HUMAN CAPITAL AND CHANGING CIRCUMSTANCES

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Introduction

The main purpose of this study is to explore how changing circumstances affect human beings in acquiring the ability to deal with them. First, following Schultz [1975], I assume that the ability to cope with changing circumstances is acquired and that the stock of such an ability increases with experience. The incentive to develop this capacity depends on the expected demand for it (determined by some exogenous events) and the supply of it consists of some form of human capital. These arguments lead to an interpretation of the concept of "entrepreneurship," and to the role education and discrimination play in some circumstances.

The evidence presented concentrates on the historical behavior of two minority groups: the Jews and the Parsees. The reason for analyzing these minorities is that they have faced to a greater extent situations of changing circumstances than other people, and due to the influence of parents' human capital—in its various forms—on that of their children, it is expected that these acquired abilities of parents will be reflected in the investment patterns and incomes of future generations, even if the younger generation faces stabler circumstances than the older generations. To test some hypothesis with respect to the behavior of these groups is derived from the following argument: these groups faced the probability of violent changes over relatively short periods (being thrown out of a country, changing patterns of discrimination and so forth), thereby providing the kind of evidence that we would like to get if it was possible to conduct a controlled experiment. As a rule economists must rely on data generated by small changes in experience, where it is difficult

to separate the random from the systematic effects. Analyzing the aforementioned groups allows a clear insight into the behavior of the "concealed" variables that take place. Data on just one minority group would however not be sufficient to test my hypothesis that changing circumstances lead to the development of some specific abilities, since it could be hard to distinguish between this and the hypothesis that observed behavior is due to differences in taste. The strikingly similar behavior of two different minority groups which have faced similar situations provides the indirect evidence that the differences in economic structure are not only due to taste differences.

In previous research it was argued that Jews invest relatively more in human that in physical capital than the rest of the population because human capital is more portable than physical capital. This hypothesis was supported by the empirical evidence on their occupational structure, but it could not explain why Jews—a discriminated minority—have higher incomes than the rest of the population and why, during some specific periods, their income increased relative to that of the rest of the population. The hypothesis advanced in this paper explains these facts and also sheds light on why some discriminated minorities may have higher incomes than the rest of the population. At the same time it explains why some groups in the population having lower incomes than the rest does not necessarily imply that they are discriminated against.

The plan of the paper is the following: in the first section the theoretical argument is set out. In the next section the relationship between education, discrimination and my hypothesis is discussed. The third section presents some historical evidence to support the hypothesis. The fourth section presents the statistical evidence, and the conclusions follow.

I. The Demand and Supply of Entrepreneurial Skills

Entrepreneurial capacity will be defined as the economic agent's ability to assess profit opportunities and to be able to act in response. This ability has a value only in situations of changing circumstances, since by definition in stationary conditions no unexploited profit opportunities exist. Let us first define these terms clearly: by a "stationary state" I refer to a situation where the expected returns on all investment opportunities are equalized and maximizing behavior thus only implies adaptation to a given rate of return in a well-defined market. In such an economy there are no rewards to speculative thinking, since there is nothing to speculate about. In contrast, by "changing circumstances" I refer to a situation where the expected returns on alternative investment opportunities are permanently changing. These changes may arise as a changes in legal barriers to entry in occupations by-product of expropriation, or as a result of technological change and change in the price of factors of production. In such an economy the value of a faster processing of information is greater. Thus, in such an economy speculative thinking, or quicker adaptability are rewarded.

The particular form of human capital that economic agents will invest in will be determined by the type of environment (static or dynamic) they face. First I shall concentrate on a particular form, where due to exogenous reasons some groups were thrown out of their lands. This loss of land compels the economic agents to search for alternative means to earn their livings. This search and learning process imply that a new skill is developed for which there was less demand before, and this comes in addition to the increased incentive to invest in human capital in general. This incentive exists even if members of this group have the right to buy land in host countries they go to, since

they are probably ignorant of the methods of cultivation prevalent in the various places to which they might find their way. It becomes then relatively cheaper to learn a skill which needs a smaller amount of initial investment. 3

In short I assume that people learn and develop entrepreneurial abilities (or that of their children) with the expectation of benefit. If, as I assume, the development of entrepreneurial abilities is through observation and experience it is expected that groups in the population which faced more situations of changing circumstances—due to exogenous reasons—have invested more in this specific form of human capital. Also, groups facing some specific form of discrimination can be expected to develop this ability. One reason is that members of such groups must constantly choose between alternatives, make decisions and so forth that members of the non-discriminated groups have no need for. The issue of discrimination will be dealt with in more detail in the next section.

Schultz [1975] in his study on entrepreneurial abilities made a comparison between modern and traditional agricultural conditions and emphasized the increased value of the ability of farmers to deal with dynamic situations in a modernizing economy. The same argument can be applied to the comparison between economic agents in static conditions and economic agents who know that they are vulnerable either to being forced to flee from the country they live in or to face some form of discrimination. As Schultz argued, once in a stationary state "custom could fix rents, wages, and the interest rate and the economy would continue to be efficient. They could be efficient prices in the sense that no appreciable stresses and strain would rise as long as economic conditions remain unchanged" (p. 831). Or as Welch [1978] put it: "If the environment is technically static but dynamic vis à vis actors, there will be recurrent learning as old actors retire and new ones are brought aboard. But in this case, we would expect avenues for information transmission to evolve

that simplify learning. After all, in a technically static environment it is not necessary to know why it works, only whether it works" (p. 6). In contrast to such a state, some minority groups have frequently faced the probability of expulsion, expropriation and legal barriers to enter either agriculture or the normal avenues of commercial activity. These constraints force economic agents, whom we assume to be calculating maximizers, to reallocate their resources and to search for non-traditional employment opportunities, since the relative price of such search is lower for members of this group than for the rest of the population. This search for new forms of trade, the necessity to face more risks, or in general dealing with more changing circumstances than the rest of the population leads to the increase of their supply of entrepreneurial abilities. Also notice that for members of this group to find answers to questions of why or how the system works becomes relatively more important than for the rest of the population, for whom--facing static conditions--unquestioned customs are efficient.

To summarize the arguments in clear economic terms: following Becker's [1971] and Schultz's [1975] views, I assume that entrepreneurial capacity like any other ability is a scarce resource. Human beings have various abilities: to acquire education, to perform mechanically a given task, to deal with changing circumstances, to learn discipline and so forth. Developing any of these abilities is time-consuming and, since time is a scarce resource, the supply of these abilities can be treated in a manner similar to that of the supply of any service provided by an economic agent. The amount supplied of any of these abilities is a function of both the existing technology of its production and the anticipated returns from alternative investment opportunities. But there is a basic difference between these two factors; just explaining the divergence between some groups' behavior by differences in their technology of production

is similar to stating that the groups are different. In contrast, explaining the divergence in the groups' behavior by the differently-perceived relative prices and explaining the discrepancies in prices reveals the source of the variant types of human performance. 7

In a stationary economy the value of the ability to deal with changing circumstances is zero, but the value of the ability to perform a given task is positive. In contrast, in a dynamic economy--where the expected returns on alternative investment opportunities are constantly changing--the value of dealing with changing circumstances and the value of a more efficient processing of information are positive, while the value of performing a traditional task is relatively decreased. 8 In a given situation economic agents will develop their respective abilities in such a way as to equalize the expected returns on their investment in the various abilities. Therefore, economic agents who expect to face more changing circumstances in the future perceive the anticipated return on the ability to cope with such a situation as being higher than that perceived by another economic agent who does not expect such a situation to occur. In particular, if some groups are discriminated in some markets or in all conventional markets, the anticipated return on the ability to create a new market is higher than the return a non-discriminated economic agent expects to receive on this ability. Also, if some group in the population is disproportionately self-employed due to employers' discrimination, we would expect further development of the ability to deal with changing circumstances within that group. This will occur because of the following: most employees are hired to perform a certain given task, based on existing division of labor, for a fixed salary or wage. Although an employee may be as conscientious and industrious in his work as one who is self-employed, he can hardly be as inventive or experimental, simply because the range of decisions the employee makes is limited. We would then

expect that members of a group who become self-employed (initially for exogenous reasons) would develop entrepreneurial abilities to a greater extent than the rest of the population. While these are the initial responses to changes in the anticipated returns on alternative investment opportunities, we would expect that due to the influence of the parents' human capital on that of their children the investment pattern and the acquired abilities of the parents will be reflected in the abilities of future generations.

This view of entrepreneurial abilities, or the capacity to deal with changing circumstances is different from the one generally found in the literature. 10 Kilby [1971], and more recently Leff [1979] summarised the various existing theories of entrepreneurship. Kilby classifies them in four psychological theories (Schumpeter, McClelland, Hagen, Kunkel) and three sociological theories (Weber, Cochran, Young). 11 Weber's, Schumpeter's and Hagen's views have much in common: they all assume entrepreneurial abilities to be exogenously given. In Weber's theory the entrepreneurial energies are generated by the adoption of exogenously supplied religious beliefs. According to Schumpeter economic leaders are individuals motivated by an atavistic will to power, while Hagen sees the entrepreneur as a creative problem-solver interested in things in the practical and technological realm and driven by a duty to achieve. McClelland and Cochran ascribe entrepreneurial abilities to child-raising practices, but while McClelland emphasizes education at home, Cochran stresses education at school. Young's approach is based on a theory of the society's incorporation of reactive subgroups. Kunkel's view is the closest to the one advanced in this paper. He views entrepreneurial behavior as a function of the surrounding social structure, both past and present, which can be influenced by economic incentives. 12 It is also useful to mention Bert Hoselitz's well-known observation on the importance

of culturally marginal groups in promoting economic development. Hoselitz [1964] hypothesized that marginal men, because of their specific position from a cultural or social standpoint, are peculiarly suited to make creative adjustments and develop innovations in social behavior. In the mainstream economic literature today entrepreneurial abilities do not play a large part: these abilities are identified with the ability of risk bearing, when uncertainty is introdumed in the form of some random distribution 13 and the parameters of this distribution are known.

The ability I have referred to in the previous paragraphs includes the very perception of the random variables. 14 i.e. what is required for entrepreneurial skills is the ability to know where to look for knowledge. 15 The approach presented here also implies that entrepreneurial abilities induce an equilibrating process, in contrast to Schumpeter's view that entrepreneurial abilities disturb equilibrium. In terms of demand and supply analysis the difference between the approach presented here and Schumpeter's is the following: while Schumpeter assumes that entrepreneurial abilities are exogenously given and they are supplied at a zero price, I assume that this ability--like the formation of any other form of human capital--responds to incentives and is a scarce resource. Hagen's view is connected with one implication of my argument: as shown, members of a group facing changing circumstances are relatively more interested in finding out why the system works or how it works than members of the population who face static conditions. This attitude can define Hagen's problem-solver entrepreneur. How my hypothesis is related to the subject of education at home or in general (and thus connected to McClelland's and Cochran's theories of entrepreneurship) as well as to the subject of discrimination (and so connected with Hoselitz's view) is discussed in the next section.

But before discussing this role of education it is worth noting that the hypothesis advanced in this section is similar to Arrow's (1974) in his theory of information. While Arrow wrote about some abstract notions, I try to apply it here for explaining some specific empirical phenomena. Arrow argued that each individual economic agent starts with the ability to receive some signals from the natural and social environments. This capacity is not ,according to Arrow, unlimited and the scarcity of information-handling ability is essential in understanding individual behaviour. Arrow's individual starts off with a set of expectations as to the range of signals that he may receive in the future. The channels initially open to the individual may be augmented by the creation of new channels, and this choice is determined by a cost-benefit analysis. Education, scientific literature are examples of intermediary goods which enable the increase in the number of channels an economic agent may sample. This is in fact the capital aspect of information in Arrow's view. Such investment (although subject to depreciation) is locked up in an individual's mind and is thus irreversible. A tentative conclusion Arrow draws from this analysis is that random accidents of history will play a bigger role in the final equilibrium. This conclusion is supported by the empirical evidence presented in this paper: both the Jews and the Parsees were initially thrown out of their lands, which gave them the incentive both to specialize in trade (a relatively cheaper skill to learn than the methods of cultivation in the new lands) and to invest in education (since physical capital is perceived as riskier and taking into consideration the allocative role of education discussed in the next section). But Arrow (1974) argues "an explorer inhitherto unkown territory will find it easier to explore new areas near those he has already covered"(p. 41). Therefore once the parents had the incentive to invest in some specific activities we would expect that these investment patterns would persist over time. The reason is that education then becomes

cheaper for children with educated parents, just like learning any skill is cheaper for those children whose parents already possess that skill. These arguments may explain why the theory advanced here cannot —without analyzing the initial conditions—be applied for all discriminated minorities.

2. Education, Discrimination and Entrepreneurship

The demand for education appears in the literature either because it increases expected monetary benefits or because it increases benefits from various forms of consumption. Grilliches [1964, 1970], Welch [1970, 1973] and Schultz [1975], however, argued that education plays an additional role, i.e. allowing a more efficient adaptation to technological change. This result was attributed to the effect of education on either raising the marginal benefits of information or decreasing the marginal costs of acquiring it. If the hypothesis advanced in this paper is correct then it is expected that members of groups who faced changing circumstances to an extent greater than the rest of the population (for example, Jews or Parsees) have a greater demand for education, since education permits a more efficient allocation of resources in a dynamic environment or permits a quicker adaptability. Thus, the value of such a capital is greater for groups who expect to face changing circumstances and so these groups' greater incentive to invest in education results. greater investment in education is therefore the outcome of differences in perceived relative prices as to the value of education, rather than differences in taste.

This allocational aspect of education has been investigated mainly in issues related to agricultural economics. I shall summarize some of the results here since they are similar to the evidence presented in the following sections. George Patrick and Earl Kehrberg [1973] found no contribution of education to farm output in areas in Brazil considered as traditional. Haller [1972] found that in Colombia in regions described as traditional education did not have statistically significant positive effects on farm production but in regions considered to be modern a positive effect was found. These findings are

consistent with the historical evidence presented in the next section. In static environments, although both Jews and Parsees had a higher level of education than the rest of the population, their incomes were not higher than that of the rest of the population. However, once the economies in which 18 they lived started to change their relative income increased.

An immediate question arises: since education facilitates dealing with changing circumstances and since entrepreneurship means the same thing, can entrepreneurship simply be learned? If entrepreneurship were just a matter of formal schooling the empirical evidence we should observe would be: a) that Jews and Parsees had only a temporary advantage during some periods, but in the long run once the whole population faces changing circumstances due to technological changes the relative advantage of these groups would disappear; b) if entrepreneurship can be acquired through formal schooling higher levels of education and number of entrepreneurs should be positively correlated. not -- in many countries minorities who had at first lower education than the rest of the population produced a disproportionate number of entrepreneurs. Thus entrepreneurship does not depend only on formal education, but also some other factors. Hoselitz [1964] identified as one of the factors some specific form of discrimination. This relationship between discrimination and entrepreneurship can be explained by my hypothesis. Suppose that some groups in the population face employers' rather than consumers' discrimination. a larger percentage of this group, relative to the rest of the population, will expect to be self-employed and so they will invest in professions in which self employment is more feasible. As argued in the previous section, self-employment develops entrepreneurial abilities. In contrast, since the range of decisions an employee must make in his work is limited, the opportunity to be inventive

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or experimental in his decision-making is also limited. Thus, even if education is held constant, it would be expected that entrepreneurial abilities will be more developed for groups facing the patterns of discrimination described above than for the rest of the population. Again, this argument is similar to one found in the agricultural literature. Rati Ram [1976] argued that to the extent that education is an allocative input, this component is restricted to persons making allocative decisions. Ram's data permitted a distinction between schooling of farm managers and agricultural laborers. He found that while there is no positive relation between output or value-added and schooling of laborers, there is a significantly positive effect on output of the manager's schooling. Thus we would expect that a group which was disproportionately selfemployed--because of discrimination--would have higher incomes than the rest of the population, keeping education constant. We would also expect that a decrease in discrimination over time would decrease the number of self-employed within this group and will thus narrow the difference in income between this group and the rest of the population. 19

Discrimination may be related to entrepreneurial abilities through another mechanism: suppose that some group in the population expects discrimination in both the labor and the capital market. This means that in order to induce people to buy from this group it must sell the goods produced at a lower price than their non-discriminated competitors. If markets are perfectly competitive, members of this group will be able to compete only if they are more efficient, i.e. having lower marginal costs.²⁰ If such efficiency can be learned by education at home, we arrive at the economic interpretation of what sociologists and psychologists defined as "motivation."²¹

We may summarize the theoretical arguments presented in this and the previous section and compare them with the other hypotheses that connected entrepreneurship

with education and discrimination. It can be concluded that the various hypotheses offered to explain entrepreneurship—motivation, formal education, education at home, discrimination, social environment, taste for problem—solving—are not in fact different theories, but are all just specific aspects of one, more general theory suggested here, which is that facing, or expecting to face, changing circumstances produces this type of human capital.

Finally, here are some of the implications of my hypothesis:

- a) Groups expecting to face changing circumstances more than the rest of the population have greater incentives to invest in education.

 This incentive exists even if the economies themselves are in static conditions. Thus both Jews and Parsees are expected to have higher levels of education than the rest of the population.
- deal with changing circumstances, the income of these groups may

 be lower in static environments than that of the rest of the popu
 lation. Their income will rise relative to the rest of the population

 when the economies start to face changing circumstances. If these

 groups were discriminated against we would expect that during such

 periods their legal status would change. These implications are

 supported by the historical evidence presented in the next section.
- c) Since the groups who faced changing circumstances in the past are more efficient in processing information, we would expect to find them disproportionately represented in growing or non-traditional industries. In particular, since we argued that for these groups to understand why a system works is relatively more important than for groups facing the customs of static conditions, we would expect to find them concentrated in scientific research, keeping the income and the education of parents constant.

- d) If discrimination is in part the explanation for the disproportionate representation of these groups among the self-employed and among the innovative entrepreneurs (i.e. discrimination rather than differences in taste or ability explain this difference) then a secular decrease in discrimination would lead to both a decrease in self-employment and to a smaller number of innovating entrepreneurs among members of these groups. This would lead to a decrease in the difference in incomes between the members of these groups and the rest of the population. Indirectly this implication of the hypothesis can be tested on Jews in Israel. It can be expected that relative to native Israelis new immigrants from countries where Jews were discriminated against would be disproportionately represented in submitting patents or innovations.
- e) Jews will be disproportionately concentrated in risky industries.

As already discussed, some aspects of the theory advanced in this paper were systematically tested in agricultural economics. The data I have gathered tends to support some of the aforementioned applications, but more data is needed before some definite conclusions can be drawn.

3. Some Historical Evidence

In an economy that is close to a stationary situation the ability to cope with changing circumstances has a low value. We would then expect that in Europe of the Medieval Ages, Jews had little value. Excluded from agriculture and from the normal avenues of commercial activity, and facing a permanent risk of expulsion, they were compelled to specialize in petty trade and usury. Being thus excluded from the traditional occupations of that time—agriculture and "respectable" commerce—and the insecurity of their legal status imply that the anticipated return on the ability to perform a traditional task for Jews was much lower than for the rest of the population. At the same time the ability to deal with changing circumstances and the ability to create new markets, or the expected return on the ability of "speculative thinking" was higher in comparison to that of the rest of the population. ²²

The increased value of such abilities, and with them the increased value of the resources of Jews--as reflected by the changes in both their incomes and their legal status--came in Western Europe during the XVII and the XVIII centuries with the rise of mercantilism, which would fit the definition of changing circumstances:

"...[I]t was inevitable that Christian Europe should begin to view its Jews in a completely new light. Here was a people who understood commerce, a people uninhibited by feudal ties of ecclestiastical traditions." 23

The rulers of that time recognized the value of the specific form of Jewish human capital and introduced laws which increased the incentives of Jews to further develop their entrepreneurial abilities. Frederick II of Prussia permitted children of Jews to leave the ghetto in return for the demand that their parents "either establish factories or promote the marketing of home products outside

the countryside." ²⁴ Later, in the XIXth century, emancipation notwithstanding, the disproportionately large Jewish involvement in trade remained. Several reasons could explain this phenomenon: first, state service was still closed to Jews if not legally then by employers' discrimination. Second, specialization, i.e. the experience of many years of being forced to move from one place to another would justify concentration in retailing, this profession also being a relatively liquid and conveniently portable vocation. Also, because of past experience Jews had more information on the participants in this market, its general structure and its mechanism. ²⁵ Indeed, while about half of the Jews in Prussia were in retailing, less than one tenth of the non-Jews in Prussia were in this occupation.

Kahan [1978b] describes a similar process in Russia:

"...[T]he main difference between the landlord-owned and the Jewishowned...enterprises was first the greater flexibility of locations
of such enterprises, the recruitment of such enterprises of a free
labor force and technological improvement, ...using more capital, [Jews
economized] on the costs of labor and decreased the costs of production
of woolen cloth, thus making them more competitive in the market,
capable of competing with the serf-based landlord factories."

"The Jewish sugar entrepreneurs, contrary to the customs prevailing
among the [noble] producers, who would sell the output either at the
mills or at the nearby railroad stations, introduced on a large scale
a system of forward sugar contracts, negotiated at the exchange in
Kiev, and the larger producers began to develop separate sales networks,
based upon established warehouses located in the major urban and
mercantile centers of Russia, and employing itinerant salesmen working
on a commission basis for the particular major sugar companies."

"...[I]t was, however, the change in economic conditions, the new technological possibilities...which made it possible for [Jews] to... embark upon entrepreneurial activities." 27

This historical evidence from both Eastern and Western Europe support the hypothesis that Jews had a greater capacity to deal with changing circumstances than the rest of the population. Thus, when such circumstances arose, Jews moved into entrepreneurial-intensive occupations. I shall give more detailed statistical evidence later.

Some strikingly similar patterns in the history of the Parsees will now be stressed. 28 The Parsees are an ethno-religious minority in India living mainly in Bombay. In spite of their very small number (less than 100,000) they occupy a special position in India's recent history. They left Persia 1200 years ago because of religious persecution. First they sought refuge in the remote region of Khurasan, from where 100 years after the fall of the Sassanian Empire they shifted to the Persian Gulf. After 15 years they moved to India, where they would wait 19 years to be allowed refuge. Several restrictions were imposed upon them: to abandon their language, clothing, etc. In later years they appear in reports of European travellers as a group who concentrated in trade, and were called "Jews" by the Portugese, because they had "mental characteristics similar to the Jews." 29 Evidence from the 17th and 18th centuries indicate that the Portugese, French, Dutch and English factories all employed Parsees as their brokers. The rise of the Parsees in wealth and influence coincides then again with a period of changing circumstances -- the arrival of Europeans to India. Thus, while before the 17th century the Parsees are mentioned in some documents as a usual Hindu caste, whose traditional occupation was trade, later documents indicate that from the 17th century on, the Parsees were the sole channel of intercourse between the Europeans and the natives, and emphasize their increased wealth and influence:

"When it is remembered that the Parsees at Bombay are the descendants of a small colony which emigrated from Persia in circumstances the most miserable, it is a matter of some surprise...that this people have simultaneously with the progress of British power in India risen into affluence and importance, while the other natives of the land, Mahomedans and Hindoos, have fallen into insignificance." 30

Other groups who faced circumstances similar to those described above have reacted in the same pattern. In the 17th and 18th centuries, French economic innovation was correlated with the Huguenots, a discriminated group, who were ultimately thrown out of France. 31 A study by Hagen [1962] showed that in the English Industrial Revolution the Protestant Dissenters--again a persecuted group--provided ten times as many innovating entrepreneurs (i.e. introducers of new forms of trade) than the Anglicans: 43% of entrepreneurs were Protestant Dissenters, who were only 7% of the population. The fact that these groups had a different religion does not by itself seem to explain these differences. same type of evidence exists for groups who were discriminated against although they had the same religion as the rest of the population. A detailed study of Colombia showed that the Antioqueños, a socially (but not legally) discriminated group, provided--at the turn of the 20th century, when an acceleration in growth rate occurred--a disproportionate number of entrepreneurs (70% of the total number, while their proportion in the population was 40%). This in spite of the fact that they had previous to this period lower incomes and lower levels of formal education than the rest of the population. 32 Also, in this case there was no difference in religion: Antioqueño innovators were as piously Catholic as other Colombians. The same type of evidence was found in Japan. Sansom states that following the restoration of 1868, the organization fo Japan was in great

measure the work of samurai of the lower grades. But while all samurai were of the same religion, those of the lower grades were discriminated against. 33

There are two common elements in all the aforementioned historical data:

1) that entrepreneurship seems to be correlated with some specific patterns of discrimination; 2) the skill these groups acquire during the periods when they are discriminated against (but when the economies face static conditions) becomes evident when the economies start to face changing circumstances. Both evidences fit the predictions of the hypotheses advanced in the previous sections.

Other examples also show that the response to a changed environment depends upon the stock of a particular form of human capital at a specific point in time and on the costs at which this stock can be increased in response to the changed anticipated returns on these abilities. Schultz [1975] has described the following process in India: regardless of how long poor farmers have lived under stationary conditions and of how limited their experience, they are not unresponsive to changed economic incentives, although they are relatively slow in perceiving and taking the appropriate action. This slower response of the local population explains the immigration of well-qualified non-farmers to farming in north India.34 in response to the changed anticipated returns created by the changed circumstances--in this case caused by the introduction of various new forms of wheat. This process is very similar to the growth path various countries have followed, where foreigners have immigrated in response to some form of changing environment. In Argentina between the two World Wars, for example, a disproportionately large share of industrial entrepreneurs were of foreign origin, while the local landowners--although rich--did not invest in the new manufacturing activities.35

In conclusion, groups in the population who either faced or expected to face changing circumstances reallocated their resources more quickly in response

to changes in expected returns on alternative investment opportunities than the rest of the population. Since the behavior of these groups is one channel through which a signal is provided to the rest of the population on the changed anticipated returns, ³⁶ we would expect that the rest of the population will both follow the trend set by these groups and will learn how to deal with changed circumstances. However, due to intergenerational effects—about which not much is known—we are unable to predict how long it will take the rest of the population to acquire the same capacity to deal with changing circumstances that some particular groups in the population already have (due to some exogenous reasons in the past). Also, the evidence presented here supports once more the view that supply does not create its own demand. In stationary conditions neither the Jews nor the Parsees could "create" demand for their specific human capital.

4. Changes in Income and Occupational Structure

The hypotheses presented in the first sections lead to the following conclusions: groups expecting changing circumstances will invest more in education even when the economy as a whole faces static conditions. ³⁷ In spite of this higher level of education, their income will not be higher than that of the rest of the population. However, when due to exogenous reasons circumstances change, it is expected that these groups' income will rise; they will be disproportionately represented in human capital-intensive professions and in growing industries. The evidence for this, which follows, is for two groups: the Jews and the Parsees.

Documents from the medieval ages indicate that learning, although strictly religious, was a universal pursuit for Jews. ³⁸ During this period and until the 16th and 17th centuries Jews lived in ghettos, their main occupation being petty trade and usury. With the rise of mercantilist and the period of rapid growth which followed in Western Europe between the 17th and the 19th centuries, the rise in the wealth and influence of Jews is mentioned in all the documents of that time. ³⁹ Their rise in the banking industry is worth pointing out (as we shall see below, this was one of the industries that Parsees also concentrated in initially). The more widespread connections of Jews due to their greater mobility (i.e. their possessing more information) in comparison to that of the rest of the population, the experience in dealing with liquid capital (in particular usury) and their higher levels of education (thus their more efficient processing of information) may explain this phenomena. By the turn of the 19th century in Western and Central Europe, in addition to their disproportionate role in trade, Jews were concentrated in human capital-intensive professions:

"In the field of music Jews were among the most numerous of Europe's instrumentalists, both as members of orchestras and as concert

performers. As faculty members of universities and as researchers in industry Jews in numbers far out of proportion to their percentage in the general population were among Europe's leading chemists, biologists, physicists and mathematicians." 40

In two professions, law and medicine, Jews represented thirty times their proportion in the population in 19th century Germany. The arguments presented in this paper explain these developments: the shift from traditional occupations to the aforementioned ones was relatively a new phenomenon—education was simply one of the growing industries. Both their greater literacy in the past and their greater ability to deal with changing circumstances (which as argued also implies a more analytic approach) explain the movement into the aforementioned professions, in particular scientific research. ⁴¹ The absence of Jews from government, public administration or university administration probably reflects discrimination. ⁴²

A development similar to the one described above may be observed when analyzing the secular changes in income and occupational structure of Jews in the U.S. during this century. Note that this was a period of rapid change in the U.S.: it was characterized by the movement away from trade and personal services towards professions and industrial factory employment together with a process of growing urbanization. These circumstances fit the assumptions of my hypothesis and thus it could have been predicted that Jews would achieve a higher income and invest more in education than the rest of the population (keeping parents' income and formal education constant). The available information is the following: during 1880-1914 Jewish immigrants from Eastern Europe to the U.S., who were mainly blue-collar workers previously, succeeded in catching up in earnings with the native American workers within 10-15 years, despite their initial disabilities of language and skills. 43 Table I shows the results of an investigation of Boston's immigrants in 1909. Despite their disproportionate number in business.

Table I

OCCUPATIONS OF SELECTED IMMIGRANT
GROUPS IN BOSTON, 1909

Ethnicity (first generation in U.S.)	"In Business for Profit" (percent)	Unskilled Labor (percent)
Jewish	. 45	3
Irish	5	24
Italian	22	3 9

SOURCE: Thernstrom [1973], p. 137.

the average earnings of the Jewish immigrants was only \$396, compared to \$510 for the Irish. However, Jews invested more in the education of their children than groups who had higher incomes or even higher levels of education. By the second generation the pattern found is that reflected in Table II: 44 while only 21% of the Irish had one year at college, 44% of the Jews in the second generation attended one year at college. The respective proportions for English and German Protestants whose parents had a higher level of education than the first-generation -Jewish-parents were 27% and 31%. 45 The same type of evidence is shown in Table III: in spite of the fact that the parents in some religious groups had higher levels of education (like the Episcopalians and the Presbyterians) than Jewish parents, the younger generation of Jews have now a higher level of education than other groups. 46

The following conclusions can be drawn from the information in Tables I-III: the demand for education of Jews was higher than that of the rest of the population, in spite of the fact that parental income and education were lower. The younger generation has both a higher level of education and a higher level of income than the rest of the population—the last in spite of various forms of discrimination (or as argued in the first sections maybe because of it). The available information on religious groups in the U.S. today shows that Jews continue to have higher levels of education than the rest of the population 48 and have higher incomes. 49 This information does not make clear whether the higher level of income is explained by the higher level of education of Jews in comparison to the rest of the population or is because Jews are disproportionately self-employed. But the following test will enable an identification of the source of the higher income: if Jews are disproportionately self-employed because of discrimination, then a secular decrease in discrimination would lead

Table II

EDUCATION, OCCUPATION AND INCOME

OF SECOND GENERATION IMMIGRANTS (AGES 25-44)

BY FATHERS' EDUCATION AND OCCUPATION, 1950

Ethnic Background and Religion	One or more years at college	White Collar Occupation	High Income	Median School Years of Father
Catholic				
Irish	2 1	19	13	8.3
Italian	11	17	9	5.2
Protestant				1
English	27	29	19	10.3
Swedish	28	27	23	8.7
German	31	31	23	10.3
Jewish				
Russian	44	46	27	8.1

SOURCE: Thernstrom [1973], p. 172.

Table III

EDUCATION AND PARENTAL EDUCATION
OF NON-SPANISH SPEAKING WHITES, 1973-74,
AND INCOMES, 1962

Denominational Groups	Mean Years of Education	Parental	Parental Education		
benominational droups	(1973-74)	Father	Mother	(1962)	
Jews	14	10.2	9.9	9839	
Episcopalians	13.5	12.2	12.2	9173	
Presbyterians	12.7	10.7	10.7	8013	
Methodists	11.9	9.4	.10	7185	
Catholics	11.5	8.5	8.7	7132	
Lutherans	11.2	8.8	9.1		
Baptists	10.7	8.2	8.9	5612	

SOURCE: Greeley [1976], Ellman [1970].

to a decrease in the percentage of self-employed. As argued, education is an allocative input, thus this component has a greater effect for economic agents making allocative decisions -- in particular for those self-employed. The secular decrease in discrimination would lead to narrowing the gap in incomes between Jews and the rest of the population. 50 Evidence exists on the decrease in the percentage of self-employed Jews relative to the rest of the population, but no data was collected on the earnings of this group. The following evidence would also support the aforementioned implication of my hypothesis -- Jews will be less represented in innovative activities in countries where they are less discriminated. The evidence shows that during the last two years 80% of the patents in Israel were submitted by Russian immigrants, who are a tiny fraction of the population. These data seem puzzling, although consistent with my hypothesis. 51 For, it would imply that while it takes much time to acquire the ability to deal with changing circumstances, it takes relatively a short time to adapt to more stable conditions, stable in the sense that no discrimination is expected. It would also imply that expectations of being discriminated against has a greater effect on investment in human capital than intergenerational effects. It seems however that this number could be explained by the fact that Israeli engineers made their innovations in military rather than consumer a goods and this is the source of the bias. Still it is worth inquiring the information given by these data in the future.

Only casual evidence supports other implications of my hypothesis (the reason being, probably, that the data which is relevant to my hypothesis is not connected with any other existing theories. Thus their collection was not demanded). A study in <u>Fortune</u> (1936) and later in Kuznetz [1972] did emphasize that Jews in the U.S. are disproportionately represented in the growing industries: professionals, newspapers, movies etc. Thernstrom [1973] in his study on various ethnic groups in Boston writes: "[T]he Jews were heavily concentrated in callings that involved risk-taking" (p. 137), but he mentions neither what these callings

are, nor what his measure of risk is. ⁵² Thus the main evidence which already exists and which supports my hypothesis (besides the historical one presented in the previous section and the evidence from agricultural economics) is related to the higher level of education of Jews and their higher income—in spite of discrimination.

The occupational structure of the Parsees was, in the 19th century, strikingly similar to that of the Jews in Western Europe and currently in the U.S. Later data is scarce and probably non-representative: the Parsees started migrating to Europe and they were intermarrying already in the 19th century. 53 Therefore, the occupational structure would be biased, and since a mixed marriage excludes the Parsee, for religious reasons, from the community, their actual number would also be biased. 54 As already mentioned, the Parsees, like the Jews, were concentrated in various trades before India become an English colony. This was not, however, because of the existence of occupational classes among the Parsees similar to some Hindu castes. The Parsees were not excluded from any activities (manual work, for example) by religious norms and taboos like the Brahmins. Therefore, when the 1931 Census mentions "trade" as the traditional occupation of the Parsees, the word "traditional" must be interpreted carefully, since it does not bear the same meaning for the Parsees as it does for other castes. 55

Immediate with the arrival of the British, the Parsees are found to have invested more in education than the rest of the population in Bombay. Tables IV-V give the first, more detailed evidence: while being a very small fraction of the population, Parsee students outnumbered students from other castes. In 1911, 71% of the Parsees in Bombay were literate. At the same time only 8.4% of the Hindus were literate (see Table V). The disproportionate number of Parsees in new professions and trade is also mentioned in several documents from the

Table VI

REPRESENTATION OF DIFFERENT COMMUNITIES IN BOMBAY'S EDUCATIONAL INSTITUTIONS 1860, 1909

	Hi	Hindus		Muslims		Parsees		Christian	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	
	*1		18	60					
College	82		3		66				
High School	239		15		615		441	150	
Middle School	214		19		585				
Primary School	478		6 6		59	485			
Special School	76		26		16				
			19	J9				 	
College	1287	11	3 9	1	505	34	186	2 3	
High School	5077	47	786	24	3217	819	1136	645	
Middle School	977	205	268	6	226	80	927	782	
Primary School	10891	3662	3448	1241	2451	321	321	146	
Special School	804	1	132		16	104	104	10	

SOURCE: Kulke [1974], p. 86.

Table V

LITERACY RATE OF INDIAN COMMUNITIES, 1931

Community	% Literate (Persons over 5 years of age)	% Literate Men	% Literate Women
Hindu	8.4	14.4	2.1
Muslim	6.4	10.7	1,5
Christian	27.9	35.2	20.3
Parsees	79.1	84.5	73.4
Jewish	41.6	48.8	33.8
Buddhists	9	15.3	2.3
India Total	9.5	15.6	2.9

beginning of the 19th century, but only the first Census in 1864 gives a detailed numerical picture (see Tables VI-VIII). 18% of the Parsees, and only 6% of the rest of the population, in Bombay were doctors, teachers and other white-collar professionals. In 1898, 46 out of 100 qualified Indian advocates, and 40 out of 73 Indian attorneys in Bombay were Parsees. In 1891, 6 out of 7 surgeons and 23 out of 52 medical assistants in Bombay were Parsees. It is interesting to note more similarities with the Jewish occupational structure: the Parsees' concentration in banking, textiles and the press.⁵⁷ Of the 13 cotton mills established in Bombay between 1854-1870, nine belonged to Parsee entrepreneurs. The initial stages of native press in Western India were almost exclusively dominated by Parsee journalism. The Parsee press was generally characterized by continuity, in contrast to the great number of short-lived and unimportant newpapers established by other groups. Bankruptcy being a measure of riskiness in an industry, this evidence further supports my hypothesis. As to more recent data: up until 1954 the Parsees held 18.1% of company ownership in the state of Maharashtra. In the new companies founded between 1955 and 1962 this proportion has decreased to 7.7%. Unfortunately, the Census in India no longer publishes data on incomes, thus it cannot be deduced just from this evidence that the difference in incomes between Parsees and the rest of the population has narrowed.

In conclusion: the evidence on the Parsees--their higher level of education, their participation in the same growing industries that Jews have entered, the timing of the change in their economic structure--supports my hypothesis. It is worth pointing out a further similarity with the Jews: it seems that there was some sense of uncertainty as to the future of the Parsee community, and some form of social discrimination did exist. Kulke [1974] writes that in the 19th century higher careers in politics, administration and the military were

Table VI
OCCUPATIONAL DISTRIBUTION IN BOMBAY, 1864

	Parsees	Non-Parsees
Banking, money changers, auctioneers, real estate, priests	20.3	6.9
Government service, professionals	18	6.37
Services	14.4	7.92
Small-scale business	14.4	6.36
Retail trade	11.6	9.53
Transport	4.4	6.02
Navigation (sailors, fisherman)	0.2	6.84
Agriculture, handicrafts	2.6	10.36
Workers (iron, textile)	4	26.73
Low and "unclean" occupations	0.2	5.96

SOURCE: Census, 1864; the figures above are the % of the Parsee community and of the total population of Bombay in the various occupations.

Table VII

PROFESSIONALS IN BOMBAY, 1864--A SELECTED SAMPLE

	Parsees	Non-Parsees
Doctors	9	0.67
Teachers	13	0.37
Clerks, bookkeepers	19	4.44
Printers, bookbinders	12.8	0.55
Watchmakers	19	0.11
Photographers	6.9	0.09
Toy producers	12.1	0.21

SOURCE: Census, 1864; the figures above show the percentage of the respective groups within a broader definition of occupation used in the Census.

Table VIII

REPRESENTATION OF DIFFERENT COMMUNITIES IN HIGH INCOME GROUPS (1965/6)

Income class (annual)	Hindus	Europeans	Parsees	Muslims
Rs. 20,000 - 30,000	72	20	23	29
Rs. 30,000 - 40,000	36	10	11	15
Rs. 40,000 - 50,000	8	4	9	2
Rs. 50,000-100,000	15	12	13	9
Rs. 100,000 or more	7	not given	6	4

SOURCE: Kulke [1974], p. 57

not yet open to Parsees. In 1892, the English General Dashwood described the Parsees as foreigners in India who would immediately be extirpated if England were to leave India. During 1905-1907 the proposal that the entire community should emigrate and found a separate Parsee colony (in Beluchistan or East Africa) was popular because of fears about the Parsees' future in independent Hindu India. 59

Conclusions

The hypothesis advanced in this paper has several implications: growth rates in various countries could be a function of some measure of their facing changing circumstances. Also, in a growing economy groups in the population who faced relatively static conditions in the past may have lower incomes than the rest of the population without being discriminated against. Women, for example, may not have considered themselves as being discriminated against in a static environment, although they were only performing household activities. However, once circumstances change they may consider their lower earnings relative to males as a sign of discrimination. If my hypothesis is correct, the lower earnings have nothing to do with discrimination but rather with the fact that women had less incentive in the past to invest in developing the ability to deal with changing circumstances (market activities, for example).

These implications stem from my basic assumption that people adapt their behavior to changing circumstances, so as to maximize their satisfaction. This statement is nothing more than an application of the Law of Demand—since all it means is that people adjust their behavior to changes in relative prices. But instead of looking at the market for physical goods, I have looked at the 'market' for human capital. As I have emphasized, this view does appear in the literature, in special in Arrow's information theory, where he argues that ecnomic agents will invest in opening new channels of information (by education) when they expect to benefit. It is this theory which is applied here to explain some empirical phenomena.

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FOOTNOTES

- *I am grateful to T. W. Schultz for very helpful discussions, and to Dennis Carlton and George Stigler for helpful comments.
- ¹See Brenner and Kiefer [1980].
- ²This argument may shed light on the subject of evolution. It is frequently assumed that evolution started because of changed weather conditions. This could fit the definition of changing circumstances.
- ³Perfect capital markets are not relevant for this discussion.
- ⁴T. W. Schultz in his <u>Transforming Traditional Agriculture</u> argued that traditional agriculture is more efficient than modern agriculture in the sense that margins are more precisely perceived in static environments. This is also the point made in the text.
- ⁵Welch [1978] also argues that in such an environment "learning will vanish in the long run as the stock of experience accumulates" (p. 6).
- ⁶Various empirical evidence indicates that there is a specific human capital called discipline: when people are willing to pay in order to stop smoking, or to stop eating they are in fact acquiring this human capital.

7Freud wrote:

"Only to my Jewish nature did I owe the two qualities which had become indispensable to me on my hard road. Because I was a Jew I found myself free from many prejudices which limited others in the use of their intellect, and, being a Jew, I was prepared to enter opposition and to renounce agreement with the 'compact majority'."

(p. 398, as quoted in Sachar [1977])

Notice that Freud's description fits exactly the hypothesis on people allocating their time (to thinking, in this case) according to the expected returns. The

result of such behavior cannot be thus attributed to differences in taste or skills, but to differences in perceived relative prices.

- ⁸Even if there is an increased demand for this traditional task, the value of performing it has decreased <u>relative</u> to the value of the ability to deal with changing circumstances, since the value of the latter is zero in a static economy.
- ⁹In the Israel Institute for Innovations, from 700 ideas submitted during 1978, 80% came from Russian immigrants. The director of the Institute argued that "Russian immigrant engineers don't have a more inventive mind than other people...but many of them were forced to think up new ideas in Russia if they wanted to hold on to their jobs.... Then they focused more on inventions than other engineers" (p. 21, Jerusalem Post, January 28-February 3, 1979).
- 10 See a summary of the existing literature on entrepreneurial abilities in Kirzner [1973].

- That Jews and some other persecuted groups score more on I.Q. tests than the rest of the population can be explained by the hypothesis advanced in this paper, since I.Q. tests, in part, measure efficiency in processing new information.
- 15 Indeed Kilby [1971] argued that the most important qualities of the executives of large business corporations today is not knowledge of the productive processes, but the ability to select capable and innovational subordinates.

 Kahan [] in his discussion on Jewish entrepreneurship in Tsarist Russia wrote that Jews "...perhaps...perceived regularity in phenomena which appeared to the majority as predominantly random" (p. 12).

¹¹ See Kilby [1971], p. 6

This short summary of these theories follows Kilby's [1971], pp. 6-26.

¹³See Kirzner [1973], or Coase [1977], p. 318.

¹⁶A similar point is made, in a different context by Finis Welch [1978]. He comments on Schultz [1975]:

"While I agree that the emphasis is correctly placed on an ability to respond, the response is to economic disequilibria in a narrow sense. It can be smart to be ignorant, and learning—the ability to respond—is very much an equilibrium notion" (p. 3).

Also, notice that there is a reservation to this argument: if members of a group who have developed entrepreneurial abilities in the past migrate to a stationary economy, in that economy the equilibrium will be disturbed by the arrival of the new group.

17 See Arrow (1974), chapter 2.

was a set of the set o

- 18
 Notice, for Jews and Parsees it was profitable to invest in education even in periods when the economy as a whole faced static conditions.
- ¹⁹Only by this last evidence could we discriminate between the two hypotheses:

 a) that more self-employment is caused by differences in taste, or b) it is
 because of exogenous reasons (differences in skills). Ram [1976] neglects
 this possibility of self-selection.
- 20 The lower marginal costs can also be obtained by employing members of the discriminated minority, who receive lower wages. Thus segregation in production is a possible outcome.
- ²¹For example, if parents keep repeating that success is possible only by working harder than one's nondiscriminated competitors, "motivation" may result. In order to give such an education the parents must already have some general knowledge of the environment.

See footnote 7, as to how the supply of ideas depends on expected returns. It is important to note that trade was <u>not</u> a traditional Jewish occupation: as late as the Roman destruction of the Temple, Josephus wrote: "We do not dwell in a land by the sea, and do not therefore indulge in commerce either by sea or otherwise"; "[In the Roman Empire] it was the Greek who was scholar, artist, doctor, actor." Both quotations are from N. Bentwich [1934], p. 34 and p. 47 respectively.

23 See Sachar [1977], p. 37.

24 See Sachar, <u>ibid</u>

See footnote 24.

26 See Kahan,(1978b), pp.18-20.

27

See Kahan, op. cit., p. 22.

30 Also in Karaka [1884] we find: "The arrival of Europeans...opened up an unexpected field for the energy, industry and enterprise of the Parsis" (p. 243).
31 See Hagen [1975], pp. 273-279.

32 See Hagen, op. cit., pp. 268-299, and Hagen [1962]:

"...Antioquia, which is paved with gold is the poorest and most miserable of all.... Until the end of the colonial period...observers were struck by the general backwardness, illiteracy and poverty of the province" (p. 275).

33
As quoted by Hagen [1975], p. 275.

This argument may imply that another implication of my hypothesis would be that the groups mentioned in this section would be more mobile.

35 See Sirquin [1975].

36

Ramade, a Hindu social reformer, wrote in 1899:

"In our national car, hoary with the weight of ages, and immovable in numbers, we too often serve as a deadweight and a brake. The car would never have moved an inch but with the inspiring contact with the English, and the elevating example of the Parsees. They pioneer the way, and we slowly follow at a great distance..." (p. 141, Kulke [1974]).

- This may not necessarily be formal education. Religious education, or literacy in some language, etc. may also be included.
- 38
 See Sachar [1977], chapters I-IV.
- 39 Ibid.
- 40 See Sachar, op. cit., pp. 394-5.
- Also, if the probability of confiscation of physical capital was still taken into consideration because of experiences in the past, then the expected return on human capital was higher for Jews than for non-Jews. See Brenner and Kiefer, op. cit.

- There is one more factor which could explain the more rapid movement of Jews into human capital-intensive investments—their higher life expectancy. The scarce data that exist show that even when their income was lower, the life expectancy of Jews was higher than that of the rest of the population. This difference could be explained by my hypothesis: since they had a higher level of education, they screened information (in particular with respect to health) more efficiently.
- 43 See Kahan (1978 a,b).
- The correspondence of the two generations obviously not perfect, but Thernstrom [1973] has data on the mobility of these groups which shown that around 50% of the non-Jews and 60% of the Jews persisted in the sample. See Thernstrom [1973], p. 165. Also, the figure of 54% for Jewish fathers with white collar professions is misleading: proprietors of small shops were also included in this category.
- In 1919 the respective figures for mean family size were: Jewish--5.28, Irish--4.80, Italian--5.52, when Thernstrom [1975] writes: "There were more Jewish than Irish sons and nearly as many Jewish as Italian sons to draw upon family resources" (p. 166).
- Although in this case no information exists either on the number of children in a family in each religious group or on the parents' income.
- 47 See Alchian and Kessel [1962].
- See Brenner and Kiefer (1980), Kahan (1978a)
- The median income of Jews is approximately 30% higher than that of the rest of the population, while when only the urban population is taken into account the median income is 20% higher. See Ellman [1970], pp. 121-125.
- 50 See Brenner and Kiefer [1980].

- 51 See footnote 9.
- 52
 "Bankruptcy could be one measure for riskiness in an occupation, and permit
 a test of this hypothesis.
- Disproportionate migration relative to the rest of the population is one more similarity between the two groups.
- ⁵⁴See Kulke [1974], p. 45.
- Notice the similarities with the Jews not being bound by traditional occupations. Karaka [1884] wrote: "The Parsis, however, had always been free from caste prejudices and...soon betook themselves to occupations they had never attempted before" (p. 244).

See Kulke [1974], pp. 37-80.

- 'Individual Parsees became prominent as bankers of Indian princes who had gotten into financial difficulties" (p. 56, Kulke [1974]).
- ⁵⁸See Kulke [1974], pp. 115-120.
- See Kulke [1974], p. 145, and notice the similarity with the Ugandan proposal of Herzl. Within the Parsee community several categories could be differentiated: a small minority considered that the future of the Parsees was not to be separated from that of India, and that they were first Indians, and only then Parsee. The majority, however, estranged themselves from their Indian environment and viewed their role as reforming the Indian society according to European values.

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