Turkey started to implement export promotion policies. For South Korea, on the other hand, we clearly observe that the pure import substitution period of the early reconstruction of South Korea took approximately ten years and South Korea started to implement export promotion policies after 1960s (Sonmez; 2000). In fact we will observe that the post 1960 period will witness a mixed policy implementation for South Korea in which infant industries protection and subsidization continues by import substitution polices.

Overall the paper will go on as follows; first the overall industrialization process of Turkey in section 2, then the general implementations of South Korea in section 3 and finally in section 4 we aim to discuss the background of the industrialization processes for Turkey and South Korea; we aim to observe Science & Technology, Research & Development policies as well as the incentives and promotion policies of both economies. The paper will end with conclusions.

2. Industrialization Process of Turkey

The evolution of a pure industrialization policy in Turkey has to be observed step by step. In fact other than the sub periods, it will not be misleading to regard the industrialization strategy of Turkey as a two stage process broadly; the import substitution policies followed up to 1980s and the export promotion policies that are started to be implemented after 1980s. As our main aim is to concentrate on the transformation process of Turkey during 1980, we aim to simply go over the developments up to 1980s by observing the implemented polices and their effects on the first industrialization era of the country and then to spend more time on the implementations of post 1980 period. We have to underline that; understanding the background of the 1980 transformation when combined with the developments for the post 1980 episode, illustration will be useful in understanding the link between South Korea's and Turkey's industrialization processes.

2.1 Reconstruction and Early Developments of Republic Period (1923-1946)

After a long period of war, Turkey lost most of its active working population. Both skilled and unskilled labor force of Turkey showed a decline after the war period. In addition to the problems of labor force, lack of capital and low levels of domestic savings discourage the evolution of domestic entrepreneurship in Turkey. Being aware of these problems, Turkey insists on the importance of private entrepreneurs in the early stages of the industrialization process. This initial period of republic can e observed as a two stage development episode;
i) A liberal Outward Oriented Period (1923-1933) and ii) Satist Period (1933-1946)

The republic period started with a liberal development policy which gave importance to private sector in industrialization. State's role is determined as a regulatory authority which is responsible for building the corporate and legal infrastructure of the economy (Karluk 2004). Initial position of the industrial structure of Turkey can be realized from Table 1. The structure is observed to be a labor intensive one and mainly dependent on agricultural production.

Table 1Distribution of the Business Units and Employment in 1927 Industry Census

% of total	Agriculture	Mining	Textile
Firms	43.59	22.61	23.88
Employment	43.01	38.28	18.71

Source: Yenturk & Kepenek (2004))

In line with initial strategies, Izmir Economic Congress was established in 1923. As an initial issue, to deal with the low capital and savings levels, the establishment of a credit mechanism was declared. After the establishment of Türkiye İş Bankası (1924), in 1925 Industry and Mining Bank (Sanayi ve Maadin Bankası) was established, with an aim to generate funds for the industries by giving high emphasis on the mining sector of Turkey. Other than establishing funds for the use of the private sector, another major aim of the bank was to control the industrial companies under the use of public sector and to transfer those firms to private sector in a pre determined time period. In 1927 a new act, Industry Incentive Act (Sanayi Tesvik Kanunu) was declared[1]. Aim of the act was to encourage the domestic entrepreneurs and to give enough time for them to build up a sound structure (see section 4 for detailed information about the law). Both of the developments of the early period in fact aimed to eliminate the severe problems of the domestic entrepreneurs in Turkey. In addition to the so called capital problem of the domestic industry, acts of Lausanne Treaty also limited the policy makers to raise protective barriers for the domestic industry (Kepenek and Yenturk; 2004)[2]. After 1929 with the abolish of the Lausanne Treaty's Acts related with customs, policy makers started to implement a new custom policy which is in fact observed to be a more protective one. When we combine the developments of the period, we mean the subsidization policies and the protectionist approach of the policy makers, with the ongoing problems of the economy; figures signal that growth of the overall industry was 10.2% annually (Boratav; 2004). As Boratav emphasized this period's growth in the industry can not

[1] It is a fact that, The Industry Incentive Act will be in effect until 1942, and will face some interruptions; but the reality is that the act forms the background and the benchmark of the incentive and promotion implementations of Turkey for the republican period. (see section 4)

[2] Act related with the custom conflict, permits Turkey to implement regulatory polices for the following five years and force Turkey to countine to implement the prevailing custom polcies of the pre war period until the 1929 Cutoms Act.

be linked with a structural growth, whether an acceleration of the industry after the war period with a rapid reconstruction. Boratav's calculations underline that; leather, cotton and food manufacturing as percentage of the total manufacturing production moved from 88% in 1913 to 87% in 1927. In short despite the move of the policy makers to subsidize the domestic industrialization process, conditions of the early period signals us the insufficient environment for the development of an industrialization process based on the private sector's move.

The step for an industrialization under the leadership of private sector failed because of the economic conditions of Turkey, World as a whole (1929 Great Depression limited economies opportunities in international markets) and the insufficiency of private sector. Note that it will not be accurate to identify the first period as an unsuccessful one. Period witnessed investment in infrastructure areas by state and also investment in human capital[3]. Both policies followed up to 1930s would be useful during the industrialization attempts of the statist period. After the first move of pre 1930 period, policy makers took the second step for an industrialization move by the leadership of state. First in 1930 and 1931 measures related with trade regime was determined; increasing protection by high tariffs. Mainly after the legislative measures of 1932 we observe the increasing sign of etatism in Turkey. Etatism evolves as an alternative way to increase the motion of industrialization attempts of Turkey. In particular this period can be identified as protectionist and statist one. After 1933, private sector's protection by the previous periods' legislations continued. Meanwhile state's role in the process of industrialization widens. As Karluk suggests we do not recognize any sign of intervention during the statist period, whether we observe an industrialization process under the leadership of the government (2004). Public tried to invest in areas that private sector is insufficient; formation of State Economic Enterprises (SEE) has this objective.

First of all, the main strategy of the statist period relied on self sufficiency of the domestic industry; main items were sugar, flour and textile.[4] In deed the import substitution policy evolves as the main tool in the industrialization process. Aim of the policy makers was to increase the share of public in the areas that private sector can not sustain sufficiency. In line with the stated policies we observe the first industry plans of Turkey. First Five Year Industrialization Program (FFYIP) followed an import substitution strategy and gave emphasis to the production of consumption goods by the domestic industry. Here we have to underline that, some critiques related with the start of the program with consumption goods, have misleading fundamentals. First the main critique advices a start up in the strategy by focusing on the production of intermediate and investment goods; in long run it is widely believed that, a developing economy can not sustain a development process without being able to produce its own intermediate and investment goods. Here we have to point out that such a start up needs a huge capital accumulation from previous periods and may be most importantly a high skilled labor force to sustain the ongoing of the strategy. Both of these items were absent or not sufficient for Turkey during the early 1930s. In fact when the Second Five Year Industrialization Program (SFYIP) was announced later, we come to realize that there is an expected shift in the production process from the production of consumption goods to the production of investment goods. So etatist period approach to the industrialization process can be called a realistic and a well working one which in fact is observed to have a long run perspective.

[3] See section 4; By the investment in human capital we mean the policy followed during the early stages of the republic; sending students abroad to increase the level of skilled labor in the domestic economy, by infrastructure investment we mean the build up of the necessities of private sector; success of these implementations will be discussed in section 4.

[4] This section follows the general remakrs of Karluk and Yenturk (2004).

The implication of the FFYIP (1934) as previously mentioned, aimed to sustain the self sufficiency of the domestic industry, this objective in fact was the background of the import substitution strategy. Meanwhile finance of the industrialization is aimed to be sustained by the internal sources mainly relying on tax revenues. Five major industries are aimed to be constructed; textile, mining, paper, chemistry and construction (wood and cement). Main objective was to reach a domestic production level sufficient for the economy; mainly in the production of the main consumption goods in the areas of food and textile, a pure import substitution policy. Meanwhile we have to remark that, the Incentive Law of 1927 was still in effect and still was a major tool for the policy makers for the promotion of the domestic economy. After the first implications following figures were realized; textile industry managed to cover 80%of the domestic demand, iron-steel industry managed to cover 32% of the domestic demand and paper industry managed to cover 39% of the domestic demand (Karluk; 2004, Kepenek & Yenturk; 2004). Figures in fact underline the success of the first industry plan and one can realize that one of the important necessary conditions of the self sufficiency was sustained in the selected areas.

After the early successful results of the FFYIP policy makers took the second measures towards a move to the production of the investment of intermediate goods by the domestic industry. We have to remark that first plan was mainly focusing on the consumption goods' demand in the domestic economy; next, measures in the Second Five Year Industrialization Plan (SFYIP-1936) were related with the investment and intermediate goods which in fact signal us the long run perspective of the policy makers. Aim was to sustain domestic sufficiency in investment and intermediate goods' production areas and then export the surplus. Main areas were chemicals, food and marine transportation. With the applications of the FFYIP and the strategy of the SFYIP, we can understand the expected shift in the industrialization strategy of the economy. In line with the experiences of developing economies Turkey was following a two step strategy; first sustaining the self sufficiency of selected industries then increasing the efficiency and move to heavy industries. Unfortunately once more the external factors coming from the severe conditions of the world, limited the opportunities. With the out break of the Second World War, SFYIP was postponed. In fact this was one of the major blows faced by Turkey in the industrialization process of Republic Period.

Overall 1933-1940 period was a successful one. Growth rate of the industry was on average 10% annually. The early implications of the import substitution strategy works and domestic economy sustained a significant level of self sufficiency mainly in the area of consumption goods. External factors forces Turkey to change its strategy and when we come to 1945-1946 we realize a shift in the domestic policy towards a liberal approach. Governments of late 1940s in fact once again give importance to the private sector. With the implications of 1950s Turkey started to leave the industrialization plans' strategies and started to realize a period of liberal approach in economics.

2.2 1946-1960 Liberal Import Substitution Period

The period of liberal policies witnessed during 1946-1960 has to be analyzed separately. After the early success of the republic period, the outbreak of The Second World War and the move of the policy makers towards liberal economic policies, shape of the industrialization also changes in Turkey.

For instance, most important result of the implementations of the liberal period was mainly related with the first step of the industrialization strategy, self sufficiency of the consumption goods by the domestic market. After the implementations of FFYIP, domestic economy succeeds up to a level for self sufficiency. But the full sufficiency of consumption goods' domestic production is sustained during the liberal period. Here the conflict is related with the policies of the governments. As mentioned, the period aimed to increase the importance and thus the share of private sector in the industrialization process[5]. But overall mainly the post 1955 period when observed, we come to realize that the full self sufficiency of the domestic economy was mainly sustained by the contributions of the public sector, not private sector (see Table 2). Production levels signals that public sector's share is increasing when we move to the end of the periods, in addition to that gross investment figures also points out that public is trying to compensate the domestic demand because of the insufficiency of the private sector. Overall when the share of the gross investment figures for the public sector is observed we realize that public sector's share in the overall industry investments increases from 57% in 1950 to 60% in 1955 and 78% in 1962 (Kepenek & Yenturk; 2004).

Table 2 Structure of Industrial Organization (in thousands TL per employee)

	Production	**Value Added**	**Gross Investment**
1950			
Public	12.229	5.629	0.561
Private	12.013	3.419	0.407
1955			
Public	21.674	9.915	2.351
Private	20.792	6.495	1.054
1960			
Public	54.368	27.388	2.810
Private	44.050	14.004	1.601

Source: Kepenek & Yenturk (2004)

The Incentive Law of 1927 ended in 1942 and a new act related with the subsidization of domestic entrepreneurs is not declared until 1963. However liberal period's attitude toward foreign investor's is crucial; The Oil Law and the Foreign Capital Promotion Law both emphasizes that the period while does not specify a direct incentive system for domestic industry, builds up a promotion system for the foreign investors. So we can underline that liberal period does not witness a direct subsidization in domestic industry, but the increasing domestic demand and the foreign exchange bottleneck of the mid 1950 both create an indirect subsidy for the domestic industry. Here we have to note that foreign exchange bottleneck represents a barrier against imports; barrier that are against imports may be an indirect subsidy or protection for the production of domestic consumption goods, but in addition to that domestic industry also suffers from the declining purchasing power of reaching the import of intermediate and investment goods. In fact when the composition of imports are observed; the share of consumption goods imports declined from a level of 20,6% in 1950 to 9,5% in 1960, the share of investment and intermediate goods on the other hand increased from 79,4% in 1950 to 90,3% in 1960. Here note that this increase represent the change in the composition of the total imports, if we compare the import to GNP ratio findings are striking; import to GNP ratio declines from 7,7% in 1950 to 4,5% in 1960. In addition to that indirect effect, in 1950 with the recommendations of World Bank, Industry and Development Bank of Turkey (Turkiye Sinai ve Kalkınma Bankası-TSKB) was founded. In line with the strategic

[5] The so called liberal implementations contains; privatization of SEE; however note that government can not implement the so called policies, whether increases its reliance on public in the general production process.

approach of the policy makers the bank aimed to create funds for the use of the private sector. Credit allocation in fact represents an important tool mainly in developing economies, which are trying to build a new industry structure; we aim to discuss the credit allocation issue in details in section 4.

Unlike the overall objectives of the liberal period towards increasing self sufficiency by relying on private sector, we observe that liberal period managed to sustain the full self sufficiency in consumption goods by relying more on the public sector. At the end of the liberal period, share of industry in GDP reaches to the level of 15.7 % (1960) (SIS). In addition to that the increasing growth rate of industry in the early 1950s was 9.3% but when we observe 1959 growth results, we observe that growth rate of industry moves back to a level of 3.6% (SIS, SPO). We realize that overall 1950-1960 period in which liberal industrialization policies were heavily implemented there exist an average growth rate for the industry of 8.4%.

2.3 Planned Economy and Import Substitution Period (1960-1980)

Policy makers in 1961 took the first step towards a planned development period and established the State Planning Organization (SPO-DTP). Overall aim was to create a long run perspective for development of the economy. Industrialization under the strategy of import substitution was again a major concern but import substitution policy is aimed to be followed with one difference. This time policy makers were underlining the long run aim; as to develop strong industrial firms with the help of import substitution policies and then prepare those industrial firms thus industries for further competition. This idea was a major difference when compared with the previous periods' import substitution implications. In fact SFYIP also signals a similar approach but can not be implemented. Domestic industry would be protected and subsidized up to a level and after that level those industries were expected to be ready for international competition. Whether these ideas were implemented or not is another concern which will be investigated through out the section.

In line with the first implementations of the period a series of five year development plans were declared. Table 3 will underline the major objectives of each plan as well as the realized results. There were four development plans for the period; figures of 1978 represents a sub period in which policy maker could not sustain a specific policy and the fourth development plan was postponed one year. Here we have to underline that in the long run, aim is to save in foreign exchange and correct the balance of payment problems of the economy. The idea was first sustaining a sound domestic industry structure, which in the long run will help the economy to solve the increasing current account deficit and the overall BP problems.

Table 3 Annual Growth Rates of Sectors for the Planned Economy Period

	1963-1967		**1968-1972**		**1973-1977**		**1978**		**1979-1983**	
	T	**R**	**T**	**R**	**T**	**R**	**T**	**R**	**T**	**R**
Agriculture	4.2	3.0	4.1	1.8	3.7	1.2	4.1	2.8	5.3	0.3
Industry	12.3	10.9	12.0	9.1	11.2	8.8	8.8	3.4	9.9	2.4
Service	6.8	7.2	6.3	6.6	7.7	7.3	-	0.1	8.5	2.6

Source: SPO
Annual Average Growth Rates (%)
T: Target Growth Rates (%)
R: Realized Growth Rates (%)

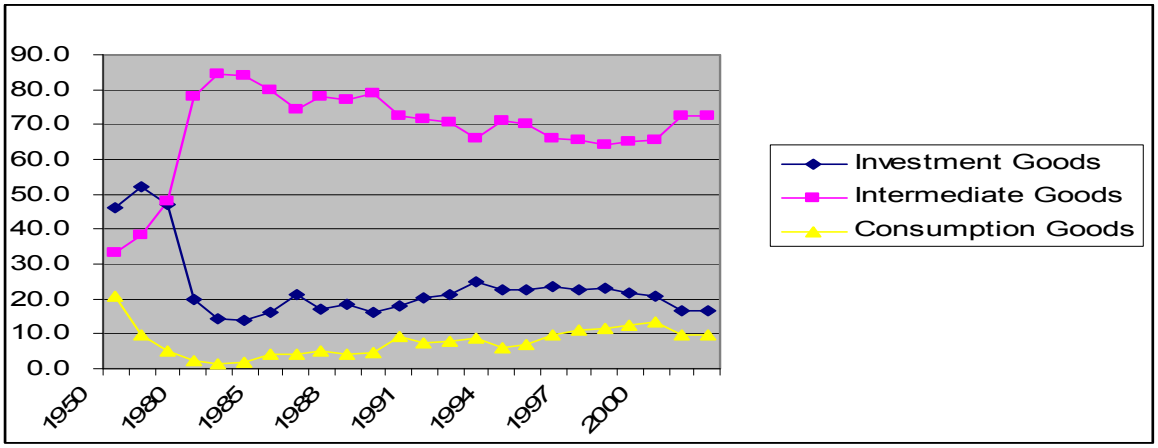
Observing the overall strategy of the period can be done by spending some time on the sub periods of the planned economy period. As we mentioned, the major objective of the policy makers for applying such polices has its background in the structure of the industry when we move towards 1960. Growth of the industry was unstable. Other than the volume changes in industry production; our question is to understand whether there occurs a structural change in the industrialization. First of all from the start of the First Five year Development Plan (**FFYDP**) policy makers underline the importance of industry in the development process, and overall industry is declared to have priority in the development process. The first plan emphasized that development of industry and agriculture has to be a balanced one, but the plan added that overall long run development target can be sustained by a strong industrialization process. Note that overall growth rate of agriculture and industry when compared, it will not be misleading to understand that implementations concentrated on the industry sector. If we observe the gross fixed investment values for the early implementations of the period we will understand that, increasing public investment slowed down during the second period. The ratio of public gross fixed investment to the total gross fixed investment varies 30.1% to 37.3% during the FFYDP, and slows down to the ratio of 28.3% at the end of the SFYDP (SIS, SPO)[6]. When the **SFYDP** was declared this time the main emphasis was related with the increasing importance of industrialization; the balanced growth idea of agriculture and industry is left. In fact growth values from table 3 when observed, we can capture the clear picture related with the shift in the development strategy. After the early implementations of the period we observe that **TFYDP** signals the move towards the production of intermediate and investment goods. Although major aim was to implement import substitution policy for the crucial inputs of the industry, the overall policy can not stop the growing trade deficit coming from the import of the major inputs by the domestic industry. When the period of 1950 - 1970 observed, we realize a trend in the share of investment and intermediate goods import. The share of intermediate and investment goods was 80% of total imports in 1950, a crucial signal for the dependence of the domestic industry to import of inputs, but this ratio increases to 90% in 1960 and 95% in 1970 (SPO, SIS) (see figure 1). So despite the changing structure of the manufacturing industry (see figure 2), still domestic industry is far away from self sufficiency in the production of investment and intermediate goods. Figure 2 underlines the change in the structure of the manufacturing industry during the period. While observing the case we have to keep in mind that, we can regard manufacturing industry as a benchmark for industrialization because income generated from manufacturing industry represents the 85% of the overall income of the industry and in addition to those figures labor force employed in the sub sectors of manufacturing industry represents the 90% of the active labor force during 1963-1979 period. (Karluk; 2004). Note that findings of Karluk, represented in figure 2, conflicts with the import numbers; here the idea is that, the period witnessed a structural change for industrialization (a move in the manufacturing sectors towards the production of investment and intermediate goods), but still domestic economy can not sustain its own resources and still domestic industry is dependent on the imports of raw materials and investment goods. Those findings can in fact explain the foreign exchange struggle of 1978 and the sharp decline in the production capacities of industries during the early 1980s (see table 3, realized growth rate of industry).

One may notice that, the planned development period does not have a specific tool for incentive policies. The incentive policy was not a sustainable one rather developed an ineffective process to accumulate industrial base (see section 4). Mainly after the

[6] Note that during the previous period that liberal polices were implemented, unlike the expectations public investment's share was increasing. So overall the first stage of the planned development period can show us the increasing share of private sector in gross fixed invetsments.

implementations of the early republican period and the attitude of liberal period towards the encouragement of foreign investment in Turkey; the major implementation for the planned development period is the protection of the domestic industry with the implemented import substitution policies. But above all the foundation of SPO and TUBITAK (see section 4) is crucial in the sense that, they represent the first specific organizational bodies of planning and S&T policies of Turkey.

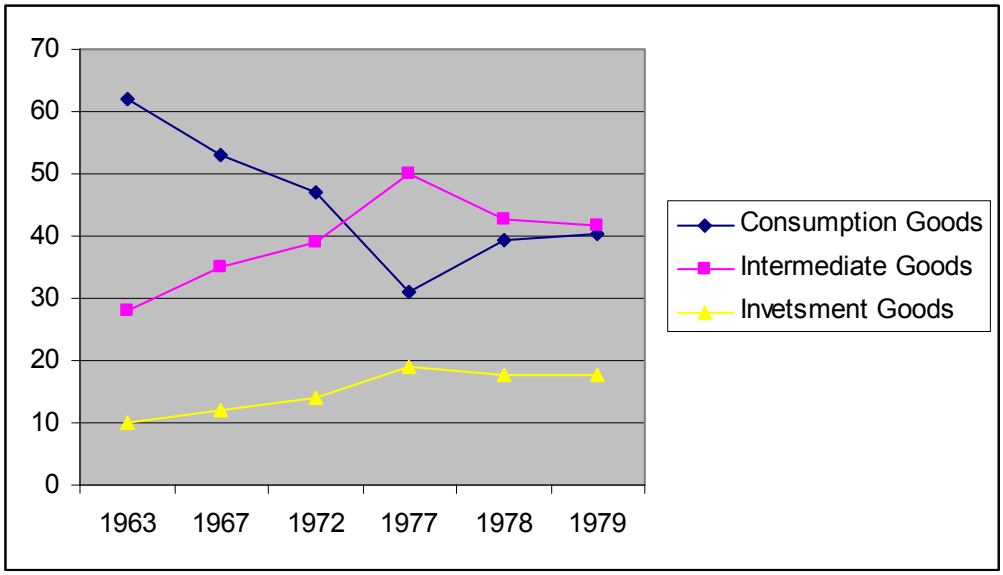
Figure 1 Composition of Imports (%)



Source: SPO

After the break of 1978, in 1979 **FFYDP** was declared. In fact the expected transformation in the economy can not be sustained yet. Although we observe a structural move attempt in the production composition of industry, the indicators of foreign trade underlines a foreign exchange bottleneck. Note that one of the targets of the import substitution policies was to save in foreign exchange. But what happens for the case of Turkey's import substitution attempt was increasing dependency on the import of intermediate and investment goods which in turn ended with a deteriorated trade balance. So 1979 FFYDP was prepared under such conditions and the political, social position of Turkey when taken into account it will not be misleading not to expect much from the last development plan of the period, which in fact found little implication area. One major difference in the implication of the plan was a turn back in the weight given to agriculture. Target growth rate for agriculture is determined at higher rates; the main reason was the effect of the economic conditions. Industry was affected severely by the crisis in the economy.

Figure 2 Composition of Domestic Manufacturing Industry for the 1963-1979 Period



Source: Karluk (2004)
CG: Consumption Goods Production (%share in total manufacturing industry)
Int.Goods: Intermediate Goods Production (%share in total manufacturing industry)
Inv.Goods: Investment Goods Production (%share in total manufacturing industry)

Table 4 Composition of Gross Fixed Investment for The Planned Development Period

	1963-1967	1968-1972	1973-1977	1978-1980
AGRICULTURE	13.20	10.49	7.47	7.32
MINING	3.23	2.10	2.02	3.29
MANUFACTURING	30.53	33.49	28.38	28.87
ENERGY	4.05	4.95	3.67	7.73
TRANSPORT. & COMMU.	11.46	12.34	12.58	15.01
TOURISM	0.45	0.63	0.43	0.60
HOUSING	23.73	24.96	17.25	27.80
EDUCATION	4.51	3.09	1.83	1.73
HEALTH	1.21	1.00	0.62	0.83
OTHER SERVICES	7.63	6.95	5.76	6.82

Source: SPO

Overall findings of the planned period underlines that, an important way for industrialization is sustained. Mainly up to 1978 annual growth rate of the industry varies around 10%. The problem is that, the sustained growth figures realized as numbers in the economy can not be transferred to the characteristic of the industry. The structure of the domestic industry is still too much dependent on imports. Subsidies and protectionist policies which previously aimed to increase the competitiveness of domestic industry, ended with domestic industrial firms which are realizing rent seeking activities and away from the international competition[7]. As we previously mentioned long run aim of the planned development period was building an industry structure that will help to solve the BP problems but when we compare the pre 1960 and post 1960 figures we come to realize that the dependency of the domestic industry to imports continue and the domestic production can not

[7] Reasons of the shortfalls of the incentive and protection measures of Turkey will be discussed in section 4; and a brief comparison between South Korea and Turkey will be done as to understand the success of South Korea.

be turned into a competitive and effective one which can help the economy to increase its export volumes. Also when we observe the investment attitude of the overall economy we can underline that still manufacturing can not make the desired jump, the percentage share of manufacturing investment was still stable (see table 4). The unhealthy structure of the domestic economy and the foreign exchange bottleneck when combined with the internal conditions of Turkey; a military intervention in 1980 took place and with the so called 24 January Decision, Turkey's industrial policy implementation changes.

2.4 Transformation Process-Implications of Export Promotion Policies (1980-)

This sub section aims to investigate the rapid transformation of 1980s. The move from an inward oriented import substitution based industrialization of 1960-1980 periods is left; a new episode for Turkish Industrialization starts-an outward oriented export promotion based industrialization. Through out the section we will investigate the developments by focusing more on the structure. Note that specific policies related with incentive, promotion and technology strategies will be left to section 4; comparison of South Korea and Turkey.

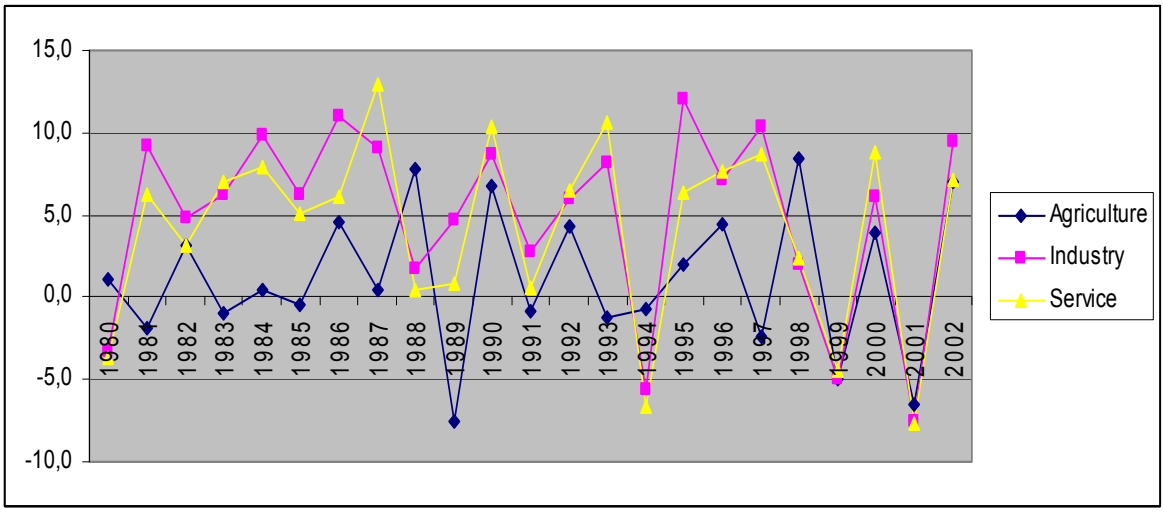
As we stated in the previous parts of the Republican Period's Industrialization attempts, up to 1980, import substitution based strategies were followed. In fact the idea of protecting the domestic industry and mainly the infant industries is a strategy mainly used by most of the developing economies in their industrialization processes. The problem arises in the implication of the policies. Domestic industry in spite of the given subsidies and protections, can not sustain a healthy structure, increase in growth levels for production can not be transferred in to a structural growth, and when we move towards 1980s, we observe a weak industry structure which is too much dependent on imports. With the increasing foreign exchange bottleneck, we observe a sharp decline in the production of the late 1970s. Growth rate of the industry had a sharp decline from its 8.8% level in 1977 to 3.4% in 1978. During the 1978-1983 periods the average growth rate of the industry had one of the lowest levels of 2.4%.

With the so called 24 January Decisions, Turkey changed the industrialization strategy and moved to an export oriented one. As we emphasized previously domestic industry can not reach a healthy competitiveness level. So during the period of 1980 1990 the competitiveness of the domestic industry was mainly compensated by numerous devaluations, increasing efficiency of capital and an anchor on wages. Wage is a major tool for policy makers. As the main aim of the new episode is industrialization with increasing export figures and as these policies mainly depend on the production of labor intense industries, lowering wage levels becomes a necessity for increasing the competitiveness of domestic industry. In line with these policies, real wages realizes annual drop of 3.3% annually between 1981 and 1987. Mainly after the 1989 transformation-liberalization of the capital account- we observe an increase in the real wages. During 1988 1993 period real wages are observed to increase 21.6% annually (on average); the significant increase is realized in specialized and scale intense industries (Senses, Talay; 2003). Here as we did in the previous sub sections, we aim to investigate whether the period witnessed an improvement in the production structure. Other than the numerical improvements, the background will also be important.

After the start of the export promotion period and liberalization of the import regime, domestic industry manage to import the raw materials and investment goods more easily which is in turn reflected to the industry figures. Figure 3 underlines the trend of the growth rates of the major sectors. Note that our starting period for the export oriented episode (1980)

witnessed negative growth rates for the selected industries. If we concentrate on industry we observe that mainly in the first part of the episode domestic economy realized high growth rates. Before the liberalization of the capital account in 1989, the growth rate of industry reaches a peak (for the period of 1980-1990) growth rate of 11.1% in 1986.

Figure 3 Growth Rates; Agriculture, Industry and Services after 1980 Transformation



Source: SPO, SIS

Understanding the background of the early results of the export oriented industrialization period is crucial. Here we aim to investigate whether the increasing growth potential of industry is sustained by increasing investment figures or not. Table 5 in fact helps us to capture the post 1980 period clearly. In the early years of the episode, we observe increasing manufacturing contribution to GNP. First findings are in fact consistent with figure 3. But the problem is related with the investment figures, in spite of the increasing industry and manufacturing growth rates, the period does not witness a trend in the form of increasing gross investment figures. Only in 1985 we observe a first sign in the growth of gross investment which in fact can not be a sustainable one. So here we can underline that, the post 1980 periods initial performance is mainly related with the use of the unused capacities of the planned economy period. Otherwise we should observe a pattern in investment figures. Without a shift in investment behavior of the industry, we don not expect to realize a pattern in the long run for the industrialization of an economy. Finally if we observe the share of gross investment of public and private sector we come to realize the following pattern; for the 1980 1989 period public's share in the overall gross fixed investment is 41.1%, however for the period of 1990 1998 we observe that public's share declines to a level of 25.4%.

Table 5 Value Added in Manufacturing; Gross Fixed Investment in Manufacturing

	Manufacturing Value Added*	Change	Gross Fixed Investment in Manufacturing*	Change
1981	3.653.763	9,440%	1.450.465	-6,741%
1982	3.888.334	6,420%	1.319.405	-9,036%
1983	4.178.404	7,460%	1.219.949	-7,538%
1984	4.564.906	9,250%	1.189.542	-2,492%
1985	4.825.106	5,700%	1.266.456	6,466%
1986	5.331.742	10,500%	1.309.012	3,360%
1987	5.868.115	10,060%	1.138.476	-13,03%
1988	5.960.425	1,573%	1.103.830	-3,043%
1989	6.140.460	3,021%	1.034.678	-6,265%
1990	6.734.905	9,681%	1.630.245	57,561%
1991	6.895.219	2,380%	1.627.301	-0,181%
1992	7.293.028	5,769%	1.648.390	1,296%
1993	7.970.978	9,296%	2.091.517	26,882%
1994	7.361.864	-7,642%	1.865.979	-10,78%
1995	8.386.189	13,914%	2.195.106	17,638%
1996	8.982.633	7,112%	2.440.705	11,188%
1997	10.010.738	11,445%	2.443.495	0,114%
1998	10.128.256	1,174%	2.349.929	-3,829%
1999	9.553.995	-5,670%	1.953.398	-16,87%
2000	10.168.577	6,433%	2.447.997	25,320%
2001	9.340.147	-8,147%	1.556.485	-36,41%
2002	10.312.360	10,409%	1.606.252	3,197%

Source: SPO
**in billions TL (1998 prices)*

Also when we observe the distribution of the gross fixed investments and compare with the previous periods, we come to realize that gross fixed investment in manufacturing as a percentage of the total gross fixed investments do not have a slight difference. Table 6 gives us the composition of the gross fixed investment after the start of the export based industrialization. When figures of the table are compared with the pre 1980 period; we observe that share of manufacturing gross fixed investment faces with a decline from the average 32.6% (see table 4; share in total gross fixed investment during the planned economy period of 1963-1980) to the average 24.8% (see table 6; share in total gross fixed investment during 1980-1990 period).

Table 6 Composition of Gross Fixed Investment for the Period of 1980-1990

1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	(%)
7,6	10,5	10,8	10,7	9,9	7,4	6,2	6,9	6,0	5,5	5,4	AGRICULTURE
3,3	4,7	4,0	4,4	4,4	5,1	3,6	2,4	2,4	1,9	1,8	MINING
28,5	28,6	27,3	25,5	25,0	23,1	22,0	17,6	16,1	14,8	19,5	MANUFACTURING
8,7	10,3	10,8	11,2	10,2	10,2	11,3	9,7	9,7	10,8	7,3	ENERGY
14,2	17,3	18,4	19,8	20,4	22,0	20,8	20,7	16,1	15,9	17,9	TRANSPORT.COMMU.
0,6	0,6	0,6	0,6	1,0	1,4	2,2	2,5	3,1	3,9	3,8	TOURISM
27,8	17,5	17,5	17,3	18,6	18,8	21,4	27,9	35,8	36,7	33,4	HOUSING
1,8	2,1	2,1	2,1	1,7	2,2	2,0	2,3	2,3	2,5	2,6	EDUCATION
0,8	1,0	1,0	0,8	0,8	0,8	0,9	1,0	0,9	1,2	1,5	HEALTH
6,7	7,3	7,5	7,5	7,9	8,9	9,7	9,0	7,6	6,9	6,7	OTHER SERVICES
100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	TOTAL

Source: SPO

For instance both table 5 and table 6 underlines that despite the increasing growth rates we do not observe a sign of investment accumulation in the domestic economy towards new capacity increases and thus new technology developments. Celasun (1994) compute the efficiency of Manufacturing Industry. Calculations of Celasun (1994) underline that both human capital efficiency and capital efficiency increases from the planned period to the post 1980 period. [8] Celasun's (1994) findings can be captured as one of the important reasons of the growth figures after 1980. When the increasing efficiency combines with the unused capacities of the previous periods, the increase in the annual growth of industry can be understood.

In line with the major property of the period, domestic industry is expected to increase the export volumes. Note that previous planned economy period can not sustain a healthy competitiveness level for domestic entrepreneurs, but with the implementations of post 1980 episode; low wage policy, high devaluations, domestic industry tries to compete in international markets, without improving the structure of the industry as a whole. Findings of Table 7 underline the move of the export performance of domestic industry after 1980 transformation. Especially when the share in total export figures is compared within sectors, we can capture the big jump of industrial exports mainly after 1980-1983 episodes.

[8] Annual change in the human capital effieicny was - 0.6%, capital efficiency was - 8.6% during 1977-1980; Annual change in the human capital effieicny moves to 3.6% and capital effieicny to 5.7% during 1980-1988 period (Celasun, 1994)

Table 7 Exports by Main Sectors* (in millions USD)

	Agriculture			Mining			Industry		
	Exports	*Change***	*%intotal*	*Exports*	*Change***	*%intotal*	*Exports*	*Change***	*%intotal*
1950	245	na	92,9	15	na	5,6	4	na	1,4
1960	244	-0,0045	76,0	20	0,3176	6,1	58	14,1316	17,9
1970	441	0,8096	74,9	39	1,0000	6,6	109	0,8870	18,4
1980	1.672	2,7907	57,4	191	3,8974	6,6	1.047	8,6535	36,0
1983	1.881	0,1250	32,8	189	-0,0110	3,3	3.658	2,4926	63,9
1984	1.749	-0,0699	24,5	240	0,2695	3,4	5.145	0,4063	72,1
1985	1.719	-0,0170	21,6	244	0,0167	3,1	5.995	0,1653	75,3
1986	1.886	0,0967	25,3	247	0,0127	3,3	5.324	-0,1119	71,4
1987	1.853	-0,0176	18,2	272	0,1029	2,7	8.065	0,5148	79,1
1988	2.341	0,2639	20,1	377	0,3852	3,2	8.943	0,1089	76,7
1989	2.012	-0,1407	17,3	411	0,0900	3,5	9.170	0,0253	78,9
1990	2.249	0,1178	17,4	326	-0,2068	2,5	10.349	0,1285	79,9
1991	2.585	0,1493	19,0	285	-0,1262	2,1	10.686	0,0326	78,6
1992	2.134	-0,1744	14,5	267	-0,0630	1,8	12.286	0,1498	83,5
1993	2.292	0,0740	14,9	233	-0,1258	1,5	12.794	0,0413	83,4
1994	2.301	0,0040	12,7	263	0,1265	1,5	15.518	0,2129	85,7
1995	2.133	-0,0731	9,9	391	0,4882	1,8	19.089	0,2302	88,2
1996	2.455	0,1507	10,6	228	-0,4184	1,0	20.237	0,0601	87,1
1997	2.679	0,0914	10,2	404	0,7764	1,5	23.132	0,1431	88,1
1998	2.700	0,0078	10,0	364	-0,1004	1,3	23.874	0,0320	88,5
1999	2.394	-0,1131	9,0	385	0,0586	1,4	23.755	-0,0050	89,3
2000	1.973	-0,1758	7,1	400	0,0400	1,4	25.340	0,0667	91,2
2001	2.234	0,1322	7,1	349	-0,1286	1,1	28.695	0,1324	91,6
2002	2.038	-0,0878	5,7	387	0,1091	1,1	33.549	0,1692	93,0

*Source: SPO, SIS *Based on ISIC REV3 Classification from 1989 onwards*
*** For the first 4 observations, change figures are for 10 year periods, after observation 5 (1983) change figures are represented annually*

We aim to spend more time about the technology and production structure in section 4 but here as the period witnessed an export increase we aim to investigate whether the composition of exports realizes a structural change. Overall one of the striking finding of table 8 is that; in each of the sub periods between 1970 and 2000 the share of labor intense and resource intense industry exports is higher than the others. Only in the share of scale intensive production we observe an increase after 1980, but both science based and specialization based productions' export performances are weak.

Table 8 Composition of Exports for main Sectors (%)

	Agriculture	Mining	Industry				
			Labour Intensive	Resource Intensive	Science Based	Scale Intensive	Specialized
1970-74	10.6	4.6	35.5	45.1	0.2	3.4	0.6
1975-79	15.4	6.2	33	40.8	0.2	3.7	0.7
1980-84	17.4	4.1	30.4	34	0.3	11.5	2.5
1985-89	9.4	3.1	35.7	24.6	0.7	20.8	5.6
1990-94	7.2	1.9	40.6	23.4	0.8	20.6	5.5
1995-99	4.1	1.5	43.1	21.3	1.6	20	8.3
2000-01	3.2	1.3	40.5	17.4	3.3	23.3	11

Source: Şenses, Taymaz (2003)

For the post 1980 period after the first transformation, a second transformation occurs in 1989 with the liberalization of the capital account. After the liberalization of capital account, Turkey realized a period of rapid foreign capital inflows, which in fact continued up to 1994. Mainly after the 1989 transformation we observe a move from the low wage policy of policy makers (see figure 4). As we observe after 1988 real wages in manufacturing industry has an increasing trend which in fact continued up to 1994. After the crisis of 1994 real wages realizes a slight decline. Note that although after the crisis period the decline is observed to be limited and the wage levels are observed to have a small increase, we observe that real wage levels can not reach the pre 1994 levels during the 1994 2004 period.

Figure 4 Real Wages in Manufacturing Industry (1997=100)

Source: CBRT

In fact wrong policy implementations of early 1990 when combined with the policy mistake of 1994, Turkey realized a crisis in 1994 which in turn directly affects the domestic industry. Note that the negative growth rate of -5,8% was the lowest annual industry growth rate for the 1980 2000 episode. Overall if the overall picture related with the post 1980 period for Turkey is tired to be observed, one can capture that negative growth rates for the industry is realized during 1994 crisis, 1999 earthquake (which heavily damaged the wide industry area of Marmara District) and finally during the 2000-2001 crisis (see figure 3). Between 1994 and 1999 the annual growth rate of the industry was on average 7,9% but note that if take into account the negative growth rates of 1994 and 1999 then our annual industry growth rate becomes 4,7%. For the same period we also investigate the movement of Gross fixed Investments to GNP ratio; findings underline that between 1994 and 1999 annual growth rate

of Gross Fixed Investment to GNP ratio is -0,06% annually, and when we also add 1994 and 1999 values, our annual average growth rate for the ratios becomes -2,7%. Finally in year 2001, the last crisis of the period, we come to realize a significant negative growth rate of -7,5% in industry, which is in fact the lowest value of the last 20 years.

3. Industrialization Process of South Korea

South Korea is regarded as a good study area; mainly because of the policy guidelines that can be produced from the policies and implementations of the economy in terms of industrial development. In line with our major aim of pointing out the significant differences and similarities between South Korea and Turkey, this section aims to provide relevant information about the developments of industrialization of South Korea. Simply we aim to divide the South Korea case into 4 main sub sections; i) the reconstruction Period of 1950-1960, ii) the opening period and the start of export promotion strategies of 1960-1970, iii) HCI movement 1970-1980 iv) liberalization of South Korea. But before all these sub sections, we aim to also introduce the position of South Korea before the reconstruction period of 1950s. There is a growing discussion about the effect of the pre 1950 conditions of Korea on the industrialization thus development of the South Korean economy. So first we will describe the economical and political position of Korea under the colonial power of Japan during the 1910-1945 periods as well as the separation of Korea after the Korean War and then we aim to move to the rapid industrialization of South Korea by going over the policies and implementations of post 1950 period.

3.1 Colonial Period of Korea and the Division of Korea

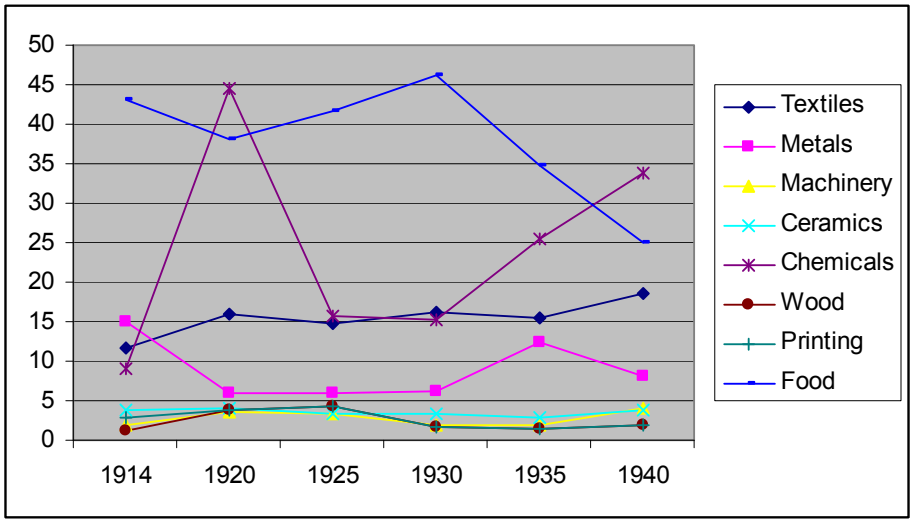
Japanese colonial rule is in fact a black episode for Korean history. The colonial episode between 1910 1945 lived its most curial period for the first ten years. Mainly after the growing protest of Koreans in 1919, a limited level of freedom is given to Koreans. As we mentioned at the opening of the debate related with the effect of colonialism on South Korea's industrialization, we aim to observe the colonial period and the structure of Korean industry. Here we have to note that overall Japan Colonial Rule may have an effect on the Korean Economy, but note that after the Korean War we will observe the separation of Korea into two parts; South and North, so what here is crucial that; whether this colonial period affected the overall Korea or the effect on the South Korea is limited.

If we turn back to the main question of the effects of Japanese Colonial rule; the basic idea was '*…if nothing happened to benefit the Korean Industry, only the railroad from Pusan to Sinuiju should be a benefits'* (Cummings; 1997). Cummings (1997) is also underlining the directional effect of the Japanese style of business-government relations to the Korean economy. The implementation of *zaibatsu* in Japan would be observed in Korea as *cheabols* during the rapid industrialization process. Also the credit allocation policy of the government by controlling the banks is also another policy implementation that shows the effect of Japanese colonial period on the South Korea's industrialization. Kohli (1994) like Cummings is building a link between the colonial episode and the rapid industrialization of South Korea. Kohli (1994) adds the following proposition to Cumming's statements; Korean transformation from a traditional and ineffective state into a modern one under the colonial rule.

The basic critique related with these so called positive effects, is concentrating on the structure of the economy during the colonial episode. Haggard et.al. (1997) make the main critique by observing the structure throughout the colonial episode. A number of arguments are built against the propositions of Kohli (1994) and his proponents. First of all the post colonial episode does not witness a rapid and immediate recovery, a period of social and political conflicts continue until the structural changes that occur during the early 1960s. In addition to that, the so called the military regime was the background of the post 1960 implementations. The regulations of the regime prevents the rent seeking and unproductive

activities of the post 1950 period, which is also found to be the continuity of the colonial bureaucracy that is responsible for policy making. Haggard et al. (1997) similar to Jones and Sakong (1980) underlined a number of important facts about colonial episode. For instance observing the overall structure of the Korean Economy for the period coincides with their findings. First of all if the agricultural structure is observed we realize that the share of agriculture and fishery moved from the 95.2% (of Net Commodity Product) in 1910 to 69.7% in 1940 (Suh; 1978). When the growth figure of agricultural production is observed, the figure is depressing; from the average rate of 5.7% during 1911-15 period, the growth rate falls to 1.9% during 1930-35 period (Haggard et.al. 1997). In addition to those figures the productivity of overall agriculture production showed a decline. Yamada's (1988) calculations underline that 1920-35 period witnessed low productivity rate which is observed to be even lower than the Taiwan's. When we move to the structure of the manufacturing industry in fact picture becomes clearer for Korea. Industry structure is discussed under three main elements; *composition, ownership and location*. We aim to go over them one by one and in fact try to build up a connection between colonial episode and the post 1950 episode.

Figure 5 Composition of Manufacturing Output for 1910-1940 Episode



Source: Kimura;1988

Composition of manufacturing output underlines that food and textile production is observed to be sustainable for the period. Also we have to realize the significant movement of production of chemicals for the period. At this point we can understand that the industry structure of Korea under colonial rule depended on mainly light industries. Next if we observe the geographic location of manufacturing we will end up with the followings;

Table 9 Geographic Location of Manufacturing Industry (regional shares % 1939-40)

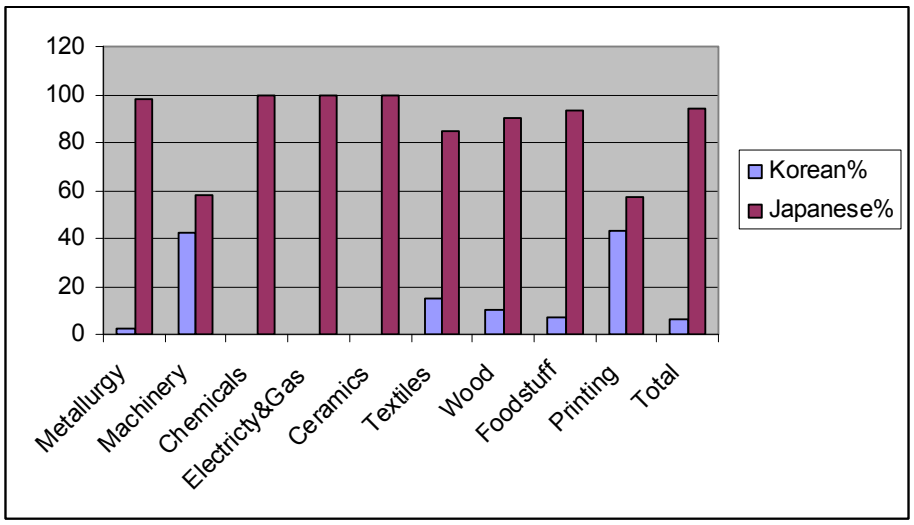
	Chemicals	Metals	Ceramics	Wood	Foodstuff	Machines	Textile
South	17	11	27	56	64	72	83
North	83	89	73	44	36	28	17

Source: Suh 1978

Table 9 underlines that for textile, food and machine production South seems to have a higher share of overall production. But note that chemicals which is observed to be a significant account for Korea during the colonial rule, mainly located in the north. If we combine figure 5 and table 9 we come to realize that, Korean economy mainly was built on

light industries during the colonial episode. In addition to that we also realize that South Korea after the separation will only be left with those light industries, leaving the few heavy industries in the north. In fact one can point out the significance of textile manufacturing during the rapid industrialization period of 1960, and can underline a general benefit of the colonial episode on behalf of South Korea. But observing the ownership signals the reverse. As can be captured from figure 6, totally 94% of ownership belongs to Japanese in 1940. Only in machinery production and printing manufacturing we observe a significant Korean ownership which is still lower than the Japanese ownership. So it will not be fair to point out that textile boom after the 1960 period can be directly linked with the colonial rule of Japan.

Figure 6 Ownership in Korea before Japanese Withdrawal (1940)



Source: Kang (1974)

However these figures do not eliminate the structural change that occurred under colonial rule. Korean Economy witnessed s growth for the colonial period and meanwhile the structure of output also changes moving towards manufacturing. However the reality is that; heavy Japanese ownership, and the unequal distribution of manufacturing industry between North and South Korea limits us to signal a directional positive influence of the colonial rule to the rapid industrialization of South Korea. On contrary we have to underline that the war period and the separation of Korea damaged the insufficient manufacturing structure of the South Korea. Calculations point out that *"43% of the overall manufacturing facilities, 41% of electrical capacity, 50% coal mines were destroyed and damaged in South Korea after the Korean War"* (Eckert et al.; 1990). So we can underline that even if the Japanese colonial rule happened to have any limited positive effects on the Korean Economy, the withdrawal of Japan and the war period destroyed those positive effects by the early 1950s.

3.2 Reconstruction of early 1950s and the Developments towards 1960s

When we observe the position of South Korea with respect to the pre war period we come to realize that industry structure of South Korea was weak. Overall composition of Korean GDP mainly concentrated on agriculture and services; on the whole 8.96% concentrated on industry and the remaining on agriculture and services in 1953.

The majority of the industry facilities and nearly all of the electricity sources were left on the north side of Korea. The weak and the destroyed industry structure of South Korea

when combined with the increasing problem of foreign exchange gap; policy makers decide to start the implementation of import substitution policies. Rhee government's major aim was to slow down the increasing import need because of the dependence of exports to imports and to sustain the breathing space for the domestic industries. Suh (1975) calculated the import ratios for South Korea and points out that heavy and chemicals based imports is 26% of the domestic supply whereas light industry based products' imports were 6% of the overall domestic supply in 1953. In line with the distribution of resources and the level of skilled labor in South Korea the start of the implementations mainly concentrate on light industries. When the composition of manufacturing output is observed for 1953; overall 79.2% of the overall output concentrated on light industries (Suh; 1975).

In short the sub period of reconstruction episode which is the starting point of the industrializing South Korea, can be observed as a protectionist one where heavy investment in infrastructure is also done as to complement the central objective of self sufficiency. As an outcome incentives and protection implementations favored the domestic industry. Another issue is the human capital; the importance of education thus the link between education and production is underlined. Heavy investment in human capital is observed. Both developments would pay back to South Korea within the next sub periods. However during this period we observe very low levels of exports. Main reason can be linked with the very low share of industry in the overall economy. Although incentives and protections concentrate on industry (mainly light labor intensive industries), the incentives can not be turned into production thus value added to overall income of South Korea during the period. The indicator calculated by Suh (1975) -export/total output- was at a very low level of 1.1% in 1953.

Overall for the reconstruction period we can not conclude a planned development in the overall economy. A number of plans were developed with an overall aim to protect and to subsidize the domestic industry; but none of them can be implemented because of the lack of political support; only after the military regime of 1961 we observe the start of a planned development in industrialization of South Korea. However we have to note that reconstruction period of South Korea is important in the sense that, it gave the infant industries, mainly in textile, the necessary breathing space and in addition to that the protectionist policies prevent the possible threats of the foreign firms mainly the Japanese.

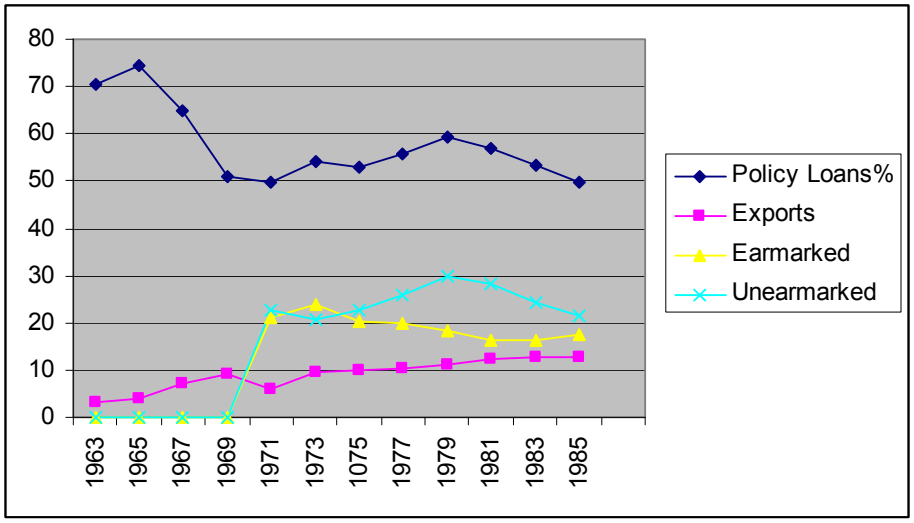
3.3 1960-1972 A Mixed Policy Implementation

After the sub period of reconstruction, policy makers were in the edge of making a step further to change the industrialization strategy of South Korea. The civilian government of 1960 was replaced by a military intervention and the new military regime's commitment to economic growth through increasing production and employment by itself causes the evolution of a new question. "With the current domestic market volume and income per capita, is it possible to sustain the desired growth?" In addition to the small size of the market, increasing foreign exchange gap was another concern. In fact the problems of South Korea and the structure of the industry in the early 1960s is the underlying reason behind the implemented mixed strategy. Logic behind the mixed strategy was to start an export promotion strategy mainly for the developed light industries and meanwhile continue to implement a protectionist policy for the infant industries. Overall both the 1st and the 2nd FYP (Five Year Plans) underline that to reach a sustainable industrialization level, production structure has to shift towards manufacturing of heavy industries which will solve the underdevelopment problem of capital and intermediate goods in South Korea. Behind these polices lies the implementation of incentives for exporters to obtain imported inputs, liberal

side of the policies, and also applying tariffs for international entrant firms to domestic economy that are trying the compete with the infant industries within the South Korea, the protectionist side of the policies. The main finding is that without the state interventions the transformation may not be so successful or let's say so rapid, mainly in the expansion of exports.

Here we aim to directly point out the role of state in this rapid industrialization period. Note that at the end we will compare the output and total export volume for the period and the reader will capture the basic reason for calling the period as a rapid industrialization one. First of all the managers and mainly bankers of the Rhee period who were under custody because of fraud, were set free. They were instructed to build an organization forming the basic roots of entrepreneurs in South Korea. Most important implementation of the period, which will overall affect the industrialization thus development of South Korean economy is related with the domestic banks, which were taken under control by the government for the credit channeling.[9] Figure 7 represent the trend in the credit channeling of South Korea and note that through out the episode, overall policy loans of government represents the majority of the distributed loans in the economy. In fact calculations underline that government's control on the overall credit market represents a rate of 92%.

Figure 7 Policy Loan Share and Composition in the Total Domestic Credits



Source: Moreira; 1995
Policy Loans: (Export Loans +Earmarked + Unearmarked)/Total Domestic Credit
Exports: (Loans for foreign trade and all loans by Korean EximBank)/TDC
Earmarked: (Loans for agricultural industries +SME loans + etc.) /TDC
Unearmarked:(Loans of National Investment Bank+Loans of KoreanDev. Bank)/TDC
The zero values for earmarked and unearmarked loans represent the lack of data for those periods.

A second important intervention of the state was related with the industrialization strategy. The high potential industries were selected and high emphasis was given to those

[9] In fact for the period of 1960-1970 we will observe the succesful implemantation of the credit chanlling through state owned banks , but the HCI period in fact will witness the unproductive usage of credits whihc in turn will cause the probelmes of credit allocation in South Korea, so we have to wait till the end of the HCI period to udnerstand the overall success and importance of the credit chanelling policy thrpugh state owned banks.

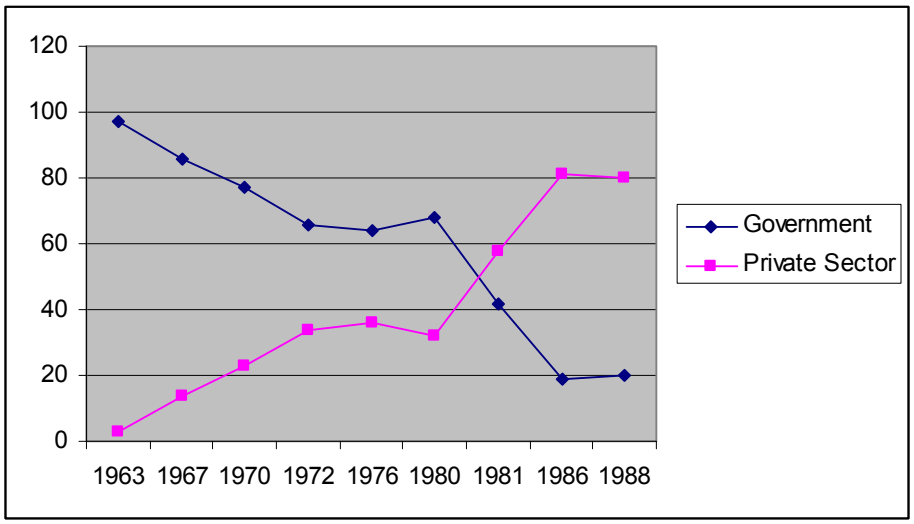
infant industries. During the first FYP government points out the cement, fertilizer and oil refining and in the second FYP this time chemicals, steel and machinery production was given importance. In addition to that; for the transition of these industries to world economy, the state prevents the formation of a pure competitive market; instead prefer to control industries by large companies; cheabols[10]. In fact the idea behind the policy implementation was to benefit from the large economies of scale. Note that the excessive possible competition in those industries will bring the social waste itself, and to prevent this social waste through excessive competition governments put restrictive measures for the new entrants even in the domestic market (Chang; 1993). Protection of infant industries and the promotion of industries towards exports is a major policy implementation of the period; and also the main reason for calling the period as a mixed strategy period.

And finally if we overall observe the R&D policy of South Korea we will observe the approach of Korean government to the issue. Overall we observe that research and development share in the overall GNP of Korean does not witness a rapid increase during the period. The R&D/GNP ratio moves from the 0.24% level in 1963 to 0.43% level in 1970. What is more important for us right now is that the share of government in this R&D investment. In fact figure 8 will first underline the position for our period, but the overall picture in figure 8 is more striking. During the period of 1963-1972 we come to realize the significance of government spending on the overall R&D investments. However mainly after the liberalization during 1980 period we observe a shift in these figures from public to private investment. In fact this movement is crucial and indicating that the intervention of state during the early industrialization becomes a culture for the Korean industries and 1980s underline the increasing share of private sector in the overall composition of R&D investment in South Korea. [11] Without the role of state we are not expecting such a movement in private sector. R&D investment represents a major cost for private sector; so we expect private sector to desire the contributions of public. However, as we will discuss in section 4 in details, the regulation of governments and the limited incentives forced private firms to enter R&D investment. This policy implementation represents one of the most important differences between Turkey and South Korea.

[10] In fact for the period of 1960-1970 we observe a number of mergers in the market to increase the company size which is in fact what the government in South Korea disered in the period.

[11] See sectin 4 for detailed observation of the R&D and technolgy policy of South Kore and the comparison with Turkeyç

Figure 8 Composition of R&D Investment in Korea



Source: Kim;1987, Lee et al.;1991

After understanding the overall structure of South Korea during the period of 1960-1971 we can now go over the change in the structure of South Korea during the episode. Note that with the aim to move to an outward oriented trade regime and still continue to protect the infant domestic industries South Korea aims to solve the basic export and output growth problem and meanwhile tries to correct the BP account of the economy. In that sense during the reconstruction period the share of exports in the overall GDP was around 1%; but when we observe the share of exports in the overall GDP of South Korea, we observe that after 1960 3.2% of share reached to 19.5% in 1972. So this striking indicator underlines that South Korea managed to use the advantage of the export promotion policies. In fact overall export import composition in the total exports and imports when observe we realize that during the period of 1962-1972 average growth rate of manufacturing industry is 19.86%, meanwhile manufacturing imports annual average growth rate of 0.94% and manufacturing exports has an annual average growth rate of 19.66%. Figures in fact underline the success of the manufacturing industry during the period. We also realize from table 10 that, manufacturing imports in the overall import composition is significant but also stable.

Table 10 Manufacturing Industry during 1962-1972 Period

	Manufacturing Value Added as %GDP	Manufacture Imports% of overall imports	Manufactures Exports % overall Exports
1962	14.15	53.08	19.57
1963	14.39	50.59	45.07
1964	15.31	49.74	46.65
1965	17.7	51.58	59.31
1966	18.8	58.48	60.55
1967	18.72	61.41	66.64
1968	19.61	63.26	73.93
1969	19.86	57.34	75.98
1970	21.18	54.76	76.53
1971	21.14	54.17	81.65
1972	22.28	57.22	83.58

Source: WDI 2004

Note that overall the mixed aim of the period was promoting exporting industries thus increasing export volume and in addition to that to develop domestic industry base through a number of protections. We recognize that export expansion is sustained during the period. Interesting figure here is related with the import composition between 1960 and 1969. Between 1960 and 1969 we observe average annual growth rate of manufacturing industry is 16.66%; but note that manufacturing imports composition in the overall import picture does not witness a significant increase and in addition to that share of raw materials and intermediate goods in the overall import figures declined from 49.6% to 46.5% between 1960 and 1969. Overall if we add the composition of the domestic economy figure to our previous findings we can capture the success of the period to develop the desired industrialization through out the implemented policies; 15.6% of industry share in the overall GDP moved to 19.9% in 1965 and then finally to a level of 23.5% in 1972.

As to compare the findings with Turkey, we aim to capture the background of this manufacturing and industry expansion; we aim to observe whether the growth is backed by a sustainable investment or not. Table 11 underlines that share of capital investment in the overall GDP is observed to be at high levels and the annual growth rate is observe to be significant; in addition to that overall for the period we can underline that the average growth rate of capital formation is around 20.32% annually.

Table 11 Gross Fixed Capital Formation

	Gross fixed capital formation (% of GDP)	Gross fixed capital formation (annual % growth)
1962	14.27	28.79
1963	14.07	27.30
1964	11.72	-9.32
1965	15.40	27.16
1966	21.17	59.6
1967	22.50	22.6
1968	26.16	37.4
1969	26.87	24.8
1970	25.53	0.98
1971	22.74	3.04
1972	20.89	1.18

Source: WDI, 2004

To sum it up, we can conclude that the outward oriented mixed strategy implementations are successful for the case of South Korea. 31.8 million USD of export volume in 1960 jumps to 1.6 billion USD in 1972. Korea managed to sustain an annual growth rate of 20% during the period. Also period witnessed heavy state intervention, we can not conclude that developments of 1960-72 period was market oriented; as we mentioned the mixed strategy caused South Korea to benefit both from the advantages of open economy and also from the protections that give the space for infant industries to prepare themselves for the coming competition from the open market structure.

3.4 Heavy and Chemical Industry Drive 1973-1979

After emphasizing the successful implementations of the 1960-72 periods, we will now observe the policy implementations of 1972-80 and will try to understand the change in the structure of the industry during the period. Actually understanding the movement of South Korea towards the heavy and chemical industries has both political and economical backgrounds. Many observers blame the period and its implications but in fact keeping in

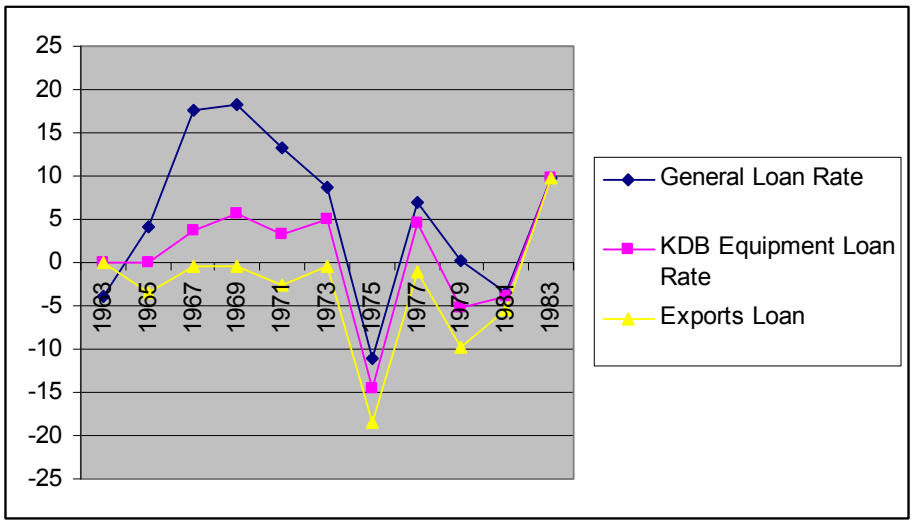
mind the side effects of the strategy we will continue to observe the change in the structure of domestic industry.

For the political side of the HCI drive we observe that; in 1962 US announced that she will cut down the military contributions in South Korea. National security and the North Korea conflict in fact forces South Korea to invest heavily in military activities which needs investment in HCIs. Meanwhile on the economic side; we observe that a number of developing economies were opening to international markets which are expected to increase the competition between developing nations mainly through the wage differentiations between these developing economies. And in addition to the increasing competition we also know that after the successful implementations in light industries through 1960-72; increasing real wage levels is signaling the loss of comparative advantage and labor productivity of South Korea in light industries. So both the increasing international competition and the increase in real wages can be captured as a signal for the diminishing comparative advantage in labor abundant light industries. In short these two major political and economical factors caused policy makers to turn their industrialization strategy towards HCIs. Here important point is the continuity in the overall structure; HCIs are not only developed to sustain the necessities of the domestic market but also to be the major exporters of South Korea. So in line with the overall aim, policy makers take a number of measures that would protect the infant HCIs and in addition to that, that would allow them to access strategic inputs at lower prices[12]. As we know from the other examples of the world, forming HCIs and promoting those industries towards exports, needs heavy capital accumulation; both in forms of physical and human capital. Accordingly heavy investment in technology and R&D is also necessary. Note that detailed information about the formation of R&D and human capital will be observed in the next section in details. At this point with the current structure of South Korea-68%of manufacturing output depending of light industries-it will not be misleading to conclude that such a policy shift towards the development of HCIs needs direct state intervention and control.

First if we observe the financial composition of the period; knowing the structural position of the domestic industry, the abundance of light industries, we observe the direct intervention of state during the period through credit allocation mechanism which was previously formed in the early 1960s by the nationalization of the domestic banks. A new act "Presidential Emergency Decree" declared in 1972. This decree is a preparation for the coming HCI drive. Actually the idea of obtaining funds at lower cost caused the period to witness very low levels of lending rates, even negative rates (see figure 9). For instance the leveraged position of domestic firms, in the form of large conglomerates when combined with the opening of a new credit channel for them, caused the period to witness even negative interest rates. From figure 9 we can capture the reality that right after the first implementations, in 1975 Korea witnessed negative interest rates. These incentives given to HCIs are the major critiques of the period and in fact we will observe that the burden to be generated from low rate funding policy will be left to consumers through increasing price levels.

[12] A more detailed representation about the protection and susbsidization polcies of South Korea will be discussed in section 4.

Figure 9 Korea's selected Interest Rates for 1963-1981 Period*



Source: Bank of Korea ESY; various years, Amsed & Euh (1990), Hong (1979)
KDB: Korean Development Bank
**Both rate are expressed in real terms*

Second important implication is related with the industry structure; note that traditional policy implementation of Korean Development Process is not allowing excessive competition by limiting the number of firms in industries and by behaving selectively both at industry level and at firm level. However the basic critique related with this issue is that, South Korea failed to forecast the market size correctly thus too many firms were built and too many firms try to benefit from the overall subsidization and protection in HCIs. Actually the idea of big conglomerates continues through out the period. For the HCI drive period overall manufacturing industry has the access of the 44.89% of the overall borrowing (annual average %); and in each periods large firms manage to access nearly twice of the small firms borrowing results. For the composition of industry we aim to go over the share of light industries and HCIs in the overall manufacturing. Table 11 underlines the shift from light industries towards HCIs. In fact table 11 underlines that manufacturing industry realizes a rapid transformation during the HCI drive period. Note that between the reconstruction period (1950s) and the first industrialization tier during 1960s, share of HCIs in manufacturing does not witness a significant increase. But when we observe the second tier in the South Korea Industrialization, at the end of the period we come to realize that, output generated by HCIs outperform the light industries; and in addition to that we also realize that share of HCIs in the overall manufacturing exports of South Korea increase up to a level which has a gap between light industries of nearly 5%. So we can point out right now that, keeping in mind the side effects, manufacturing industry managed to witness the desired transformation on behalf of HICs.

Table 12 Composition of Manufacturing 1953-1980

% shares		1953	1960	1972	1976	1980
Manufacturing Output	HCI	20.7	25.2	32	44.4	51.9
	Light	79.3	74.8	68	55.6	48.1
Manufacturing Exports	HCI	19.9	7.2	24.2	33.1	45.6
	Light	80.1	92.8	75.8	66.9	54.4

Source: Moreira; 1995

Third finding related with the results of the HCI drive witnessed between 1972 and 1980 is the realized macroeconomic indicators. During the HCI drive period South Korea industry reached an annual average growth rate of 33.78%; while manufacturing industry reached a level of 17.2%; overall these figures reflect a 9.6% increase in the South Korea GNP during the episode. Change in the production structure and the change in the export composition (see table 12) when combined with the overall export and production performance of South Korea; 21.38% of annual growth in exports, 17% of annual growth in manufacturing, we can point out the macroeconomic success of the period. The conflict here is related with the costs of these transformations. First of all we realize that gross fixed capital formation slowed down during the period. The annual growth of fixed capital formation moved from 22.29% for the period of 1960-1970, to a level of 12.58% for the period of 1970-1980. This decrease in the acceleration of the capital formation is mainly linked with the leveraged positions of the large conglomerates and the crisis environment of 1971. A second problem related with the period is the increasing inflation values. But here note that the gap between the previous periods and HCI drive periods inflation values is not wide. The 16.6% annual inflation of the previous period rise to a level of 20.5% (in annual terms) during the HCI drive. In fact most of the critiques related with the implementations of the HCI drive argue that; such a movement could also be sustained with less cost if the policy makers had implemented a more outward oriented strategy. In fact it is a reality that during the transition periods of these industries HCI firms are heavily protected and a number of incentives were given. But the significant point is that in the long run these HCI firms know that their privileges and protections will end; so they are obligated to build up the necessary conditions for sustaining the targeted levels by their internal sources. So it will not be fair to identify the HCI period as an inward looking one. We may also link this property of the Korean style industrialization to the change in the structure of R&D expenditures of private firms. Note that we observe a shift from public to private sector in the R&D expenditures through out the 1960 1990 period (see figure 8). We have to keep in mind that South Korea's attitude toward education, thus investment in human capital when combined with the R&D strategy to generate domestic technology we come to realize the main distinction between other forms of industrialization and development strategies that are copying and importing technology and the South Korea style of industrialization. We aim to discuss these issues in section 4 in more details.

Overall HCI drive caused a crisis environment in South Korea mainly after 1975, but the adjustment came so rapid that even the negative developments of the period can not stop the growth in the manufacturing output and export performance of the economy. In addition to the macroeconomic indicators, we also observe that structural transformation is also sustained during the period. Share of HCIs increases while share of light industries declines during the period. We conclude that some problems about the credit allocation of the government caused South Korea to be faced with a number of economic problems; but actually what we mainly underline for the period is that there seems to be a low probability that sustaining the same production and trade volumes by implementing more neutral, less restrictive and protectionist policies is possible

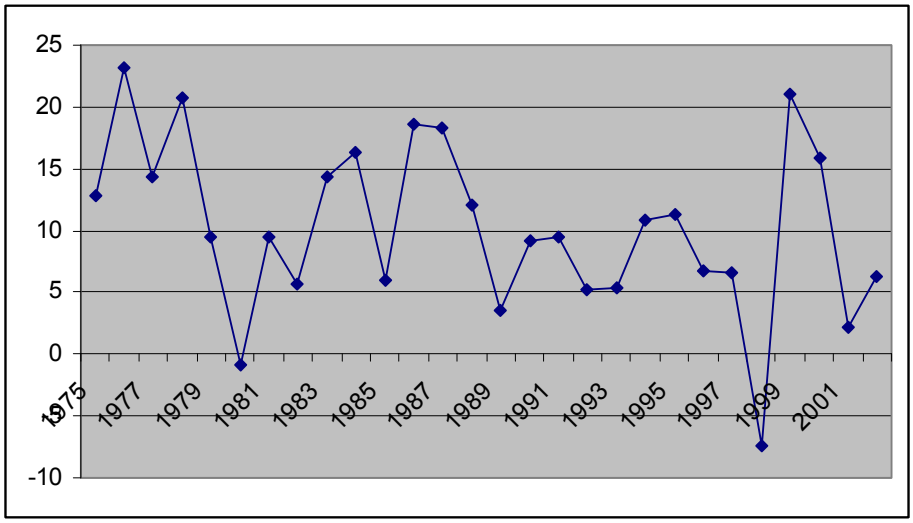
3.5 Liberalization of South Korea 1980-present

We will now observe what happened in South Korea during the period of 1980-2000; note that this episode is the start of a transformation process in Turkey-from import substitution policies toward export promotion policies- but for South Korea the transformation

had already been finalized and the economy was in fact balancing the financial system and the products market.

In South Korea, in spite of the successful transformation in the industry, a movement from light industries towards HCIs (see table 11), we realize that economic conditions were becoming worse. In fact observations will signal us that 1980 was important in the sense that it is the only significant contradictory year in South Korea Economy before the Asian Crisis. So the contraction in the economy when combined with external shocks- oil shock- and increasing inflation levels, a number of new measures were decided to be implemented to adjust the structure of the economy and to turn back to the successful growth years of the early periods. If we observe the industry and manufacturing growth we can remark the negative growth, signaling the contraction in the economy. In fact what we overall observe for the growth of manufacturing industry is that it takes years for South Korea to adjust the economy after the negative developments of early 1980s. If we observe the general picture for South Korea before and after the transformation we come to realize the following pattern.

Figure 10 Annual Growth of Manufacturing Industry in South Korea (value added)



Source: WDI 2004

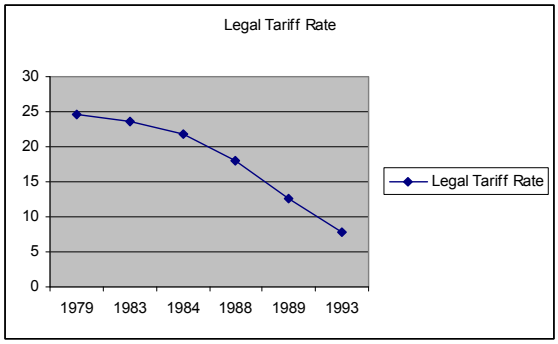
As we mentioned in the previous sub section, despite the drastic implementations of HCI drive, we observe an increasing trend in economic activities. Before the 1980 environment we know that in 1979 annual average growth rate of the Korean Economy was 7.1% (WDI;2004). However in line with figure 10 we observe that in 1980 economy growth decreased sharply to -2.1%; a clear sign of contraction for Korea. Another important indicator is the gross fixed capital formation. Note that from the previous HCI episode, we know that the speed of capital formation slowed down, and what is more remarkable right now is that, in 1980 we realize a negative capital formation rate for Korea, - 10.71%, which is significant in the sense that South Korea Economy witnessed its first sharp contraction in investments since 1964. So these negative developments in the economy arises the need for immediate adjustment in the Korean Economy. Note that in the previous sub section despite the general positive and significant growth figures in the economy and industry, we underline that problems coming from the overinvestment in HCIs created inflationary environment in South Korea and a decline in investment figures that is starting from the mids of 1970s. Generally speaking we can comment that; the overinvestment in HCIs and loss of comparative advantage in light industries arise a need for adjustment. In line with the expectations some

measures are decided and a liberalization process starts. We will observe this liberalization process by dividing it to two major parts; financial liberalization and products market liberalization.

The developments after 1960 signals us that role of state in the overall development and industrialization strategy, and one can not neglect the significance of state in the South Korea's early success. But note that we are now blaming state for the 1980 environment. So what starts in Korea after 1980 is simply the relaxation of some of the measures that were taken by state to regulate the domestic market. Overall we can not mark the period as a full liberalization period, but can specify the period as an episode, in which a clear transformation in Korean Economy takes place. First the most important development during the liberalization era was related with the financial system. Note that credit channeling policy of South Korea worked well in the early implementations during 1960 1970 period. But as we underline in the previous sub section, the over investment in HCIs through the credit channeling mechanism of the government was mainly responsible for the negative developments. So remembering the nationalization of banks policy of the government, the most important development of the liberalization period, was the privatization of the banks that were previously managed by the government-liberalization of the financial system-. This first step is in fact crucial, but there is still an on going conflict related with the power of the state over the credit markets. Although most of the banks are privatized during the period, there is an act related with the power of government to appoint the managers of the commercial banks even after they are privatized (Jung; 1991). Meanwhile in addition to the privatization of banks, a number of new commercial banks were established and more importantly evolution of non-bank financial institutions is allowed. Overall these early developments in financial markets during the 1980-90 period, is followed by the interest rate deregulation, abolition of policy loans, greater managerial autonomy to banks, relaxation of entry barriers to financial activities and finally liberalization of the capital account.

Next, if we aim to understand what happened in the product market, we have to understand the attitude of the government towards the structure of the industrialization. In line with the expectations, we observe a change in the import tariff's implementations. Figure 11 points out that after the liberalization era, we observe a continuous decline in the legal tariff rate in South Korea. So in line with this figure we expect a change in the import compositions. Table 13 underlines the picture for South Korea between 1960 and 1990. Capturing the idea of figure 11 and observing the table 12 will in fact help us to understand the increase in raw materials and capital goods imports.

Figure 11 Overall Legal Tariff Rate for all Products in South Korea



Source: Young; 1986

Table 13 Composition of Imports By End Use(%)

	1960	1969	1974	1978	1982	1986	1988	1989
Food	9.2	17	12.2	6.7	7.2	5.3	5.2	5.3
Consumer Goods	15.4	4.7	2.9	3.8	2.8	4.3	4.4	4.7
Durables	na	4	2.6	3.4	2.5	3.8	3.7	na
Non-Durables	na	0.7	0.3	0.4	0.3	0.5	0.7	na
Industry Supplies	49.6	46.5	57.6	55.5	64.1	54.2	53.4	53.6
Capital Goods	11.7	31.6	26.9	33.7	25.6	35.9	36.7	36.4
Export Use	na	na	na	na	23.9	40.3	41.2	36.4
Domestic Use	na	na	na	na	76.1	59.7	58.8	63.6

Source: *Moreira; 1995*

In addition to those measures, one of the most important questions was related with the extent of the liberalization. As we previously mentioned the post 1980 era can not be observed as a full liberalization period. Understanding the overall policy implementations point out that selective behavior of the government continued. Up to 1986 we observe that South Korea continued to choose the strategic industries. However in 1986 a new act "Industry Development Law" is declared which broadly divided sectors entitled for government support into two parts; sectors which can not sustain international competitiveness despite the comparative advantage of overall Korean Economy and the declining sectors which are far away from international competitiveness (Moreira; 1995). The so called Industry Plan is in fact useful to understand the behavior of the government even during the liberalization

Previously formed cheabol system worked well until the HCI drive, but after the early 1980s policy makers understand the over investment and the lost in the comparative advantage. Previous restriction of FDI was a major protection for the domestic large firms. In addition to the given incentives, in terms of tax exemption, funding with low costs and etc, protection of these large firms by FDI restrictions was crucial. After the start of the liberalization of the financial system, as policy makers aim to also transform the cheabol system, we observe that financial and products market liberalization starts to go hand in hand. Restriction for FDI in manufacturing industry is started to be relaxed and was estimated to phase out by 1990. In fact in 1989 policy makers point out that 97.5% of manufacturing industry is opened to FDI (Moreira; 1995). So actually we can summarize that; one important development of the period was the declining protection of domestic large firms by the abolition of the restrictions on FDI; previous implementations of South Korea aim to realize portfolio investment of foreigners instead of FDIs. A second important development in products market is related again with our large firms. As we mentioned, South Korea escaped from excessive competition that may evolve because of the increasing number of firms in industries. This policy of South Korea is left after the "Anti-Monopoly and Fair Trade Act" that is declared in 1981. This act is also crucial in the sense that, privileges and protections for the large firms will be no longer valid. So we can emphasize that policy makers were taking steps towards increasing market discipline instead of government discipline. In turn we observe that this anti-cheabol system will give rise in small and medium size firms in South Korea. However when we observe the overall policy implementations towards industrialization we can still capture the selective behavior of the policy makers. First of all although direct incentives were abolished by the policy makers, there are still some different indirect incentives that can be implemented (see section 4). A very specific example to understand the behavior of policy makers is the Industry Development Law, which still gives some room for the state to intervene in the industrialization of specific sectors (to be discussed in section 4).

If we combine the developments of the post 1990 era; increasing democratization attempts, and the continuity of the risky position of the large firms in Korean economy, one can understand the background of the Asian Crisis of 1998. During the last phase of the post 1980 liberalization, after 1990 we start to capture the increasing liberalization of the capital account. Previously formed restrictions on the capital movements are started to be relaxed. Note that during the previous state regulated credit allocation period, one of the most important facts was the ability of the private sector to get into debt easily although their capital structure was highly levered. The main prerequisite of the state regulated credit allocation towards those highly levered firms was the restrictions of the capital movements (Sungur). But after the developments of post 1990 era as restrictions on capital movement are relaxed and as domestic industrial firms, mainly cheabols, are allowed to take debt from abroad, we start to observe a short term finance approach in the industry of South Korea. In fact the maturity property of the overall debt volume in South Korea is significant in the sense that, the major policy of paying outstanding debt by taking new debt (debt roll over) will be the weak part of the financial system of South Korea. Note that during the period we also recognize the lost in the comparative advantage mainly coming from the labor costs; economies of China, Vietnam etc started to capture the advantage by implementing low wage policies. The Increasing production costs and the policy of transferring the production costs over private firms, in turn develops a highly leveraged private sector during the late 1990s. One other finding related with the evolution of the Asian Crisis is the movement of the Current Account Balance of South Korea. For the post 1990 liberal period the only current account surplus was realized in 1993; 989.5 Million USD. However from 1990 to 1997 the average current account balance was a deficit of 7.1 Billion USD. Other than 1993, in each period current account balance gives deficit and finally in year 1996 the deficit volume reaches to a level of 23 Billion USD approximately 4.42% of the GDP of South Korea. In fact one of the significant background of the 1998 crisis is mainly related with the leveraged position of the large firms in South Korea (Yenturk; 2005). However the lost of comparative advantage coming from low production costs triggered declining export volumes thus increasing need of debt for the large cheabols. Thus one can understand the reasons and the significance of the movement of the current account balance and when combined with the levered position of the real sector in South Korea, under the free movement of capital we can conclude that South Korea despite the significant background is signaling for a crisis environment. With the negative developments in Asia, the crisis is spread away and South Korea was heavily affected in 1998. The lost of confidence coming from the levered unproductive private sector in turn causes an escape from South Korea; private sector can not obtain the desired credits from international markets which was for those times a prerequisite for the rolling over the debt and in turn a number of bankruptcies were realized. In turn these bankruptcies decreased the reputation of the general economy. Result is the biggest contraction in the South Korean history. To sum up and observe the general liberalization era up to present we aim to investigate the success of the period. When the industrial growth of South Korea is observed for the period we observe an average annual growth rate of 9%. Export growth of South Korea is observed to be around 13% during the post 1980 period, while import growth is 11%. Also we can capture the investment behavior of Korea; the figures are far away from the previous episodes; average growth of capital formation is 7% during the 1980-2000 period. One can underline the Asian Crisis of 1998; second critical and significant contraction of Korean history. Actually it will not be misleading to remark the importance of the two major contractions of South Korean Economy 1980 and 1998 contractions both occurs during the episode that we are dealing with; so it will not be senseless to realize low growth and investment figures for the Korean Economy during the liberal period.

4. Similarities and Differences; Science & Technology and Incentives Policies

By observing the industrialization trends of Turkey and South Korea, we capture the most significant developments historically and also structurally. In this final section we aim to concentrate on two major issues; technology and subsidization. The idea of choosing these items is quite clear; in fact observing the overall trend underlines that major differences turns around these issues.

4.1 Technology, R&D Perspectives of South Korea and Turkey

Observing the separate policy implementations of South Korea and Turkey helped us to understand the basic differences; the timing of strategies and the commitment of policy makers to the previously declared issues. One of the critical issues related with the success of South Korea over Turkey is linked with investment in human capital, thus innovation. In this sub section we aim to introduce the attitudes of South Korea and Turkey towards the issues of technology, innovation and education. Actually the investment culture of two different economies when combined with the industrialization strategies, we come to realize that being aware of the importance of innovation and education, may give an economy increasing comparative advantage in mainly high-tech and capital intense industries.

4.1.2 Science & Technology Policies of South Korea

If we observe the case of South Korea first, we have to underline and remark the weight of state in the overall development and industrialization process. The reality is that Korean policy makers were aware of the necessity of science and technology investment for a long run strong industrialization (Arnold; 1988). The so called discovery push when combined with the products market's implementations, the outcome is an economy trying to generate and use its own technology. Actually after the separation of Korea, during the reconstruction period, we can not underline a significant implementation about science and technology investment (S&T). However during the early years, we previously marked that there is a movement mainly in the factor markets towards the education issue. When we observe the rapid industrialization during the 1960s we can identify the S&T policies of South Korea. First of all we have to mention that South Korea's S&T approach was a centralized state based one during the early years of the industrialization. Significance of centralization comes from the military regime of early 1960s, the role of state can be observed from the previous findings (see figure8) related with R&D investment; early years of industrialization mainly realizes investment of government. So it will not be misleading to identify the S&T policies of South Korea as state-led one.

A second important property of South Korea is related with the organizational structure. A number of organizations evolve during the early years of the industrialization. The main regulatory authority that was responsible of S&T and R&D policies of South Korea was Economic Planning Board; note that the centralization of South Korea despite the organizational structure is an important issue here. In the second half of 1960s; in 1966 Korean Institute of Science and Technology (KIST), in 1967 Ministry of Science and Technology (MOST) were established. These organizations in fact formed the basis of the S&T policies of South Korea. Note that historically industry based S&T policies towards R&D implementations are started to be formed with the help of these institutions.

During the early implementations in which the S&T policies of South Korea is started to be built, acquisition of technology was realized as the starting point. The early light industry based industrialization may be observed to be far away from hi-tech investment, but note that as we previously mentioned, long run development plan was built on the development of heavy and technology based industries. So we can observe the 1960 1970 period as an export oriented, light industry based industrialization period in which policy makers aimed to make the relevant investment and build the background for technology; import and acquisition of technology was heavily subsidized, a science and technology policy is formed by forming a organizational based centralized structure and the education of science and technology was given priority. Under subsidization act, we observe that policy makers encourage the big scale conglomerates that aimed to solve the R&D investment problem in the market. For the education issue, we observe the strong commitment of South Korea towards education significance. Although implementations were away from the targets, the realized results were still better than the developing economies of the episode (Moriera; 1995).

When we move on to the HCI drive period, in line with the main targets of the period; an industrialization strategy based on heavy industries, we realize that investment in engineering, technical education and R&D increases. In 1971 Korean Advanced Institute of Science (KAIS) was established with the objective of increasing the efficiency and the quality of engineering and technical education. In addition to that institute, private firms are encouraged and instructed to form research institutes. R&D activities are promoted through different forms of incentives. The technology importation of the previous period was tried to be adapted to the industrial base of private firms through these institutes. The 1972, Technology Development Promotion Law aimed to figure out the prerequisites of the industrial companies. While large firms are instructed to build one research centre per company, medium and small sized companies are advised to build research centers (Arnold; 1988). In fact those polices are the background of the shift that we observe in the composition of R&D investment during the 1960 1990 period (see figure 8). And finally in 1973 National Council of Science and Technology is established with an aim to figure the national strategies toward S&T structure.

When we try to understand the last phase that starts after the liberalization process, we come to realize the increasing importance and reluctance of South Korea towards R&D activities. Note that post HCI period in fact starts as a reaction to the overinvestment in HCIs and the contraction of the economy. Actually despite the worsening of the economy, policy makers do not change their attitudes towards S&T policies. In fact investment in technology deepened and an immediate attempt towards the establishment of hi-techs industries is underlined. First implementation of the liberal period was the consolidation of institutions. KIST and KAIS is consolidated into KAIST (Korean Advanced Institute of Science and Technology) a number of stated supported institutes are consolidated under MOST and in 1981 Korean Technology and Development Corporation (KTDC) is formed. Overall for the 1980 2000 period we observe the following main issues related with S&T policies;

- Continuity of the previous catch up policy; the national S&T Policy
- Education of upper class engineers and technicians
- Promotion of R&D investment of private firms
- Demand based technology development
- Joint R&D projects with foreign firms

4.1.2 Science & Technology Policies of Turkey

This sub section aims to summarize the attitude of Turkey towards S&T and R&D policies during the republican period. As previously underlined' it will not be misleading to blame case of Turkey for the insufficiency to meet the requirements of a pure S&T policy. In fact what separates Turkey mainly from Korean case is the short run and populist implementations of the periodical governments. When we combine the long run property of S&T policies and short run behaviour of governments in Turkey, we come to capture the current S&T position of Turkey.

During the reconstruction years of the war, the young republic was facing the severe problems of lack of physical and human capital. Note that despite the drastic measures of the period, policy makers were underlining the overall importance of industrialization in the long run development process. For the start up of the republic an industrialization process based on private sector is chosen. Policy makers were aware of the capital scarcity both in terms of physical and human. So Turkey started to implement policies to decrease the illiteracy rate, as improving the education base of the country is expected to effect the economy thus development process positively. In fact such policies were underlined during the First Izmir Economic Congress. In addition to those measures the significance of university and industry link was captured and a reform movement took place in the biggest university of Turkey (Istanbul University). A number of institutions and research centers were formed; it may be true that those institutions were far away from the sufficiency of the domestic industry, but the crucial point is the attitude of the policy makers during the early years towards education and S&T policies. The act (No.1416) that is still in effect; related with the sending of researcher abroad by the Ministry of National Education (MEB) and by other quasi governmental organization, is the contribution of Ataturk to the republic (Ayhan;2002). After the failure of the private sector led industrialization a new perspective is determined and industrialization under the leadership of the state is chosen. The FFYIP and SFYIP were the major implementations of the etatist period. Formation of SEE is crucial in the sense that state was entering in the production lines that needs capital investment that private sector could not sustain previously. The so called education policy continues for the period but note that there is still no organizational body that will be responsible for the S&T policies and R&D perspectives. The act related with researchers' education aboard is widened; researchers are encouraged to follow different researchers abroad with a future commitment to the national S&T process of Turkey.

The previous move during the early republican period under the leadership of Ataturk can not be a sustained one mainly because of the behaviour of the policy makers. Until 1950, mainly during the etatist period, we can not identify a direct S&T policy for Turkey. The insufficiency of private sector, the so called Wealth Tax on non Moslems worsened the capital scarcity issue and in spite of the government's attempt to close the gap of private sector Turkey can not develop the desired investment figures for the building a national science and technology policy; both at firm level and at country level. After 1950 with the start of the liberal policies, we observe a wiggle in the S&T behaviour of Turkey[13]. The promotions toward the transfer of foreign technology can be observed as the most important development of the period. Actually one can underline this development as the only positive development of the liberal era related with the implications toward the formation of a S&T base for Turkey.

[13] Note that we are not identifying the implemantations as S&T policies becoause there still does not exist a clear and specific policy related with S&T and R&D importance.

As 1960 episode starts, we identify the planned development process of Turkey; SPO was established with an overall aim to plan the development process and to escape from the previous periods mistakes. The fact is that; the planned development period will also be crucial for us mainly for the start of a build up in the organizational structure of Turkey. One can underline that 1960s in which Turkey start to build a number of S&T institutions, coincides with the implementations of South Korea historically; but note that historically speaking it took South Korea to build up an organizational based structure ten years, whereas it took for the case of Turkey more that 40 years to build up the desired organization structure. During the early years of the planned period in line with the increasing investment figures, we expect a movement in the technological innovation of Turkey. First in 1965 National Productivity Centre is formed (Milli Proddüktivite Merkezi). In 1963 Scientific Technical and Research Council of Turkey (TUBITAK) is established as the first legal organizational body of the republican episode. The major objective of the formation of such a body was to move from the education issues to the usage of this human capital and transfer the information formation to the production process by building up the necessary technological background. Meanwhile the previous policy related with researchers mobility continues. As the skilled labour base of Turkey is observed to be insufficient, a number of new universities were formed. Here the idea of building up new industries to increase the skilled labour base is questionable in our view. An alternative policy can be, increasing the efficiency through increasing investment in the instructors and improving the environment of the prevailing universities. Like in the case of South Korea TUBITAK advices the formation of R&D centres by individual firms, and direct subsidization of these formations by the public. Unfortunately we can not identify significant policy implementation about the advices related with R&D policies.

Another body that we observe to be significant in the S&T development process of Turkey is the Executive Science and Technology Board-STB- (Bilim ve Teknoloji Yuksek Kurulu). After the transformation of 1980, in line with the changing attitude of state towards industrialization, with the contributions of the 300 scientist, the first S&T Policy of Turkey is formed; and the Executive S&T Board (1980). However, again unfortunately the policy implementation can not be transferred to implantation side; here it will not be accurate to blame the organizational bodies, here we expect the central authority, state, to be more committed to the S&T policy developments. But the 1983-2003 S&T Policy documents (formed in the first meeting of STB in 1989) can not be implemented until the second meeting in 1993 which formulated the new document; S&T Policies of Turkey:1993-2003. Both documents were in fact parallel with a few differences; overall idea was the importance of building a national technology policy which is observed to be the perquisite of the industrialization of a developing economy (TUBITAK; 1999). The foundation of Turkish Patent Institute and the application of R&D assistance by TUBITAK are also crucial in the sense that, they represent the awareness of the organizational bodies. The innovation management and production capabilities were underlined and the desired structure was determined by the organizational bodies. However the implementations were far away from the targets; one of the main reasons was the low saving and investment figures of the post 1980 period. Turkey followed to establish the meeting of STB during the late 1990s, but the policy guidelines developed by these bodies (TUBITAK and STB) can not go beyond an advice based statement for the policy makers. Lack of political support and commitment can be the basic difference between the S&T policies of South Korea and Turkey.

4.1.3 A summary and Comparison

Actually it will not be so easy to build a direct link between economies under concern. What we can do for our case is to underline the major differences and similarities. First of all if we observe the common patterns of South Korea and Turkey, we can observe that both economies followed centralized organizational based S&T build up policies. A second common pattern is the place of state during 1960 period. We observe policy makers as a regulator and supervisor bodies in both cases; of course our findings underline that role of state in Turkey can not be a sustained one because of the lack of commitment of the policy makers, but what we observe for Turkey is that, with the start of the planned development period, policy makers aimed to regulate and determine the S&T perspective of the economy. If we try to force the human capital development issue, we can also underline that both Turkey and South Korea are aware of the importance of the link between universities and the production process.

However those common patterns for South Korea and Turkey are not so strong. What we mainly observe for the comparison is the major differences both at policy level and also at implementation level. In South Korea policy makers followed a selective industrialization process which in fact when observed at S&T policy level helped Korea to allocate resources towards the use of R&D activities more efficiently. In Turkey however such a selective process can not be implemented and the general idea of constructing the so called competitive market, in turn arises the problem of a number of small sized firms that are operating ineffectively; we can not expect from such bodies to transfer resources towards R&D activities. If we observe the general attitude towards R&D we observe that share of R&D expenditures in the overall GDP reaches an average level of 2.71% in South Korea whereas 0.542% in Turkey during the late 1990s. Remember that South Korea implemented policies that are both encouraging and forcing private sector to invest in R&D activities (see section 4.1.2); for the case of Turkey although the S&T organization (TUBITAK) signals the necessity of such an implementation, policy makers did not take the necessary measures to control the R&D activities of the private sector. Unfortunately meanwhile Turkey did not implement any significant policy to increase R&D activities with the contributions of public either. The main reason behind this fact is related with the production structure. During the planned development period domestic industry produces for the internal markets and the high protection of the domestic producers from imports allowed then to escape from R&D investments. In addition to that for the post 1980 period, after the start of the outward oriented policies, as domestic industry concentrates on light, labor intensive, industries, a movement towards R&D investment again can not be observed by the domestic producers. Here we also capture that, state also does not courage or force private sector towards such activities and this when combined with the production structure can explain the main reason behind the low R&D composition for the domestic industry. Remember that South Korea during the industrialization process forces domestic industrial firms to engage in R&D activities. If we observe the number of researchers per million of citizens in the economies we come to realize that; in South Korea 2192 researchers are available per million of people, unfortunately in Turkey only 290 researchers are available per million people (WDI, 2004). A final but an important item is related with the general attitude towards technology formation. A good case study is done by Kemal and Turkcan (2000). While comparing the technological development processes of both economies, a concentration on automobile industry is done. The evolution of Hyundai and Ford Otosan is compared. The important difference between these two brands is that; while Ford Otosan imported the technology, Hyundai aimed to generate its own technology by learning the technological necessities. Here the state in South Korea evolves as

encouraging and forcing Hyundai to make the necessary investment to build up the desired R&D activities and process (see Kemal, Turkcan, 2000, for the detailed comparison of the automobile industries of South Korea and Turkey).

If we aim to sum up the general picture and try to observe the overall effects of the S&T implementations in both countries, following figures about the composition of manufacturing exports is crucial. Table 14 underline that, the investment towards S&T and R&D activities in South Korea directly reflects its production thus exports structure. Here it will be fair to underline the S&T policies of both economies as one of the main differences through out their industrialization and development processes.

Table 14 Composition of Manufacturing Exports in South Korea and Turkey

	1985				1996			
%of exports	R.I.	L.T.I	M.T.I.	H.T.I.	R.I.	L.T.I	M.T.I.	H.T.I.
South Korea	8	60	12	20	9	28	27	36
Turkey	22	62	13	2	18	64	13	6

Source: Sönmez (2000)
R.I.: Resource Intensive
L.T.I.: Low Tech. Intensive
M.T.I: Mid Tech Intensive
H.T.I. High Tech Intensive

4.2 Incentive Policies in South Korea and Turkey

Our second aim in this section is the concentrate on the attitude of the state towards the entrepreneurs. If we observe both economies historically, we can underline the unhealthy economic and social initial conditions. Lack of infrastructure both at production level and also at institutional level is one of the major obstacles for the industrialization process. So state is expected to take its place and try to close this gap coming from the insufficient infrastructure and capital allocation. Through out the sub section we aim to have a quick look at the implemented policies; in fact we will underline that different approaches of South Korea and Turkey, when combined with the commitment issue of the state, the background reasons of the industrial and developmental differences between two economies can be understood best.

4.2.1 Incentive and Promotion Policies in South Korea

In fact thorough observing the South Korea case for incentive and promotion implementations, it will not be wrong to concentrate on the developments starting from 1960s. Note that as we previously mentioned pre 1960 period, was a reconstruction period for South Korea; investment in infrastructure and a move towards wider human capital policies were observed. Major behaviour of the government was following an import substitution (IS) policy that is observed to be a beneficial move for the infant industries which are observed to be significant during the late 1960s-export boom-. We know that the reconstruction period was mainly financed by the US aid, and we recognize that US has strong weight on the political economy of South Korea during the early years. Other than the general IS implementation we observe that during the reconstruction period, an overvalued exchange rate policy is followed and linked with a complex import licensing policy (Haggard et.al.; 1991). The so called tariff law lowered the tariff rates on the capital goods and raw materials. Finally during the period we observe that mainly these polices favoured the infant industries of sugar, cotton yarn and wheat flour. One of the major shortfalls of the Rhee period is the increasing corruption that occurs because of the rent seeking activities evolving from the link

between the ruling parties and the private sector. The privatization policy of the government may be the background of the corruption that occurs during the Rhee period.

As noted earlier with the start of the 1960 period, the BP problems and the weak domestic market forces policy makers to change the industrialization, thus development strategy. An outward oriented industrialization regime evolves; however as we mentioned in the previous sections, this period can not be called a pure opening to international markets just through export promotion policies. The so called mixed policy implementation comes from the reality that; while export production is promoted and some industries are opening to international markets, we observe that South Korea policy makers followed a policy implementation that favoured infant industries. For the weak infant domestic industries, we observe that the previous protectionist policies continuity. Mainly for the first half of the 1960s we observe strict import restrictions. While after 1965 some relaxation measures are done, still imported consumption goods are subject to numerous restrictions. Other than the protectionist side of the period we also observe the dynamic incentive system of South Korea. Under the incentive system we mainly observe two different instruments; finance management through credit allocation and subsidies through various measures.

- For the finance management, we mainly underline the role of state in the credit allocation mechanism. Low, even negative, real interest rate policy of the post 1960 period is the major tool of the state. Credits toward production is heavily controlled by the state and determined at lower rates with respect to consumer loans (See figure 9).
- Direct cash subsidies, tax incentives, direct and indirect R&D support, protection through entry restrictions and price controls are the major measures of the post 1960 period for the subsidization of domestics industries (Kim 1989)

The previously mentioned policies are in fact important in the sense that, they have to be observed separately and should be compared with the other country exercises. We observe that for the financing side of the promotions, the major implementation is the nationalization of the banks; such a move gave the power of directing credit allocation to the state's control. However what we mainly aim to underline is another issue related with South Korea*;* *selectivity* and *regulation*. These two issues are observed to be the background of the success of the so called subsidization and financing management measures. The idea of the interventionist approach of South Korea is that; market mechanism is expected to fail to choose the comparative advantaged sectors (selectivity need arises) and also is expected to cause moral hazard problems evolving from the promotions (regulation need arises) of the state (Chang; 1993).

First of all with a continuous approach, state points out the sectors to be effective in the development process. Mainly those which are observed to have a comparative advantage and export potential are forced and encouraged to make export. The credit market through export credits and subsidization measures through lower input prices and incentives in obtaining imported inputs, worked for the production side. Second, industries which are observed to have future potential, but currently does not have s strong structure are heavily protected; through entry restrictions, price controls, FDI restrictions etc. In fact these two implementations are the reason of the so called mixed policy implementation of South Korea. Here one may argue and figure out the possible problems that are expected to arise in the market; possible rent seeking activities and inefficient usage of the credit pool. If we observe South Korea case we will capture that heavy regulation issue when combined with the selectivity property of the domestic production; most of the problems are solved. For the

regulation issue; export targeting policy is crucial-both at industry level, sector level and also at firm level- in addition to that the limits on the promotions and incentives are underlined, firms and entrepreneurs know that at a maturity date the incentives will end; so the need of self sufficiency at firm level is guaranteed. The export monitoring system is applied with the obligatory reporting system and helped policy makers to directly control the private firms; whenever a firm lacks behind the given targets the promotions applied to that firms will no longer be in effect. The so called obligatory reporting system is in fact built against the possible information problem of the government; adverse selection. This is also the background of the efficiency of the private sector. Given the limits of the incentives and the strong monitoring on the market, South Korea managed to solve the possible moral hazard problem. Moreover the importance of R&D and S&T activities also imposed by the state heavily; as mentioned previously large firms are forced to heavily invest in R&D while small and medium scale firms are advised. Export monitoring and R&D and S&T regulations of the government both are crucial in the sense that market mechanism may fail to encourage firms to behave on behalf of these issues efficiently.

More importantly state encouraged the formation of large scale firms –cheabols- . The aim is to realize the positive sides of scale economies and in addition to that to benefit from the inefficiency that may arise because of a number of small and medium scale firms competing in each industry. In fact, while we are observing Turkey case, this part will be underlined as one of the important differences of economies. If we sum up the overall implementations of the 1960 1970 period we underline the interventionist approach of the state on behalf of the domestic market; while opening to international markets for firms with healthy structures are encouraged, a number of protectionist measures are taken for infant industries, but knowing that these incentives and protections are limited, domestic firms stay away from rent seeking activities and tried to build up the necessary internal structures to sustain the self sufficiency.

After the early successful implementations, after 1970s, a HCI drive starts. The increase in exports from 3.2% to 19.5% (as % GDP) and the sustained average growth rate of 19.66% during the 1960 1970 era encourages policy makers. After 1970 the incentive and protection tools were transferred to HCIs with a long run aim to sustain the necessity of self sufficiency in HCIs. Overall major tools of the policy makers do not change too much; we mainly observe that incentives and protections are transferred to the HCIs (we may again observe the selectivity of the Korean government). The acts related with R&D and S&T activities of the private sector helped South Korea, however please note that during the HCI drive period, still government was investing heavily in technology and R&D; only after the liberalization period of 1980 we will observe the rise of private sector in R&D spending over the state. So it will not be wrong to expect that policy loans, that are started to be implemented after 1960, continue to be a major tool in the financing management of the private firms. Sector specific promotion laws; again will be observed as a major difference with Turkey, tax holidays, special depreciation, implications and restricted FDI policy both act on behalf of HCIs. For the production of export goods, a new act is declared that gives those exporters the exceptions of tariff on the raw materials and specific inputs. To sum it up the HCI drive period is just a continuity of the previous implementations, with increasing weight given to HCIs and note that still policy makers were concentrating on cheabols.

After the 1970 1980 HCI drive period, South Korea managed to change the production composition. However domestic economy is in a bad condition and a serious contraction when combined with very low levels of investment; South Korea understands the need for an

adjustment in the domestic economy. With the start of a liberal period; new measures are taken with an overall aim to remove the numerous restrictions on the domestic industry. However note that for the period we can not realize a significant decrease in the interventionist approach of the state in South Korea. Actually we are also aware that; the heavy investment and tight control over imports are the backgrounds of the bad condition in late 1970s but we are underlining that without the implementations of HCI period and without the tight control of the state starting from 1960s; South Korea could not build up the desired domestic industry, which is over sustaining the self sufficiency. But still we agree that an adjustment process has to take its place; and in reality that's what policy makers in South Korea do after 1980s. We aim to observe two things; (i) The role of state in investment thus production (the credit allocation system), (ii) General incentive measures-Industry Development Law of 1981 is useful to understand the role of state in South Korea during the liberal era.

First note that the low and distinguished interest rate policy is aimed to be abolished. After 1980s we observe an increase in the general loan rates and also at the policy loan rates (see figure 9). This policy is also sustained by the privatization of the previously nationalized banks; however note that government still has a power over these commercial banks. In addition to the financing, when we observe the private and public sectors share in the R&D investment, which is observed to be the background of the overall success, early 1980s is the period that private sector managed to exceed the public investment in R&D. However note that without the early regulations of the government it will not be so easy for private sector to desire the required R&D base in their internal structures. Second important point is related with the restrictions on imports; as figure 11 shows after 1980 we capture a clear sign of decrease in the general tariff rate. Previously some exceptions were given to exporters in import markets but consumer goods imports were subject to significant tariffs. Most important implementations of the previous period were the privileges of the exporters mainly coming from export loans and legal incentives, and the protections of the domestic producers through high tariffs and restrictions on FDI. We emphasize that low interest rate policy is abolished and legal incentives are lowered. Meanwhile declining tariff rates are combined with the implementations related with FDI. With a continuous process, limitations on FDI are lowered. In 1992 foreign investors are allowed to invest in Korean Stock Market directly, in 1994 foreign investors are allowed to invest in government and public bonds, in 1993 residents are allowed to invest in overseas and generally when we come to 1997 the liberalization of the capital account in South Korea is finalized.

4.2.2 Incentive and Promotion Policies in Turkey

Finally we aim to observe the implementations related with the promotion of the domestic industry in Turkey. While going over the major implementations we will start to capture the major differences between South Korea and Turkey; like we did in the case of S&T policies.

Developments related with industrialization have a very deep historical background that goes to late 1800s. The Reform of Industry Commission (Islah'ı Sanayi Komisyonu) is the starting point of industrialization incentives for our case. Before the republican era, we observe the 1913 Industry Incentive Law; the major aim was to promote and subsidize the domestic industries, by given tax installments, land and machinery privileges. The first significant law of the republican era and implementations about the incentive and promotion applications is the Industry Incentive Act of 1927; which can be observed as the expansion of

the previous law. As mentioned before; although this law realized some interruptions, it continued to be in effect until 1942 and managed to be the background of incentives polices in Turkey. Before proceeding lets first go over the major issues of the first incentive law of Turkey;

(i) Land allocation to appropriate entrepreneurs, (ii) Exemption from income and custom taxes, (iii) Direct subsidization of telecommunication needs of firms, (iv) Discounts for the transportation of equipment from abroad, (v) Up to 10% (of the annual production) of government subsidies, (vi) Price incentives for some of the public goods (produced by a monopoly), (viii) Purchasing domestic output of the firms, that are benefiting from incentive policies, if the price level is not higher than 10% of the import of any substitutes. (See Yenturk, Kepenek; 2004 for details)

Up to the planned development period of 1960s (after the early years of the republic) we can not recognize a specific law or implementation related with the incentives towards domestic industry in Turkey. First of all during the etatist period in which Turkey formed two industrialization development plans; second can not be implemented, the formation of State Economic Enterprises is related with the rise of public role in domestic economy to promote and help private sector. After the etatist period during the liberal era, mainly acts related with the promotion of foreign technology acquisition and investment in Turkey policy is followed; the Oil Law and the Promotion Law related with the foreign capital (Foreign Capital Promotion Law). In addition to those development encouraging foreign investment in Turkey, the formation of Industry Bank of Turkey is crucial in the sense that, it aimed to generate the required credit base for the domestic industry. Note that South Korea followed a similar approach; but the difference in South Korea is that states role in Korea is much more greater, and the control of state over the credit market was sustained by the overall banking system (nationalization of commercial banks-see South Korea Industrialization of late 1960s), not a single industry bank. During the planned development period, the formation of SPO is crucial; for the incentive implementations we observe a number of policies related with tax exemptions, tariff reductions, discount on investment and again credit opportunities by the previously formed Industry Development Bank and the newly formed Industry Investment and Credit Bank, Government Investment Bank. During the planned development period, in line with the overall industrialization and development strategy of the country, we can not observe a significant incentive attitude towards the export production. It is a fact that some implementations were done to encourage exporters; tax refund (starting from 1964), credit applications are specific examples; however note that main incentive promotion policies related with export production will start after 1980 transformation. The main property of the planned development period was the period's attitude towards the investment promotion. Incentive Implementation Agency (Tesvik Uygulama Dairesi) is crucial for the period, in the sense that; it aimed to direct the private sector towards the planned areas for investment. In line with the planning property of the period; for each year sectors to be promoted were determined and an incentive list was announced as to see the sectors that benefit from the incentives. However, like the overall problem of the economy, policy makers deviate from the major objective of the policy and the number of sectors promoted increase rapidly; which in turn raises the negative list in the incentive policy implementation. A final observation for the planned development period is the evolution of the incentive certificates in 1969. Actually if move on we mainly capture for the republican period that, mostly after the opening of the domestic economy in 1980 government's implementations concentrated on the promotion and incentive policies, with an emphasis given on the export to be done to international markets. If we generalize the implications we can figure out the following tools;

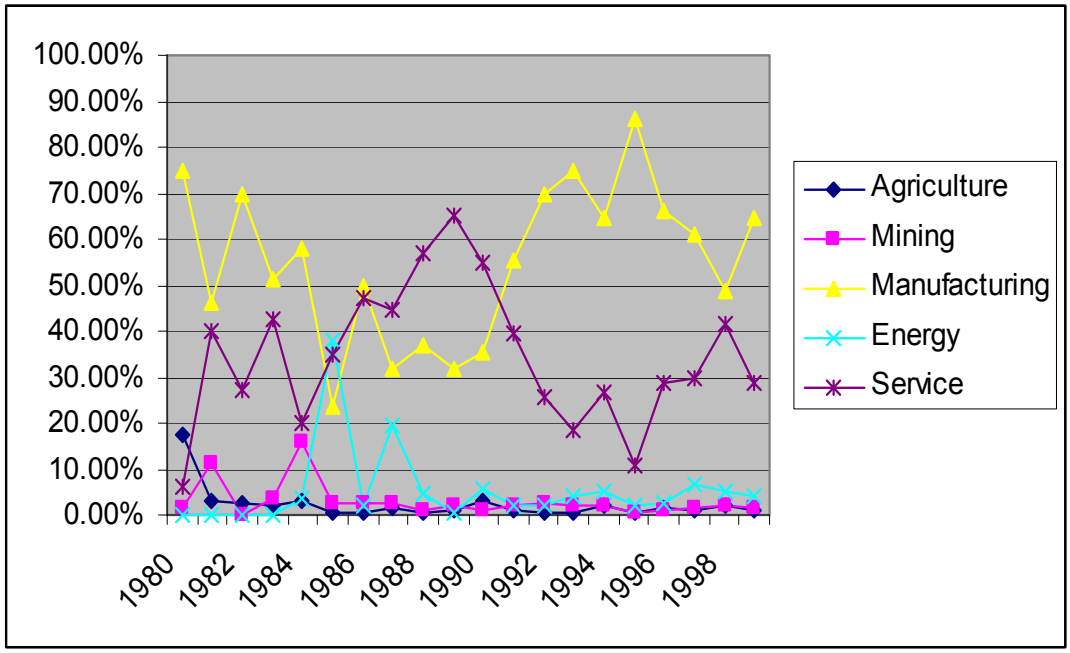
- Investment Discounts
- Tax and Custom exemptions
- Business Loans (exim bank loans to exporters)
- Energy support, land support, different depreciation methods
- Discounts on employee social security payment
- Machinery support

With the first implications of the republican era we realize that policy makers were aware of the infrastructure necessities of the industry. In reality the subsidization of industrial firms for the underdeveloped infrastructure is meaningful; what here is crucial is the property of the incentives. If the infrastructure need of the mostly underdeveloped regions is satisfied then there will be no need to promote the infrastructure need of those regions; we may expect then more effective usage on incentives generally. However we observe for the case of Turkey that; the unsolved conflict of infrastructure mainly in the east regions caused policy makers to follow a subsidization policy which become permanent. Actually observing the general incentive and promotion perspective of Turkey underlines that, in any of the sub periods of the republican history policy makers do not aim to follow a selective sector based incentive policy. The widely used implementation is an incentive policy based on regional differences of the country. The application of Priority Regions Development (Kalkınmada Öncelikli Yöreler-KÖY-) is the specific example. It's a fact that both Turkey and South Korea had likely initial conditions; both economies were out of a war and both economies lagged behind the developed and developing world in terms of labour force, capital adequacy and the infrastructure of the country. The difference is that South Korea managed to solve the infrastructure problem by heavily investing in infrastructure activities mainly during the reconstruction period. As Turkey can not overcome the infrastructure problem, there prevails a wide gap between the west regions that are observed to be better developed and the east regions which can not capture the desired infrastructure level. This fact, in reality pushes policy makers towards region specific incentive and promotion policies instead of sector specific implementations. Note that if we observe figure 12 we will realize the instability of the incentives of the main sectors in Turkey. Overall after this point, for Turkey we aim to investigate two major issues (we expect these issues to explain the major difference between Turkey and South Korea towards incentive and promotion implementations);

i) Sector based distribution of incentives; can we point out a significant common implementation towards sector specific incentive implementation?

ii) Regional distribution of incentives; overall can Turkey succeed by foregoing a sector based incentive policy on behalf of the so called region based incentive policy?

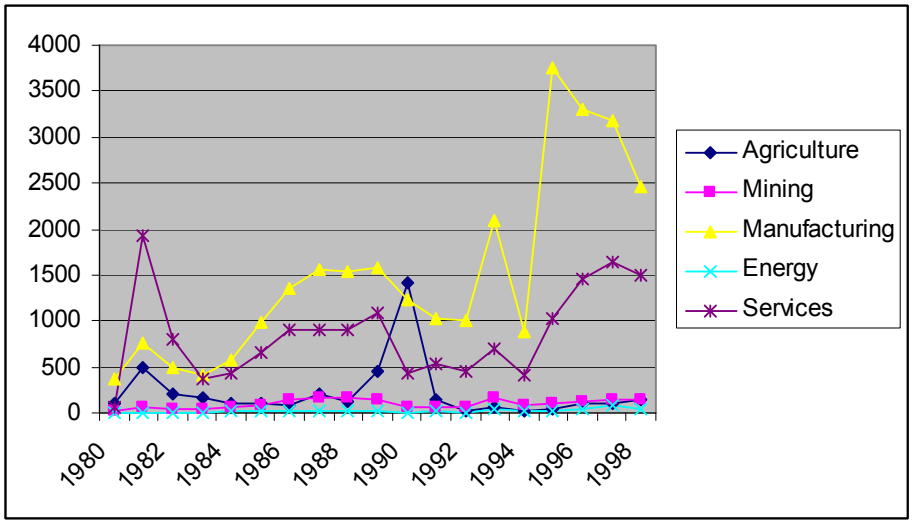
Figure 12 Distributions of Incentive Certificates within Major Sectors (price based)



Source: Duran, Dilik; 1998

Figure 12 underlines that the distributions of incentive certificates are observe to be volatile. Manufacturing seems to be the leading sector for capturing the incentives, with services following manufacturing. Note that Energy sector is observed to be less significant through out the post 1980 era; however realizes two volatile movements; one in 1985 and the second in 1988.

Figure 12 Distributions of Incentive Certificates within Major Sectors(quantity based)

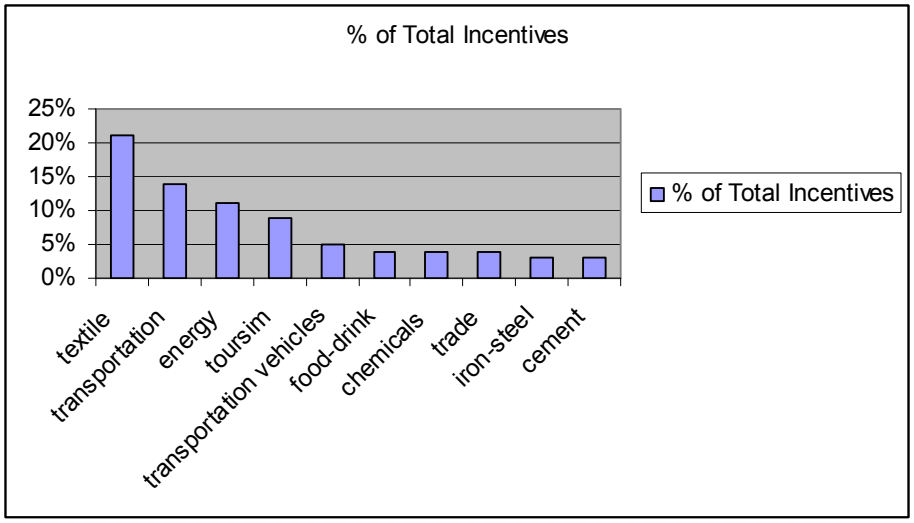


Source: Duran, Dilik; 1998

If we further observe the number of certificates instead of the volume of the incentives we come to realize that energy and mining promotions lose their significance; while

agriculture's promotion is observed to be significant in 1990. Generally speaking observing both figures underlines that Turkey's incentive policy is observed to be an instable and uncertain one, so it will not be accurate to point out that Turkey even after 1980 managed to follow a sector based incentive policy. If we move towards sub sectors the combinations for 1980 2000 era shows us that; light industries share is over the heavy industries.

Figure 13 Composition of Incentives for 1980 2000 era



Source: Duran; 2000

Next we aim to investigate the regional distributions of the incentives. Here we have to remember our previous findings related with the infrastructure of Turkey. As a developing economy one of the most important problem is the unequal distribution of income thus resources within the domestic economy. Also as we previously mentioned Turkey aimed to implement the so called Priority Regions Development (Kalkınmada Öncelikli Yöreler-KÖY) plan as to promote domestic investors toward those regions, which are lacking of insufficient infrastructure. Note that the failure of Turkey to build up a sound infrastructure, when combined with the socioeconomic conditions of those regions, the need for region specific implementations arises. Remember that South Korea instead of region specific implementations, favoured to implement sector specific ones.

Table 14 Regional Distribution of Incentives in Turkey (price based)

Cities that Benefited Mostly From the Incentives				Cities that Benefited Least From the Incentives			
Ranking	city	Million TL	%	Ranking	City	MillionTL	%
1	istanbul	1,715,178,940	18.82	1	Tunceli	54,375	0
2	Bursa	957,502,718	10.51	2	Bingöl	790,027	0.01
3	Tekirdağ	764,773,347	8.19	3	Hakkari	879,545	0.01
4	Gaziantep	506,988,888	5.56	4	Siirt	1,580,316	0.02
5	izmir	503,405,797	5.52	5	Muş	2,130,138	0.02
6	Ankara	412,192,858	4.52	6	Bitlis	2,544,085	0.03
7	K.Maraş	349,988,284	3.84	7	Artvin	2,604,264	0.03
8	Adana	330,616,250	3.63	8	Ağrı	2,900,480	0.03
9	Denizli	243,501,575	2.67	9	Gümüşhane	4,937,556	0.05
10	Kocaeli	231,281,240	2.54	10	Giresun	5,609,470	0.06

Source: Turkish Treasury

Generally speaking what we observe from tables 14 and 15 is the unsuccessful implementation of the regional incentive polices. Incentive and promotions as a general picture; west regions of Turkey mainly the Marmara Region captures the highest volume. Note that only Gaziantep is observed to be significant with a high volume of incentive but note that when we observe the number of incentive certificates Gaziantep also lags behind the major western cities of Turkey. Overall note that the major aim of KÖY policy and the regional emphasis of the policy makers toward the promotion of specific regions failed and the relatively developed areas of Turkey continued to capture the highest share of incentives. Regions that used the so called incentives at the lowest magnitude are observed to be located on the less developed parts of Turkey mainly in east sides (see table 13). Overall if we observe the overall KÖY policy we observe that for the period of 1980 1997; at the quantity base 19.2%, at the amount base 12.8% of the overall investment incentive certificates are captured by regions under the implication of KOY. Same figures are 36.8% and 42.4% for normal regions and 44.1%, 44.8% for developed regions

Table 15 Regional Distribution of Incentives in Turkey (quantity based)

Ranking	City	Number of Certificates	%
1	istanbul	10,303	22.06
2	Ankara	2,888	6.18
3	izmir	2,802	6
4	Bursa	2,47	5.29
5	Tekirdağ	1,464	3.13
6	Antalya	1,233	2.64
7	Denizli	1,222	2.62
8	Gaziantep	1,156	2.47
9	Tokat	1,069	2.29
10	Kocaeli	1,017	2.18

Source: Turkish Treasury

In fact we can combine a final issue to the incentives plans of Turkey; Small Medium Size Enterprises (SMEs). SME concept's evolution in Turkey is crucial in the sense that; SME share in employment is 56.3%, in total firm base is 99.5% (Müftüoğlu; 1998). Although these figures are close to most of the developed and developing economies, the significant difference arises else; the share of credits and share of exports when observed, the outcome is a lagging economy behind the developed world (see Müftüoglu or Dilik, Duran for detailed representation). The SME concept while evolves in 1970s globally, we observe the evolution of the concept in Turkey during 1990s. The Small and Medium Industry Development Organization (KOSGEB) is founded in 1990. Overall if we observe the incentives towards SME, we capture the fact that, overall incentive attitude of Turkey also continues in SME implications too. Under the control of Turkish Treasury, applicable projects of SMEs are promoted, but again we observe that policy makers aim to give priority to a number of regions.[14] Only until the late 1990s we observe a shift in the SME implementations towards the promotion of the exporting SMEs. Main tools are; Tax Support, business loans, investment discounts, custom exemptions etc. Overall if we observe the outcomes of the

[14] Emergency Support Implication includes; Adıyaman, Agrı, Ardahan, Batman; Bayburt, Bingol, Bitlis, Diyarbakır, Elazığ, Erzincan, Erzurum, Giresun,Gümüşhane, Hakkari, Igdıri Kahramanmaras, Kars, Kilis, Malatya, Mardin, Mus, Rize, Siirti Sinop, Sivas, Sanlıurfa, Sırnak,Tunceli, Van

stated implementations we realize that a balanced incentive policy for SMEs can not be implemented. Incentives mainly concentrate on Istanbul, Ankara and Izmir. In addition to that the first five cities in the incentive base when observed, we realize that they account for the 40% of the overall incentives. This finding in fact underlines that in spite of the Emergency Support Program, developed regions again benefit from the SME incentive implementations. Finally if we observe the sector specific distribution of the incentive towards SME; we realize that Textile, machinery manufacturing, metalware, rubber and forestry products capture the 50% of the overall incentives (textile industry is observed to be the leading one once again with a share of 22.5%). To sum it up, we point out that the evolution of SME issue in Turkey is crucial, but the implementations are not so successful; regional and sector specific targets can not be reached and an unbalanced SME subsidization and promotion path is constructed.

4.2.3 A Summary and Comparison

South Korea and Turkey cases when separately observed, we come to realize that, while the sector specific selective approach of South Korea worked well, Turkey's region based non selective approach can not reach the sustained levels. In fact Turkey during the planned development period, underline the importance of the sector selection and both SPO and the Incentive Implementation Agency aimed to select sectors to give direct and indirect incentives, however the wrong policy implementations in Turkey caused the incentive policy to be used ineffectively which in turn causes a high number of sectors and firms operating ineffectively but promoted heavily by the state. Note that one of the main reasons of the inefficiency of those incentive rich firms and sectors is the lack of performance criteria of production and output targeting in Turkey (note that export targeting and monitoring are the basic auditing implications of South Korea). South Korea case on contrary is crucial in the sense that the organizational bodies followed a step by step approach; the mixed policy implementations are backed by the protectionist and subsidization based implementations. Credit allocation mechanism, tax regulations, special implementations were the major tools; but what distinguishes South Korea from Turkey is the way of the implementations. The selectivity issue when combined with the high interventionist approach of the government, we come to realize the main difference. The sector selection is crucial in the sense that rising sectors are forecasted and heavily protected in the initial period and then a period of promotion and subsidization is followed as to help those industries to open to international markets. Many problems in fact were expected to arise; mainly related with the rent seeking activities but the high level of regulation in fact stopped the possible threats. In addition to that the export monitoring system, which is specifying limits and prerequisites for producers, is another major difference with Turkey. The information about the limits on the incentives (incentives have a given maturity, expiration date) stopped the possible rent seeking activities, instead force private sector to build up a sound internal structure. The shift in the R&D investment from public to private sector is a major sign of this awareness and also another major difference between two economies.

A last statement that we can point out for two economies; coming from their production and output structures; we observe that incentives in South Korea, mainly after the HCI drive period, started to shift to heavy industries leaving the light industries; while in Turkey still share of incentives in the overall industry concentrates on light industries (mainly textile). In fact this industrialization strategy can be combined with the fact that; while the shift from light industries to heavy industries in South Korea caused also a build up in the S&T and R&D base of South Korea, the inward oriented production structure of the pre 1980 period and the light industries based export promotion of post 1980 in Turkey to cause a

negligible development in S&T and R&D base of Turkey (see previous section; S&T and R&D policy comparison of Turkey and South Korea).

As noted above; we re not blaming the industrialization strategies for the difference between the economies industrialization strategies. In reality, what differs Turkey's and South Korea's incentive policies, is mainly related with the applications of the policy makers; while South Korea managed to follow a more regulated, selective and effective system, Turkey can not build a specific system, instead concentrated on the regional distribution of the incentives which in fact, when observed, is found to be again ineffective.

5. Conclusion

Historically speaking Turkey favored mostly import substitution protectionist policies up to 1980s. Only after the transformation of 1980 and 1989 we start to observe a changing industrial structure by the implemented export promotion policies. Through out the republican period, importance of industrialization is underlined; however as we stated previously there prevails wide difference between the strategies historically. One of the most important problems of the industrialization process in Turkey is the lack of continuity in Turkey. While in South Korea IS policies favored export promotion in the long run through the building up of a sound domestic industry, through various protections, in Turkey we realize that the protections and incentives of the IS period, courage the formation of an insufficient industrial base. In neither of the period we recognize a significant investment policy of public and private sectors, more importantly a prerequisite for the long run industrialization success and overall development, S&T policy formation can not be sustained in Turkey up to 1990. Some measures were done during the planned development period, through the foundation of a number of S&T bodies, but the strategies and plans of these bodies can not be turned into implementation until the early 1990s. Meanwhile the incentive promotion tool of the policy makers, which are expected to solve a number of problems that are valid for the domestic industry, does not work well for Turkey. The region specific concentration of policy makers aimed to favor the under developed regions but the outcome of the implementations underline that even after the so called approach developed regions happen to capture the significant share of the overall incentives.

Meanwhile for the South Korea we happen to understand that unlike the case of Turkey, the early IS implementations worked well and gave the enough space for domestic firms to build up a sound industrialization base. At the same time the state also happens to build the infrastructure of the domestic industry; which in turn through out the industrialization process gave the ability to follow a sector specific incentive policy instead of a region specific industrialization process. In addition to the followed industrialization strategy; attitude of South Korea towards S&T implications is crucial. The foundation of institutional bodies in the early years when combined with the implications of government through various incentive and promotion tools; we come to understand the awareness of policy makers in South Korea about the importance of S&T activities of the state and R&D activities of the private sector.

Overall the continuity and the commitment of state in South Korea are important to capture the difference between Turkey and South Korea. High regulation and limited incentive policy (time based) is an important property of the South Korea development. The S&T approach of two economies is also crucial. Investment figures when combined with the implication, we come to realize that being aware of the importance of S&T build up, gives South Korea a significant advantage in the long run. Although building S&T organization are observed to be similar; the difference lies behind the commitment of the state to the produced policies of those bodies. Generally speaking; the differences of strategic approaches to industrialization when combined with the major tools' implication, the increasing gap between South Korea and Turkey is better understood. We still have to keep in mind that there exist a number of other factors behind the differences of two economies' developments; however observed differences of policies and implications through out the paper is useful to understand the general approach of two economies historically.

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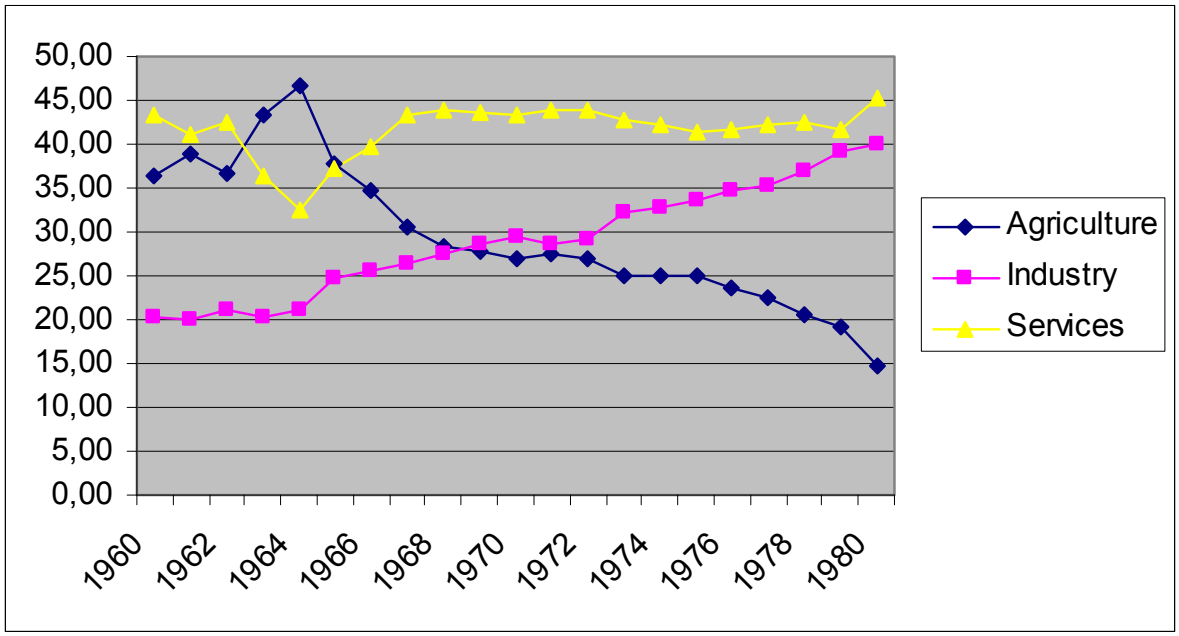
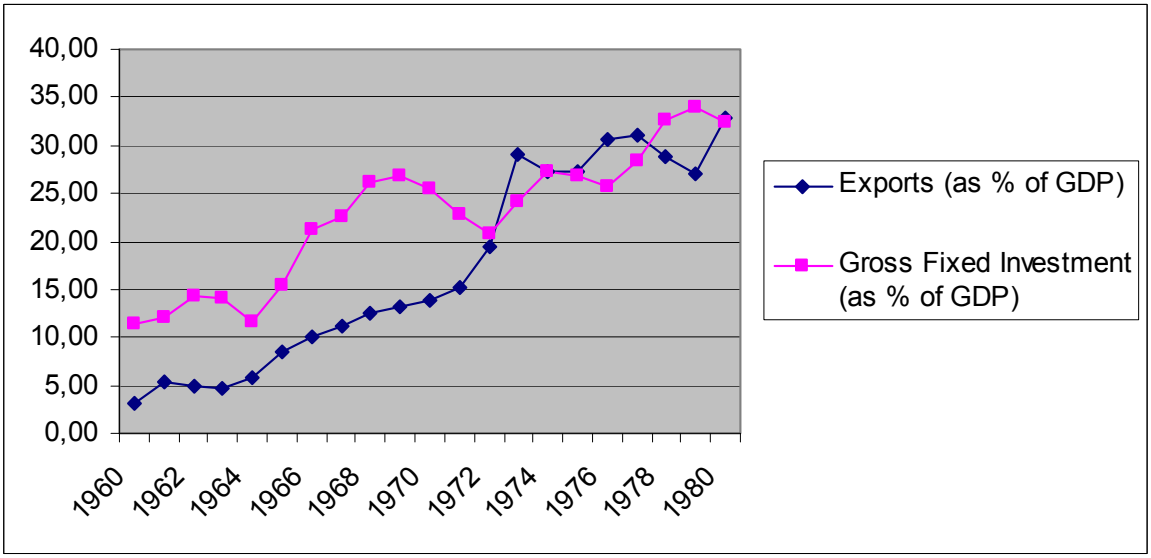
Appendix

A1-Share of Main Sectors as a % of GDP in South Korea 1960-1980



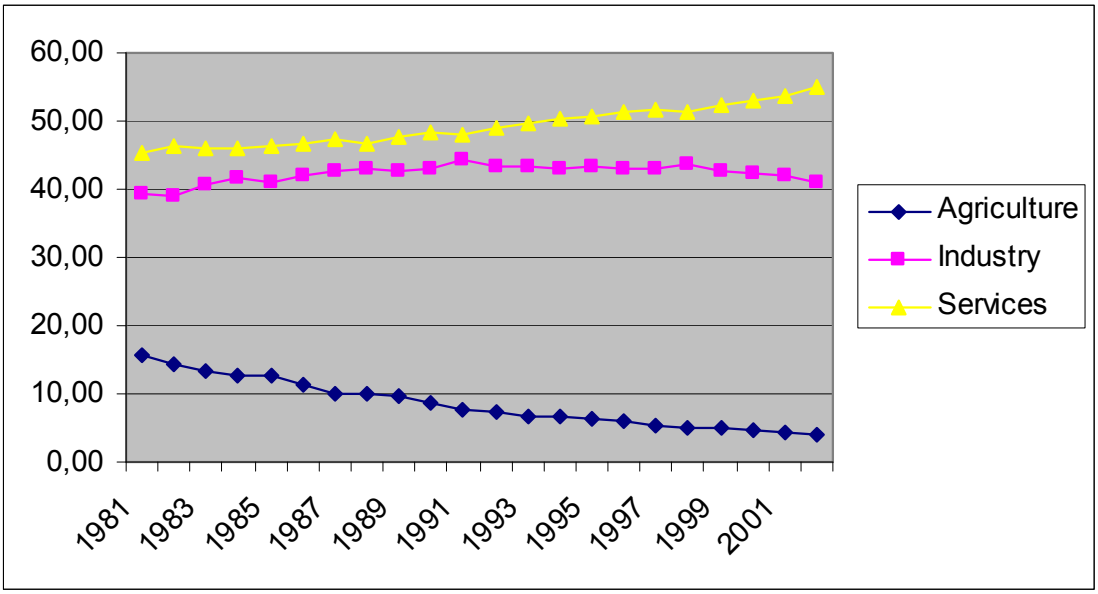
Source: WDI,2004

A2-Exports and Investment in South Korea 1960-1980



Source: WDI, 2004

A3-Share of Main Sectors as a % of GDP in South Korea 1980-2002



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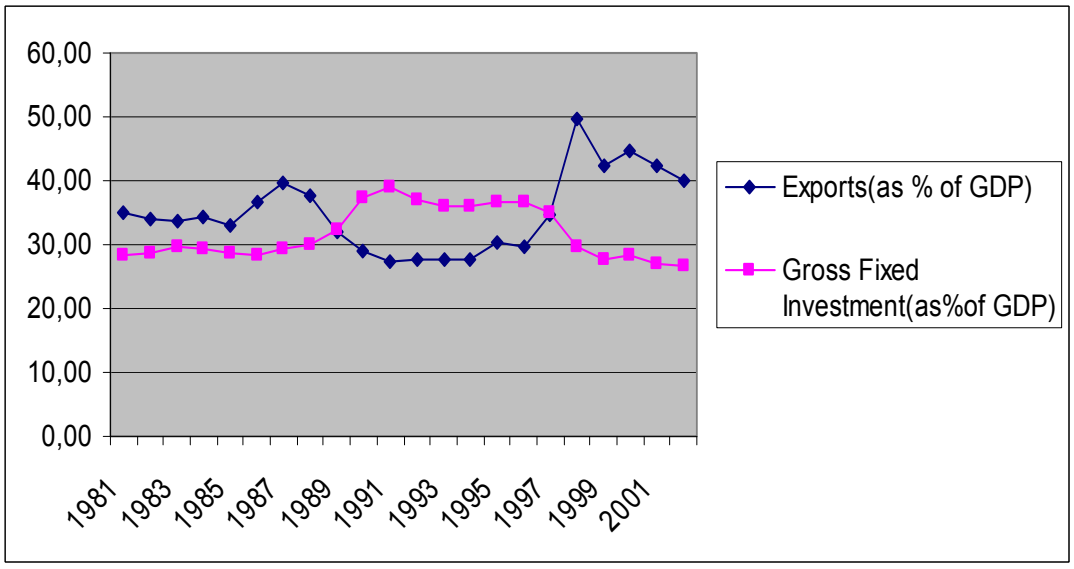
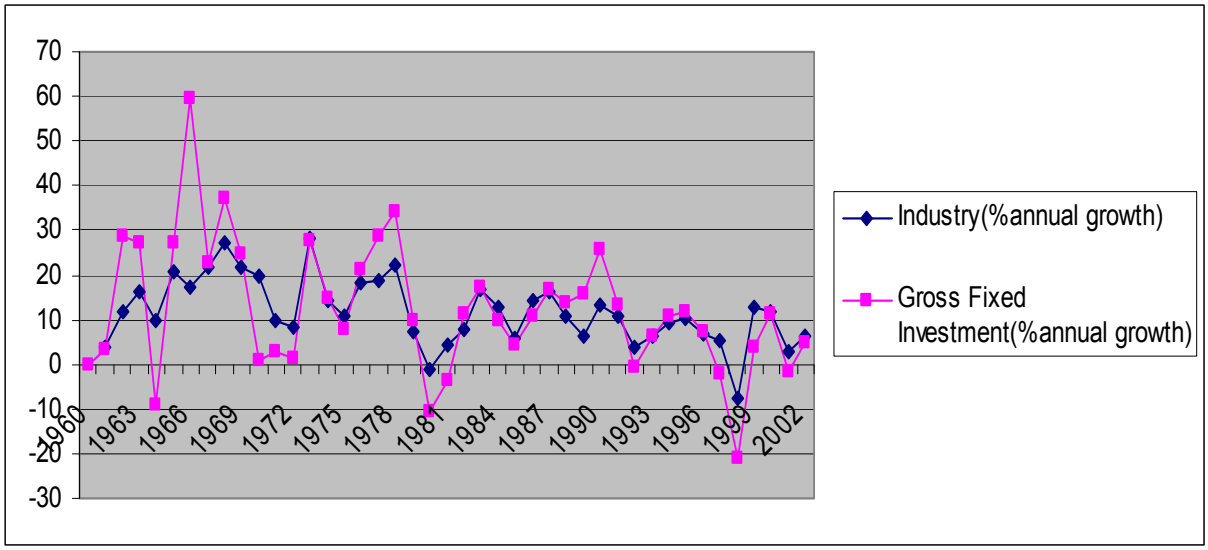


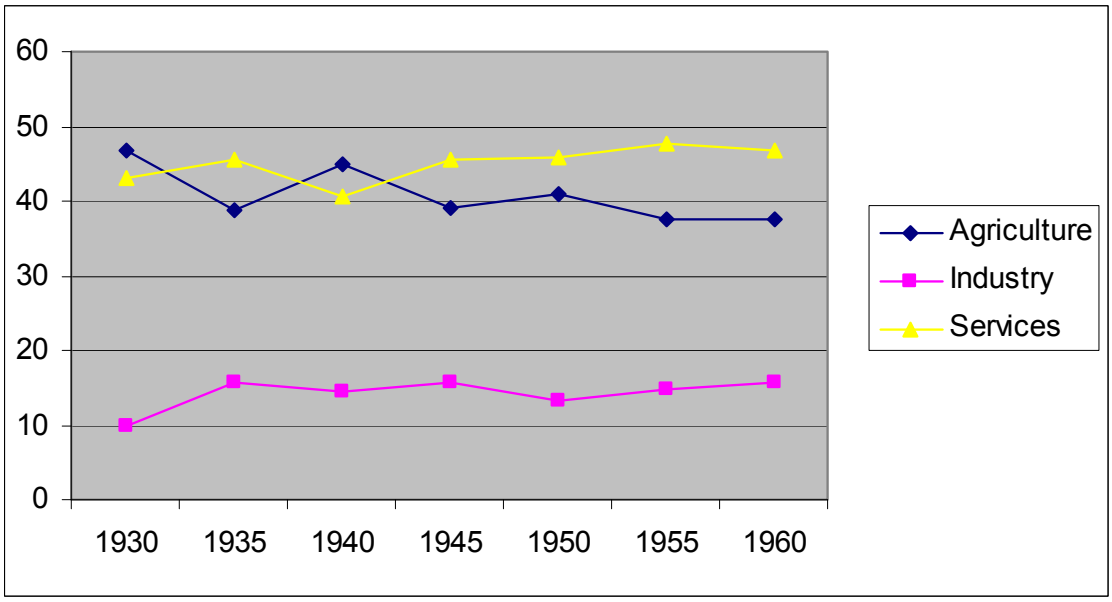
Source: WDI,2004

A5-Gross Fixed Capital Formation and Industrial Growth in South Korea



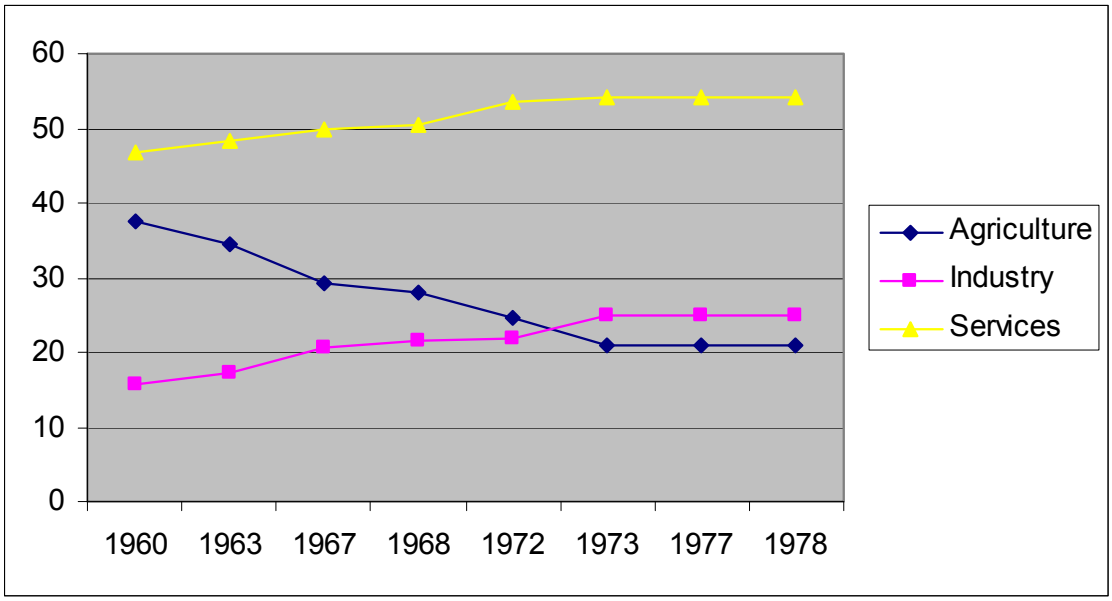
Source: WDI, 2004

A6-Share of Main Sectors as a % of GDP for Turkey 1930-1960



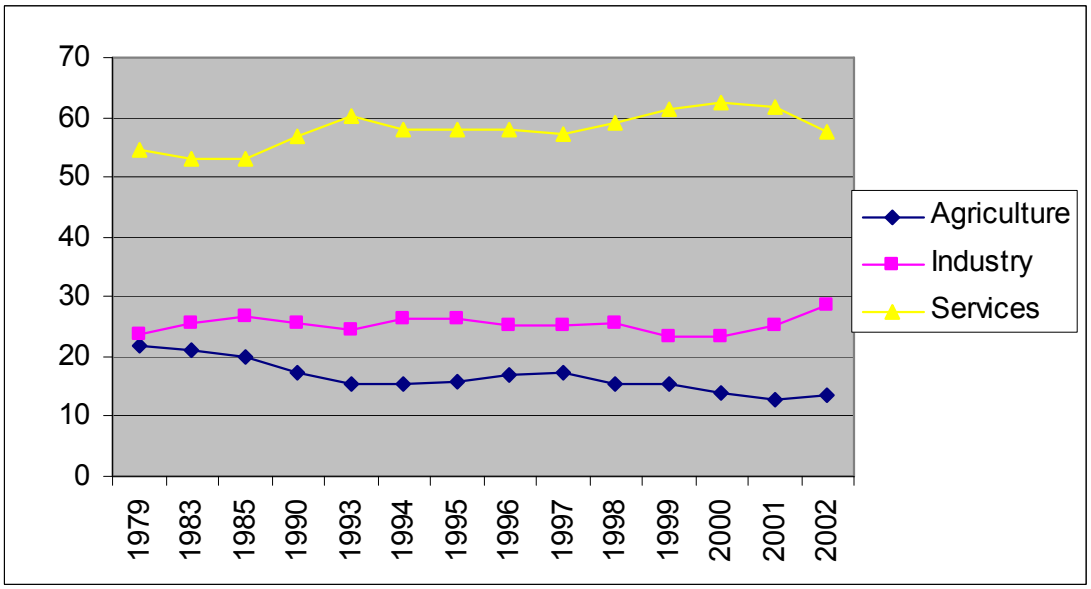
Source: SPO, SIS

A6-Share of Main Sectors as a % of GDP for Turkey 1960-1980



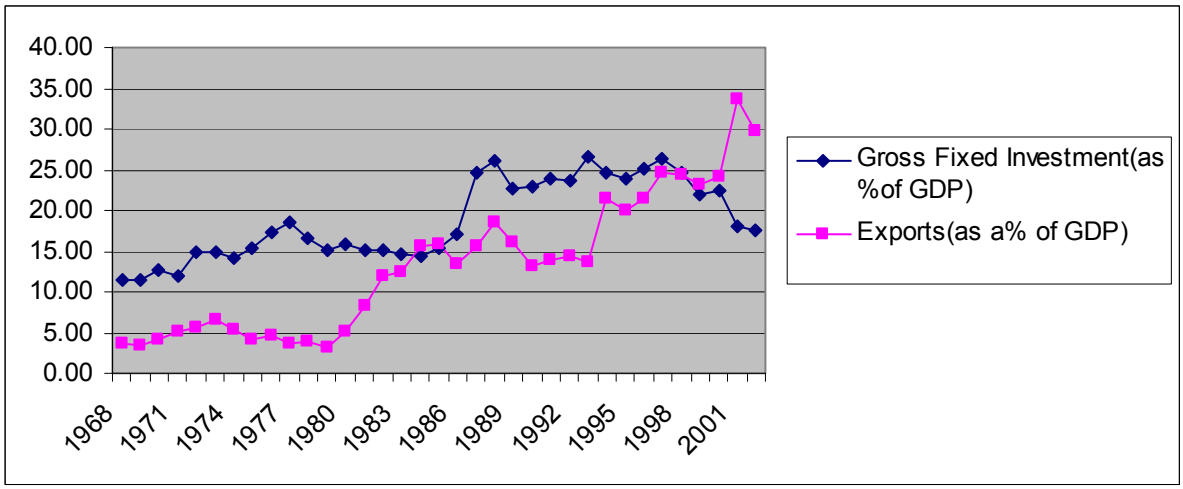
Source: SPO, SIS

A7-Share of Main Sectors as a % of GDP for Turkey 1980-2002



Source: SPO, SIS

A8-Exports and Investment in Turkey 1968-2002



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