# TESTING SOME HYPOTHESES OF "RELATIVE BACKWARDNESS" FOR ELEVEN NEWLY INDUSTRIALIZED COUNTRIES WITH SPECIAL REFERENCE TO THE TURKISH CASE

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**Abstract:**

The main objective of this paper is devoted to the testing of some hypotheses of Gerschenkron's relative backwardness approach for newly industrialized countries which are considered as the latecomers of the twentieth century. Based on the test results obtained in this paper, it can be argued that the experience of the twentieth century latecomers does not completely support the validity of Gerschenkron's hypotheses.

The paper is further concentrated on the analysis of Gerschenkron's approach in the Turkish case. The outcome of this analysis indicates that the Turkish case presents strong support for the validity of some of Gerschenkron's hypotheses.

**Özet:**

**Bazı "Göreli Gerikalmışlık" Hipotezlerinin Özellikle Türkiye Örneğine Ağırlık Verilerek Onbir Yeni Sanayileşen Ülke İçin Sınanması**

Bu makalenin temel amacı Gerschenkron'un göreli gerikalmışlık yaklaşımının bazı hipotezlerini yirminci yüzyılın arkadan gelenleri olarak ele alınan yeni sanayileşen ülkelerin deneyimlerini kullanarak sınamaktır. Bu çalışmada elde edilen sınama sonuçlarına dayanılarak, yirminci

yüzyılın arkadan gelenlerinin deneyiminin Gerschenkron'un hipotezlerinin geçerliliğini tam olarak desteklemediği söylenebilir.

Ayrıca, bu makalenin yoğunlaştığı diğer bir alan da Türkiye örneğinin Gerschenkron'un yaklaşımı çerçevesinde incelenmesidir. Bu inceleme yardımıyla Türkiye örneğinin Gerschenkron'un bazı hipotezlerinin geçerliliğini büyük ölçüde desteklediği sonucuna varılabilmektedir.

### Introduction:

The existence of considerable diversity among developing economies has been widely recognized. Within this group, the newly industrialized countries (NICs) have gained considerable importance in the world economy over the last three decades. During this period, they radically changed their economic structure and rapidly diversified their industrial production on the one hand, and exceeded some threshold level of per capita income, on the other.

Parallel to the emergence of NICs in the world scene, Turkey has recently achieved high growth rates accompanied with rapid industrialization and a willingness to play a more active role in international markets after shifting its development strategy from inward-looking to outward-orientation. Associated with these developments, significant changes occurred in the Turkish economic structure, and the country has increasingly been considered within the framework of the NICs rather than an "ordinary" developing economy.[1]

Although the NIC category can be considered as a category which brings twentieth century latecomers together, one should expect differences between the development experience of the twentieth century latecomers and early developers. To understand these differences, this paper attempts to test some hypotheses of Gerschenkron's relative backwardness approach for NICs, and then, evaluates their development experience within this framework. Furthermore, the Turkish development process will be analyzed by considering Gerschenkron's approach in the Turkish case. Thus, this study attempts to determine whether the experience of NICs and Turkey support Gerschenkron's approach.

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## 1. Setting the Hypotheses of Relative Backwardness

Gerschenkron's approach to development primarily rests on the concept of the degree of backwardness, and it can be said that the emphasis is given to the beginning stage of development rather than its long term objectives.

Gerschenkron's hypothesis argues that the initial spurt of industrialization experienced by a number of European countries was systematically related to their "degree of relative backwardness" (relative to the country or countries that had already experienced an industrialization) at the beginning of their spurts (Gerschenkron, 1966: 359; Sandberg, 1982:675; Supple, 1963:40).

Gerschenkron's approach heavily depends on two interrelated concepts, namely "the advantages of latecomers", and "the substitutability of preconditions". Nothing as sophisticated as the Rostowian preconditions are postulated in Gerschenkron's approach. True, certain preconditions of the development are missing in the backward countries. The recognition of relative backwardness, however, forces the country to foster development process by making innovative substitutions for missing preconditions. At this level, backward countries can use the already accumulated experience of the advanced countries in the form of technical assistance, importation of capital intensive techniques, foreign investment etc. to substitute the missing preconditions. The greater the degree of relative backwardness, the greater will be the number of missing preconditions, and therefore, more resourceful for the country to find innovative substitutions.

Additional hypotheses are suggested, however, to deal with more specific aspects of the development process: The greater a country's relative backwardness, (1) the more rapid will be the subsequent rate of manufacturing growth; (2) the greater emphasis will be given to the scale of the size of plant and enterprise; (3) the greater will be the stress on producers' goods as opposed to consumers' goods; (4) the less rapid will be the increase in the level of consumption; (5) the greater will be the role of special institutional factors designed to speed industrialization; (6) the less will be the agricultural sector contribution to the economic growth in terms of the rate of increase in agricultural labour productivity; (7) the greater will be the reliance on technological and financial borrowings abroad (Barsby, 1969: 449; Gerschenkron, 1966: 353-354; Gregory, 1974: 656; Sandberg, 1982: 676).

In the literature, there have been several attempts which tried to test empirically some hypotheses of the relative backwardness on a variety of countries especially for the nineteenth century.[2] But the experience of the twentieth century latecomers has received little attention in this respect, and the present paper attempts to do so.

## 2. Methodology and Data Base

In this section, we attempt to test the first, the fourth and the sixth hypothesis of the relative backwardness mentioned at the previous section for eleven NICs. It should be stated that it is not an easy task to test all of the above hypotheses. The difficulties arise in finding "relevant" variables to perform hypothesis testing (for instance for the hypotheses 2, 3 and 7) on the one hand, in quantifying some of the Gerschnekron's hypotheses, on the other. For example, how can one measure quantitatively "the role of the institutional factors designed to speed industrial growth?"

NICs that are selected include developing countries that had per capita incomes in excess of $1200 in 1990 and where the share of manufacturing sector in the gross domestic product was higher than 20 percent in the same year.[3] The countries in question are Argentina, Brazil, Chile, Colombia, Greece, Mexico, Portugal, South Africa, Republic of Korea, Thailand and Turkey.

To test the hypotheses, first of all, the countries should be ranked according to their relative backwardness prior to their initial period of industrialization. As a measure of relative backwardness, the time of reaching and passing $550 per capita income level is used because below $550 per capita income level NICs generally show the characteristics of an agrarian economy rather than an industrial one.[4]

Table 1 shows the initial dates of industrialization for NICs. The countries have been ranked according to the "lateness" in the timing of their industrialization with Greece = 1 and so on.[5] The use of "lateness" as a measure of backwardness is consistent with the works of Gerschenkron since he sometimes substitutes the term "delayed industrialization" for backwardness.[6]

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### Table 1:
### Inital Dates of Industrialization For Eleven NICs

| Country | Per Capita Income* | Date | Rank |
|---|---|---|---|
| GreeceREECE | 582.5 | 1948 | 1 |
| Mexico | 565.1 | 1948 | 2 |
| Chile | 556.0 | 1949 | 3 |
| Brazil | 558.2 | 1950 | 4 |
| Colombia | 564.1 | 1952 | 5 |
| Argentina | 558.6 | 1952 | 6 |
| Portugal | 552.6 | 1955 | 7 |
| South Africa | 550.8 | 1956 | 8 |
| Turkey | 551.7 | 1963 | 9 |
| Republic of Korea | 567.0 | 1967 | 10 |
| Thailand | 551.2 | 1977 | 11 |

* To find per capita income figures, first of all, gross national product is expressed in constant figures. They are converted in millions of 1985 US dollars by using average exchange rates, and then divided by mid-year population estimates.[7]
**Source**: World Bank (1992b); United Nations Yearbook of National Accounts Statistics (various issues); Mitchell (1993a, 1993b, 1982).

After ranking the countries according to the "lateness", Table 2 is constructed in order to present the values of the variables associated with the relative backwardness at the initial date of industrialization; ten years and twenty years after that date.

In Table 2, $V_i$ stands for the income originating in industrial sector (manufacturing + construction sectors) as a percentage of GDP in current prices. $V_p$ is the income originating in primary sector (agriculture + extractive sectors) as a percentage of GDP in current prices. $L_p$ represents the percentage of the labour force in primary sector. $C_p$ stands for the percentage of GDP devoted to private consumption in current prices. And finally, PSSER is the rate of the population aged 5-19 enrolled in primary and secondary schools.

**Table 2:**
Some Indicators of Economic Development For Eleven NICs During The Initial Period Of Their Industrialization

| Country | Date | Variables | | | | |
|---------|------|-------|-------|-------|-------|-------|
| | | $V_i$ | $V_p$ | $L_p$ | $C_p$ | PSSER |
| Greece | 1948 | 23.0 | 40.0 | 59.0 | 76.0 | 63.0 |
| | 1958 | 23.8 | 31.6 | 56.7 | 78.0 | 70.0 |
| | 1968 | 20.6 | 19.0 | 48.0 | 70.4 | 85.0 |
| Mexico | 1948 | 24.2 | 26.0 | 59.0 | 81.9 | 33.0 |
| | 1958 | 27.9 | 23.0 | 58.9 | 82.1 | 45.0 |
| | 1968 | 27.0 | 16.7 | 47.3 | 74.6 | 67.0 |
| Chile | 1949 | 21.0 | 22.0 | 45.0 | 77.0 | 59.0 |
| | 1959 | 21.1 | 20.0 | 31.0 | 78.6 | 73.0 |
| | 1969 | 32.4 | 19.3 | 23.0 | 70.0 | 85.0 |
| Brazil | 1950 | 18.0 | 31.0 | 60.6 | 74.2 | 30.0 |
| | 1960 | 19.0 | 19.0 | 54.1 | 69.5 | 46.0 |
| | 1970 | 26.1 | 8.7 | 44.9 | 67.2 | 65.0 |
| Colombia | 1952 | 15.0 | 41.5 | 55.0 | 76.2 | 35.0 |
| | 1962 | 23.8 | 33.0 | 50.0 | 75.1 | 57.0 |
| | 1972 | 24.4 | 28.8 | 28.0 | 72.4 | 71.0 |
| Argentina | 1952 | 28.0 | 17.7 | 18.5 | 73.8 | 67.0 |
| | 1962 | 32.3 | 15.1 | 18.2 | 68.1 | 73.0 |
| | 1972 | 35.9 | 16.7 | 15.0 | 68.9 | 81.0 |
| Portugal | 1955 | 34.2 | 31.2 | 45.0 | 78.7 | 54.0 |
| | 1965 | 35.2 | 20.0 | 38.6 | 74.0 | 71.0 |
| | 1975 | 36.5 | 14.6 | 30.7 | 80.7 | 86.0 |
| South Africa | 1956 | 23.4 | 26.9 | 32.5 | 63.5 | 52.0 |
| | 1966 | 28.4 | 21.8 | 29.0 | 61.5 | 64.0 |
| | 1976 | 29.0 | 19.7 | 29.0 | 56.5 | 75.0 |
| Turkey | 1963 | 18.0 | 38.4 | 75.0 | 76.0 | 54.0 |
| | 1973 | 24.4 | 26.6 | 65.2 | 70.0 | 66.0 |
| | 1983 | 29.3 | 20.8 | 50.0 | 73.0 | 73.0 |
| Rep. Of Korea | 1967 | 22.7 | 34.1 | 52.8 | 79.8 | 74.0 |
| | 1977 | 33.1 | 24.3 | 41.0 | 62.8 | 86.0 |
| | 1987 | 39.6 | 11.3 | 22.3 | 53.5 | 94.0 |
| Thailand | 1977 | 29.1 | 30.2 | 77.3 | 66.2 | 62.0 |
| | 1987 | 34.9 | 19.4 | 60.8 | 63.4 | 63.0 |

Source: World Bank (1992b); United Nations Yearbook of National Accounts Statistics (various issues); UNESCO Statistical Yearbook (various issues); ILO Yearbook of Labour Statistics (various issues); Mitchell (1993a, 1993b, 1982).

It should be mentioned that most of the variables in Table 2 are expressed as percentage of GDP rather than absolute values.[8] The stress in Gerschenkron's initial spurt of industrialization is on the upward discontinuity

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in the backward country's index of industrial production and, not on "the discontinuity in a more comprehensive index such as national output" (Gerschenkron, 1966:353). Therefore, expressing the variables as percentage of GDP eliminates the impact of the fluctuations in GDP and makes easier to capture the real changes of the variables in stimulating the course of economic development.

Table 2 also contains the values of the variables after ten and twenty years of the initial date of industrialization for eleven NICs. These two alternative periods have been rather arbitrarily chosen, and will be used in relating the characteristics of development to relative backwardness.[9]

Indices will be formed and ranked for variables under investigation. Consequently, rank correlation between relative backwardness and the characteristics of development will be analyzed.

### 3. Presentation of Results

In this part, the results of testing some hypotheses of the theory of relative backwardness for NICs will be presented.

***Hypothesis 1***: "The greater the relative backwardness of a country on the eve of its initial period of industrialization (great spurt), the more rapid is the subsequent growth of manufacturing output."

To test this hypothesis, we used indices of industrial output share ($V_i$) over ten and twenty years periods rather than manufacturing output itself. It should, however, be noted that the share of manufacturing sector in industrial output is higher than 70 percent for all countries in the sample. The remaining part is devoted to the share of construction sector.

The more backward the country, the higher should be the rate of growth of industrial output share. The indices of industrial output share and their ranks are shown in Table 3.

**Table 3:**
Indices of Industrial Output Share ($V_i$) Of Eleven NICs For Dates Ten Years
And Twenty Years After The Beginning Of Their Industrialization
(Date of Beginning of Industrialization = 100)

| Country | Date | 10Years Index | Rank | 20 Years Index | Rank |
|---|---|---|---|---|---|
| Greece | 1948 | 103.4 | 3 | 89.5 | 1 |
| Mexico | 1948 | 115.2 | 5 | 111.5 | 3 |
| Chile | 1949 | 100.4 | 1 | 154.2 | 7 |
| Brazil | 1950 | 105.5 | 4 | 145.0 | 6 |
| Colombia | 1952 | 158.6 | 11 | 162.6 | 8 |
| Argentina | 1952 | 115.3 | 6 | 128.2 | 5 |
| Portugal | 1955 | 102.9 | 2 | 106.7 | 2 |
| South Africa | 1956 | 121.3 | 8 | 123.9 | 4 |
| Turkey | 1963 | 135.5 | 9 | 162.7 | 9 |
| Rep. Of Korea | 1967 | 145.8 | 10 | 174.4 | 10 |
| Thailand | 1977 | 120.7 | 7 | -------- | -- -- |

Source: See Table 2.

The rank correlation coefficients of relationship between relative backwardness (measured as lateness) and the rate of growth of industrial output share are found to be 0.58 for the ten-year test, and 0.57 for the twenty-year test.[10] Both coefficients are significant at a level of 5 percent. The results, therefore, are significant and support the hypothesis that there is a positive relation between relative backwardness and the growth of industrial output share.

*Hypothesis 2*: "The greater the relative backwardness of a country on the eve of its initial period of industrialization, the less rapid is the increase in the level of consumption."

Indices of private consumption share ($C_p$) have been constructed and ranked with the lowest rate of increase as one. Table 4 contains these data.

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**Tabel 4:**

Indıces Of Private Consumption Share ($C_p$) Of Eleven NICs During Their Inıtal
Period Of Industrialization

(Index =100 at the beginning of industrialization)

| Country | Date | 10Years Index | Rank | 20 Years Index | Rank |
|---|---|---|---|---|---|
| Greece | 1948 | 102.6 | 11 | 92.6 | 6 |
| Mexico | 1948 | 100.2 | 9 | 91.0 | 5 |
| Chile | 1949 | 102.0 | 10 | 90.9 | 4 |
| Brazil | 1950 | 93.6 | 4 | 90.5 | 3 |
| Colombia | 1952 | 98.5 | 8 | 95.0 | 8 |
| Argentina | 1952 | 92.2 | 3 | 93.3 | 7 |
| Portugal | 1955 | 94.0 | 5 | 102.5 | 10 |
| South Africa | 1956 | 96.8 | 7 | 88.9 | 2 |
| Turkey | 1963 | 92.1 | 2 | 96.0 | 9 |
| South Korea | 1967 | 78.6 | 1 | 67.0 | 1 |
| Thailand | 1977 | 95.7 | 6 | -------- | -- -- |

Source: See Table 2.

The resulting rank correlation coefficients are -0.70 for the ten-year test, and -0.04 for the twenty-year test. While the former coefficient is significant at 5 percent, the latter is not significant even at the 10 percent level.

Therefore, ten-year test supports the hypothesis that the rate of increase in the consumption share is inversely related to relative backwardness. Although twenty-year test does not contradict the above prediction, it fails to support it.

*Hypothesis 3*: "The greater the relative backwardness of a country on the eve of its initial period of industrialization, the less the agricultural sector contributes to economic growth as measured by the rate of increase in agricultural labour productivity."

Instead of agricultural labour productivity, we used primary sector relative labour productivity to test this hypothesis. The share of agricultural output in primary output, however, is more than 90 percent for all the countries in the sample. The remaining, rather negligible, part is attributed to mining sector. This is also the case for primary labour.

So, primary sector relative labour productivity can be considered as representative of agricultural sector relative labour productivity for these purposes. Indices of primary sector relative labour productivity based on

## TABLE 5

### Indices Of Primary Sector Output Share (V$_p$), Primary Sector Labour Share (L$_p$)and Primary Sector Relative Labour Productivity Of Eleven NICs During Their Inital Period Of Industrialization

(Index = 100 at beginning of industrialization)

| COUNTRY | Indices of Primary Sector Output Share | | | | Indices of Primary Sector Labour Share | | | | Indices of Primary Sector Relative Labour Productivity | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10-Years Index (1) | Rank | 20-Years Index (2) | Rank | 10-Years Index (3) | Rank Index | 20-Years (4) | Rank Index | 10-Years (1)/(3) | Rank Index | 20-Years (2)/(4) | Rank Index |
| GREECE | 79.0 | 6 | 47.5 | 4 | 96.1 | 9 | 81.3 | 10 | 82.2 | 5 | 58.4 | 2 |
| MEXICO | 88.4 | 10 | 64. | 6 | 99.8 | 11 | 80.1 | 8 | 88.5 | 8 | 80.1 | 5 |
| CHILE | 90.9 | 11 | 87.7 | 9 | 68.8 | 1 | 51.1 | 3 | 132.1 | 11 | 171.6 | 10 |
| BRAZIL | 61.2 | 1 | 28.0 | 1 | 89.2 | 7 | 74.0 | 6 | 68.6 | 1 | 37.8 | 1 |
| COLOMBIA | 79.5 | 7 | 69.3 | 7 | 90.9 | 8 | 50.9 | 2 | 87. | 7 | 136.1 | 9 |
| ARGENTINA | 85.3 | 9 | 94.3 | 2 | 98.3 | 10 | 81.0 | 9 | 86.7 | 6 | 116.4 | 8 |
| PORTUGAL | 64.1 | 2 | 46.7 | 3 | 85.7 | 4 | 68.2 | 5 | 74.7 | 2 | 68.4 | 3 |
| SOUTH AFRICA | 81.0 | 8 | 73.5 | 8 | 88.9 | 6 | 80.0 | 7 | 91.1 | 9 | 91.8 | 7 |
| TURKEY | 69.2 | 4 | 54.1 | 5 | 86.9 | 5 | 66.6 | 4 | 79.6 | 3 | 81.2 | 6 |
| REP. OF KOREA | 71.2 | 5 | 33.1 | 2 | 77.6 | 2 | 42.2 | 1 | 91.7 | 10 | 78.4 | 4 |
| THAILAND | 64.2 | 3 | --- | --- | 78.6 | 3 | --- | --- | 81.6 | 4 | --- | --- |

Source: See Table 2.

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indices of primary sector output share ($V_p$) and labour share ($L_p$) were formed ($V_p / L_p$) and ranked with the lowest rate of increase assumed to be "1". Table 5 contains relevant data to test the hypothesis 3.

Although the emphasis in the hypothesis is on relative labour productivity, we also investigated the relationship between relative backwardness and the rate of increase in the primary sector output and labour share, since these variables should be concerned in determining the contribution of the primary sector to economic growth.

**Table 6:**

Rank Correlations Between Relative Backwardness And The Contribution Of Primary Sector To Economic Growth

|  | 10-Years Test | | 20 Years Test | |
|---|---|---|---|---|
|  | $r_s$ | Significance Level | $r_s$ | Significance Level |
| As measured by the rate of increase in primary sector output share | -0.42 | 0.10 | -0.12 | ----(*) |
| As measured by the rate of increase in primary sector labour share | -0.55 | 0.05 | -0.51 | 0.05 |
| As measured by the rate of increase in primary sector relative labour productivity | -0.09 | ----(*) | 0.10 | ----(*) |

(*) Significance level exceeds 0.10.
**Source**: Calculated from Table 1 and Table 5.

The resulting rank correlation coefficients are presented in Table 6. According to the results in Table 6, there is not a significant relationship between relative backwardness and the contribution of the primary sector to economic growth as measured by the increase in the primary labour productivity. If, however, the relationship is interpreted slightly differently and is measured by the rate of increase in primary labour share, there appears to be a significant negative correlation between relative backwardness and the contribution of primary sector to economic growth for both the ten and twenty-year tests. Similarly, the ten-year test shows a significant relationship between relative backwardness and the contribution of the primary sector to economic growth, as measured by the rate of increase in primary output share. Twenty-years test, however, fails to support this relationship.

In short, it can be argued that although there are some signs of negative relationship between relative backwardness and the contribution of agricultural sector to economic growth, this relationship is rather weak and does not fully support the hypothesis for the NICs experience. Additionally and more importantly, there is virtually no relationship between relative backwardness and the contribution of agricultural sector to economic growth when this contribution is measured by the rate of increase in labour productivity as it is suggested by the original version of the hypothesis.[11]

Alongside the above hypothesis, we also investigated the relationship between relative backwardness and human capital by considering primary and secondary school enrollment ratio as an index of human capital stock. The rationale behind this investigation is to identify the role of human capital besides the physical one during the initial period of industrialization for the twentieth century latecomers. To do so, we constructed indices of primary and secondary school enrollment ratio and ranked the countries with the lowest rate of increase as one. They are presented in Table 7.

**Table 7:**

Indices Of Primary And Secondary School Enrollment Ratio Of Eleven NICs During Their Inıtal Period Of Industrialization
(Index = 100 at beginning of industrialization)

| Country | After 10 Years | Rank | After 20 Years | Rank |
|---|---|---|---|---|
| Greece | 111.1 | 3 | 134.9 | 3 |
| Mexico | 136.3 | 9 | 203.0 | 9 |
| Chile | 123.7 | 7 | 144.6 | 6 |
| Brazil | 153.3 | 10 | 216.6 | 10 |
| Colombia | 162.8 | 11 | 202.8 | 8 |
| Argentina | 108.9 | 2 | 120.8 | 1 |
| Portugal | 131.4 | 8 | 159.2 | 7 |
| South Africa | 123.0 | 6 | 144.2 | 5 |
| Turkey | 122.2 | 5 | 135.1 | 4 |
| Rep. of Korea | 116.2 | 4 | 127.0 | 2 |
| Thailand | 101.6 | 1 | ------- | --- |

Source: See Table 2.

The resulting rank correlation coefficients are -0.43 for the ten -year test and -0.40 for twenty-year test. Both coefficients are significant at a level of 10 percent. The results of both tests, therefore, indicate that there is an inverse relation between relative backwardness and human capital if the latter is measured by the rate of increase in the primary and secondary school enrollment ratio.

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The above test result can be evaluated by making comparisons with the previous works on Gerschenkron's approach.

It should be mentioned that the study period and the methodology used in this paper are different from the previous works. While the concern of the previous studies was on the nineteenth century European countries, the current study concentrates on the latecomers of the twentieth century without giving an emphasis on the geographical differences.[12]

In determining the initial date of industrialization, we assumed a "critical" per capita income level ($550) which separates the economy from agrarian based to industrial oriented similar to the methodology used by Crafts (1984). But this does not necessarily mean that every country in the sample has started its "great spurt" at the specific date identified in this paper. For this reason, we substitute the term "great spurt" for "initial period of industrialization" throughout the study. Nevertheless, initial dates of industrialization for most of the countries in the sample can perfectly be considered as equivalent to the starting dates of great spurt. This is particularly true for Mexico, Colombia, South Africa, Thailand, Republic of Korea and Turkey which experienced a rapid and steady increase in their rate of industrial output after their initial dates of industrialization (See Table 2).[13]

Furthermore, we use "lateness" as the only measure of economic backwardness by taking into account per capita income levels of the countries. Barsby, however, also used the share of agricultural labour and per capita income by computing indices of relative backwardness in terms of relatives of the United Kingdom (Barsby, 1969:452-455). Although this methodology seems to be appropriate for a study dealing with the nineteenth century European economies, it is not applicable for the present study which concerns mostly on the experience of the NICs for the second half of the twentieth century. Which relatively developed country can be taken as reference point to construct indices of relative backwardness in case of NICs? The answer to this question is not straightforward and possibly subject to many reservations.

Present results for hypothesis 1 and 3 show similarities with Barsby's findings where he also found a positive relationship between industrial output and relative backwardness and no relation between agricultural labour productivity and backwardness (Barsby, 1969:455-456; 458).

The results of the ten-year test for hypothesis 2 is parallel with Crafts (1984:455) who indicated a negative relationship between private consumption

and lateness although the significance of this relation is weak in Crafts' finding compared to the current study.[14]

On the other hand, Crafts found a significantly positive relation ship between the share of primary labour and relative backwardness, and no relation between industrial output and backwardness which run contrary to the findings of the present work.

Furthermore, we found a negative relation between relative backwardness and primary and secondary school enrollment ratio as Crafts (1984:455) did.[15] This finding has shown parallels with Sandberg (1982:690-696) who identified a positive relation between human capital and income level and indicated the shortcomings of the lack of human capital for the latecomers.

All in all, the results of the above tests do not seem to offer strong support for Gerschenkron's hypotheses as Barsby who examined only six nineteenth century European countries.[16] Barsby's tests, however, were based on a small number of countries even though economic growth was a widespread phenomenon in the late nineteenth century. On the other hand, Crafts, who ordered the countries similar to the present study and used relatively large group of countries comparing to Barsby[17], was not able to find enough evidence to support Gerschenkron's approach as well.[18] This skeptical view can also be attributed to Gregory (1982; 1974) who strongly questioned the validity of Gerschenkron's hypotheses in Russia which is after all, usually seen as a study *par excellence* in support of Gerschenkron. The experience of twentieth century latecomers does not also present strong support for the validity of Gerschenkron's hypotheses. On the other hand, depending on the test results, this paper also attempts to provide some clues about the characteristics of development for the twentieth century latecomers (NICs) and, the major findings of the present study will be summarized in the next section.

## 4. Evaluation of the Development Process in NICs

At the beginning, it should be stressed that the latecomers of the twentieth century gave an emphasis to the increase in their rate of industrial output as it was predicted by Gerschenkron. In other words, the latecomers of the twentieth century had the ability to achieve rapidly high shares of industrial output during their initial period of industrialization.

Secondly, latecomers of the twentieth century gave less importance to the increase in their consumption rate at least for the first decade of their initial

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period of industrialization. But for the second decade, this trend was considerably weakened, even though it was not totally reversed.[19] That is to say, compared with the first decade, latecomers started to deal with the increase in their consumption rate in the second decade of their initial period of industrialization.

Thirdly, latecomers of the twentieth century considerably decreased the share of primary labour in total employment during their initial period of industrialization. In other words, they released labour from the countryside to be used in the industrial activities.

Consequently, latecomers gave less emphasis to the increase in primary output share especially during the first decade of their initial period of industrialization. But this trend was not strongly apparent (in the empirical sense) when comparing to the trend in the share of primary labour[20] and, probably because of that reason twentieth century latecomers could not have declined sufficiently the relative labour productivity in their primary sector contrary to the anticipations of Gerschenkron. Put it differently, the primary sector's contribution to economic growth in terms of the rate of increase in relative labour productivity was not as low as the Gerschenkron's expectations in the case of the twentieth century latecomers. It can, therefore, be argued that the contribution of the agricultural sector to economic growth was not negligible in the experience of the twentieth century latecomers.

Finally, the twentieth century latecomers gave less importance to the rise in their human capital stock when they are measured by the rate of increase in primary and secondary school enrollment ratios. Slow increase in human capital stocks, in turn, limited the economic development of the latecomers. In other words, the lack of sufficient human capital restricted, to some extent, the advantages of the twentieth century latecomers in realising rapid industrialization. This argument can be considered as analogous with the proponents of "people-centered" development ethic rather than "goods-centered" one.[21]

Our conclusions can be considered as an initial outcome of Gerschenkron's approach applied to the experience of the twentieth century latecomers. More can be said about the individual position of the relatively backward countries, and this will be done for the case of Turkey in the following section.

## 5. Analysis of Gerschenkron's Approach in the Turkish Case

In testing some of the Gerschenkron's hypotheses, we used the data of the eleven NICs. Countries in the sample are more or less advanced than Turkey both in terms of initial date of industrialization and in terms of the changes in the major indicators of development. This is, therefore, a good starting point to consider Turkish industrialization in the context of relative backwardness approach.

In the previous section, NICs are ranked according to their relative backwardness as measured by the lateness in the timing of industrialization. In this rank order, Turkey is at the ninth place among eleven NICs with its $551 per capita income level (as measured by 1985 US$) attained in 1963 (See Table 1). Therefore, it can be argued that Turkey started late its industrialization process comparing with other NICs, and thus, one should expect that Gerschenkron's hypotheses may be valid in the Turkish case. To evaluate this argument, rank orders which are constructed in the second section of this paper can be specifically analyzed giving an emphasis on the position of Turkey.

According to the indices in Table 3, Turkey increased its share of industrial output by 35.5 percent after ten-years and by 62.7 percent after twenty-years of its initial date of industrialization. These rates indicated the third largest increase for ten-years index and second largest increase for twenty-years index among NICs. Therefore, it can be said that Turkey (relatively speaking) experienced very rapid industrial growth rates during its initial period of industrialization, and that the Turkish case is consistent with the hypothesis that "the greater a country's relative backwardness, the more rapid is its rate of industrial output."

Table 4 which is used to test hypothesis 2 illustrates a similar picture for Turkey. The decline in the share of Turkish private consumption is 7.9 percent after ten-years of its initial date of industrialization equivalent to the second largest change among eleven NICs. This change is more than anticipated in the context of relative backwardness of a country and strongly supports the hypothesis that "the greater a relative backwardness of a country, the less rapid is the increase in the level of consumption."

But comparing to the first decade, the trend in the share of Turkish private consumption drastically changed, showing a 3.9 percent increase, at the end of the second decade of its industrialization period while most of other countries continued to decrease their consumption share. Turkey ranked to the

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ninth place among ten NICs, the second highest rate of increase in the share of consumption, for twenty-years index. This development obviously jeopardized the validity of the hypothesis 2 in the Turkish case.

Analyzing the contribution of the Turkish agricultural sector to its economic growth is another aspect of considering Gerschenkron's approach for this country. During the initial period of industrialization, Turkey decreased its share of primary output in total domestic product on the one hand, and its share of primary labour in total employment on the other. In consequence, primary sector relative labour productivity also fell down. (See Table 5). To understand the magnitude of these changes with respect to other countries, one should look at the ranks identified for Turkey in Table 5. For five of the six different rankings, Turkey's position is higher than it should be in the context of Gerschenkron's hypothesis (hypothesis 3). In other words, contribution of the Turkish primary sector to its economic growth is higher than expected when this contribution is measured by the rate of increase in primary output share, primary labour share and relative labour productivity. But, there is a very important exception to this analysis. The decline in the primary sector relative labour productivity of Turkey is the third largest among eleven NICs for ten-year index giving a complete support to this hypothesis.

Therefore, it can be said that hypothesis 3 is valid in the Turkish case in condition that the contribution of agricultural sector to economic growth is only measured by the rate of increase in primary sector relative labour productivity and the initial period of industrialization is restricted to ten-year.

Furthermore, Turkey increased, the rate of primary and secondary school enrollment 22.2 percent and 35.1 percent for the first and second decade of its initial period of industrialization successively. When the rankings of Table 7 is concerned, the economy relatively attained high rates of increase in primary and secondary school enrollment ratio, and hence, raised its human capital stocks compared with other countries.

In a broader sense, it can be argued that until the early 1960s, Turkey showed characteristics of a relatively backward country, where certain preconditions of the industrial growth were missing which, in turn, prevented its industrialization. The recognition of the backwardness, however, forced the country to develop rapidly its industrialization process by making substitutions for missing preconditions.

Furthermore, the country has not attempted to rise its consumption levels. In contrary, the share of private consumption in GDP rapidly decreased providing an impetus to faster industrial development for the first decade of its initial period of industrialization.

On the other hand, diminishing trends in the agricultural relative labour productivity, mainly originating from the slow decline of the agricultural labour force, decreased the contribution of the agricultural sector to economic growth and then, promoted development process of the country.

Additionally, Turkey seriously concerned with the improvement of its human capital stock by increasing the rate of primary and secondary school enrollment ratio. The country was not really suffered from the lack of human capital which could have been an important constraint for its industrial development.

In short, although economic structure of the country showed characteristics of a relatively backward country until 1960s, Turkey successfully used the advantages of being a latecomer and realized very rapid and discontinuous industrial growth during its initial period of industrialization.

As a result, it can be said that the Turkish development process can be evaluated depending on the relative backwardness approach although this approach has been largely ignored by the researchers.[22] In fact, Turkish experience gave a strong support to the validity of some of the Gerschenkron's hypotheses when the initial period of industrialization is restricted to one decade. Even when this restriction is removed, there still remains some evidence to support the validity of Gerschenkron's hypotheses in the Turkish case.[23]

### Concluding Remarks:

This paper focused on testing some hypotheses of the theory of relative backwardness approach for NICs which are considered as the latecomers of the twentieth century. Depending on the test results obtained in this paper, it can be argued that the experience of the twentieth century latecomers does not completely support the validity of the Gerschenkron's hypotheses.

Although the test results for eleven NICs do not present strong support for the theory of the relative backwardness, their implications offer some hints about the development process of the twentieth century latecomers. First of all,

it should be mentioned that the latecomers of the twentieth century rapidly achieved high shares of industrial output during their initial period of industrialization. Second point is that the increase in the share of consumption for the latecomers of the twentieth century was not modest, contrary to the anticipations of Gerschenkron. This result reflects to some extent the changing consumption patterns in the twentieth century comparing with the previous centuries. Thirdly, it can be stated that the contribution of the agricultural sector to the economic development was not negligible in the experience of the twentieth century latecomers. Finally, twentieth century latecomers have not appropriately dealt with the improvement of their human capital stocks.

The interesting point emerged in this paper is the rapidness and the shortness of the "great spurt" in the twentieth century comparing with the previous one. If the spurt period is restricted with one decade, the results of the empirical analysis seems to support some of the Gerschenkron's hypotheses when they are applied to the experience of the twentieth century latecomers.

Meanwhile, this paper is also concentrated on the analysis of Gerschenkron's approach in the Turkish case. This analysis indicated that even though the Turkish economic structure has shown the peculiarities of a relatively backward country until early 1960s, it has experienced considerably rapid industrial development during its initial period of industrialization.

Furthermore, it can be pointed out that the Turkish development process can be concerned relying on the relative backwardness approach. It should also be mentioned that the Turkish case presents strong support for the validity of some of the Gerschenkron's hypotheses.

All in all, it can be stated that the Gerschenkron's approach about the latecomers necessitates some refinements although it is correct to infer that their development is different from the early developers. This statement is valid for both nineteenth and twentieth century latecomers.

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## Notes:

[1] See for instance Balassa (1981), and Chowdhury and Islam (1993).

[2] See for instance Barsby (1969); Crafts (1984); Gregory (1974) and Sandberg (1982). For a detailed survey of the literature, see Mıhçı (1998).

[3] The data have been drived from the World Development Report (World Bank 1992a). NIC category overlaps with the upper range of lower-middle-income countries and all the upper-middle-income countries. Socialist countries at that time and the countries which have a population less than 2 millions in 1990 are excluded from this category. Although its share of manufacturing sector in gross domestic product was 14 percent in 1990, Greece is also included in this category due to the highest per capita income that had experienced among NICs. On the other hand, Uruguay has been excluded from the sample due to the unavailability of the historical data.

[4] In a previous study (Mıhçı, 1999: 53-65), we have investigated "patterns of development" as a Chenery-Syrquin type for NICs and, found that below $550 per capita income level the structure of a newly industrialized economy shows the characteristics of a traditional society. Above $550 per capita income level, however, "structural transformation" gets underway for NICs.

[5] If the two countries have achieved $550 per capita income level at the same year, the one which has attained higher per capita income level is ranked above the lower one.

[6] See, for instance, Gerschenkron (1966:44, 360).

[7] The conversion is made basing on the exchange rates given by World Bank, World Tables 1992 (World Bank, 1992b).

[8] Barsby (1969), however, has used absolute values in his study. On the other hand, Crafts (1984) and Gregory (1974) have generally expessed the values of the variables as percent of GDP or GNP as the present study does.

[9] The lengths of time were chosen to test the hypotheses. This does not, however, imply that industrialization or a spurt automatically ends after two decades.

[10] Spearman's coefficient of rank correlation, $r_s$, is used in the calculations. The formula is as follows:

$$r_s = 1 - \frac{6\sum d^2}{n(n^2-1)}$$

where d is the difference in the ranks.

[11] It should be noted that the test results are discussed and evaluated in a more detailed manner in the following section.

[12] Gregory (1974) has also taken into account non-European countries (United States, Canada and Argentina) in testing some hypotheses of Gerschenkron for the Russian case.

[13] Gerschenkron specified two quantitative characteristics of a "great spurt": rapid rate of increase in the rate of industrial output and the continuation of this growth through a period of international depression (Gerschenkron, 1966:163).

[14] Rank correlation between relative backwardness and the level of private consumption in Crafts (1984:455) is -0.49 for a sample of seven countries. This relation, therefore, should not be considered as significant at a level of 10 percent. Crafts also accepts the weakness of this result (Crafts, 1984:455).

[15] It should be noted that significance level of Crafts' finding is higher than the present one.

[16] The countries in question are France, Germany, Denmark, Sweden, Russia and Italy.

[17] The list of the countries is as follows: Great Britain, Belgium, Denmark, Germany, Netherlands, France, Austria, Sweden, Norway, Hungary, Finland, Portugal, Italy and Spain.

[18] It should be noted that correlation tests of Crafts are only relevant for the initial dates of industrialization. But, one should take into consideration changes occurred during the industrialization period in order to analyze Gerschenkron's hypotheses since the trend is a very crucial aspect of this analysis.

[19] For Hypothesis 2 and 3, the results of the 10-years and 20-years tests are not consistent to each other. This is, however, not the case for hypothesis 1. Furthermore, 10-years tests are generally consistent and give support to the Gerschenkron's hypotheses with the possible exception of the hypothesis 3. Therefore, it can be argued that industrialization or a spurt in the twentieth century is significantly rapid and reveals itself in a very short period of time. In fact, Gerschenkron has also pointed out the shortness of a spurt in analyzing Russian and Italian Cases without mentioning the length of time (Gerschenkron, 1966:120-150).

[20] Recall the significance levels of the rate of increase in primary sector output share in Table 6.

[21] Between numerous studies stressing the importance of "people-centered" development ethic, see for instance Sen (1983) and Griffin and Knight (1989).

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[22] As far as I am aware, the present study is the first attempt to consider relative backwardness approach in the Turkish case.

[23] Not only Turkey, but also the Republic of Korea which is included in the sample of eleven NICs gave a very strong support for the validity of some of the Gerschenkron's hypotheses. For the justification of this argument, one should repeat the analysis (by looking at the rank orders in every Table) performed in this section for the Republic of Korea. Interested readers may also look at Amsden (1997; 1989) who analyzed the Republic of Korea in the context of late industrialization.