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Poverty, Vulnerability and Development (Case of Study: The Garmsar and Dasht-e Azadegan Villages)

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Abstract: *The present article has been prepared based on two field research studies undertaken to identify the vulnerable strata in rural areas of Iran's Garmsar and Dasht-e Azadegan regions*[2]*. As will be demonstrated below, the findings of the two studies show that the development policies implemented during recent decades--policies emphasizing strategies of structural adjustment, liberalization, and privatization, especially in the agriculture sector--have not been effective in terms of preventing the creation and development of vulnerable strata in the rural community. However, prior to the studies that I and a team of researchers undertook beginning in the late 1990s, no research had studied systematically the impact of policies on low-income rural groups nor identified which groups constituted the vulnerable strata. In view of the government's objective to support such groups, it is imperative first to identify them through sound scientific methods. This article, thus, represents an initial attempt to do just that.*

Keywords: *Poverty, privatization, low-income rural groups, vulnerability, Development, Iran.*

Introduction

At the national level, all social groups with household incomes close to or below the poverty line are considered as vulnerable groups. In villages, due to special geographical and climatic conditions, the types of livelihood, and the limited ability to resist unfavorable natural events and disasters, vulnerability encompasses a more extensive domain than just income. In rural areas, the type and extent of use made of different factors effective in the economies of agriculture and animal–husbandry, as well as the application of different methods to make use of land, water resources, mechanization, etc., all play a significant role in categorizing a household as being in a vulnerable status. In fact, in studies conducted under the supervision of international agencies such as the Food and Agricultural Organization (FAO), a total of nine distinct vulnerable groups have been identified in rural Iran[3]. These vulnerable groups are as follows:

(1) small peasant landowners (cultivating farming units of up to three hectares);
(2) landless rural families;
(3) migrant shepherds (families with no permanent settlement, and those whose main source of income and consumption is provided by livestock-raising);
(4) petty fishermen (families that fish in small groups with the use of non-mechanized rowboats);
(5) tribal, aboriginal, and local populations (families that based on law, regulations, or customs are known as local and distinct communities);
(6) homeless migrant and immigrant population (the latter being primarily Afghan refugees who are not registered as refugees and work "illegally" as agricultural laborers);
(7) refugee families registered in accordance with UN criteria;
(8) semi-refugee homeless families temporarily driven away from their dwelling place by natural disasters such as drought or earthquakes; and

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[2] I published the original research in Persian as *Study of Social and Economic Aspects of the Vulnerable Strata of the Rural Communities in Garmsar and Dasht-e Azadegan Regions*, vol. 1 in 1380 (2001) and vol. 2 in 1382 (2003); both volumes were published jointly by the Institute of Social Studies of the University of Tehran and the Center for Agricultural Planning and Economic Research, which is affiliated with the Ministry of Agriculture and Jehad. The research project received financial support from the Center for Agricultural Planning. In this article, data from those studies is analyzed to highlight the three main social, economic, and environmental aspects of poverty and vulnerability.

[3] See further Zahedi Mazandarani and Zahedi Akbari, "Poor and Vulnerable Villagers," Journal of Economics of Agriculture and Development, Special Issue on Poverty and Rural Vulnerability, 4 (Summer 1996).

(9) Female– headed households.

With respect to these nine groups, economic factors are the main index of their poverty and vulnerability. These rural strata are incapable of meeting their basic needs (food, housing, clothing, and elementary appliances) from their incomes, and they generally do not use public infrastructure services (health, education, energy, etc.). These strata include low-income families and families that lack any regular income because no family member is employed or owns income-generating land or livestock. Given the intensity of their vulnerability, most of these families require some form of support from the government (the public sector) to avoid being driven into deep poverty and becoming entangled in a disadvantaged status (Azkia et al., 133-35, 1998).

Following the victory of Islamic Revolution in 1979, the public sector tried to reduce rural vulnerability by establishing advocacy institutes and organizations for the poor, such as the Welfare Organization and the Imam Relief Committee. These agencies covered some strata of the rural poor community. However, the lack of any deep knowledge about the quality of rural lives, the relative weakness of the measures adopted, and the somewhat incomplete awareness of what support institutes needed to do to alleviate poverty and vulnerability, all contributed to hindering the government's ability to eliminate poverty and economic disadvantage from the rural community. Furthermore, it seems that by adopting liberalization and privatization policies (after 1989) and even nullifying some advocacy policies, the overall status of the vulnerable strata actually deteriorated during the 1990s. Considering that a major portion of the vulnerable strata are involved in the agricultural sector, there is recognition that rural poverty might endanger the successful implementation of agricultural development programs. This concern has arisen because the pressure exerted on soil and water resources, on the one hand, and the inability of vulnerable families to meet basic needs by working in the agricultural sector and the villages, on the other hand, can lead to a situation that contradicts the requirements for sustainable development. For this reason, it is imperative to study closely the status of the vulnerable strata in the rural community so that it can be possible both to preserve the trend of development and to pave the way for the creation and expansion of social justice.

Despite the importance of the poverty and vulnerability issues, no comprehensive field study has been conducted at the country-wide level. Thus, the formulation of a preliminary design to study the rural vulnerable strata necessitated an experimental research. For this end--to know all about the different aspects of rural poverty and vulnerability, it was decided to select two distinct rural regions that could serve as suitable sites for conducting comprehensive case studies to obtain data that could be applied at the country-wide level. The Garmsar region is located in north central Iran between Tehran and Semnan; to its north are the eastern Alborz Mountains, and on the south is the Dasht-e Kavir, an expansive salt desert. The Dasht-e Azadegan region is in the southwestern province of Khuzestan. It is located northwest of the city Ahvaz in the foothills (elevation 300 to 350 meters) of the Zagros Mountains, with the Karkheh River on the east and the land border with Iraq on the west.

Objectives and Theoretical Background

The main objective of this research is primarily to design a specific methodology relevant to the study of social strata in rural communities. This is undertaken by using the theoretical framework of social stratification and by quantifying the theoretical concepts through data analysis methods to obtain an appropriate research framework for rural social strata, especially for the study of the socio-economic status of the vulnerable strata. This approach seemed to be needed because the traditional patterns of social stratification among rural strata have lost their relevancy to a great extent as a result of multifaceted changes since 1979. The present methodology can serve as an applied model for researchers in rural studies. A secondary objective of the research was to study the socio-economic status of the rural vulnerable strata in the two sample regions to obtain an appropriate research design in the field of socio–economic status of the vulnerable strata in rural communities. The research additionally had four minor objectives: (1) to study such demographic characteristics of the vulnerable strata as having multiple jobs, decreasing levels of specialty and skills, immigration and its specifications, family status, etc.; (2) to study the level of rural underdevelopment and the use of public welfare facilities and services by the vulnerable strata; (3) to study social stratification, income and poverty distribution in the rural community in order to determine the poverty line and the achievement of inequality scales in the sample rural regions; and (4) to study poverty and vulnerability at the family and village levels and to recognize their socio-economic characteristics.

Two concepts are used in this study: "absolute poverty" and the "livelihood concept of poverty." Absolute poverty implies not having sufficient income for regular and adequate meals, which is a matter of life and death. The livelihood concept of poverty pertains to the level of income needed to provide for food to meet the basic nutritional needs of each member of a family. The food expenses are considered as fundamental living costs. If we add the expenses of necessary clothing and fuel for cooking and heating, the total figure is the criterion for maintaining a livelihood at the poverty level; income below that figure is considered absolute poverty. With these definitions, it

can be stated that individuals, families, and groups lacking income resources to enjoy different food regimes, to participate in social activities, to maintain daily health conditions, to utilize public facilities extensively, and are not supported by society are considered to be living in poverty.

Poverty and vulnerability in societies have different aspects. However, their economic aspects have had more manifestations, and to some extent it is plausible to consider different aspects of poverty and vulnerability as outcomes of economic activities. Although there has been a variety of definitions for poverty with respect to its dimensions, including absolute and partial poverty, many experts consider the phenomena of poverty and disadvantage as interdependent and even as one single concept. One of these thinkers is Third World economy expert Townsend, who in his *Poverty and the Hungry* has taken into account an analytic concept of disadvantage as the core definition of poverty. He shows that understanding absolute need or disadvantage is the only way by which it would be possible to understand pivotal effects of poverty (See further Zahedi Mazandarani and Zahedi Akbari, "Poor and Vulnerable Villagers.").

In fact, the poor are the ones who are exposed to partial or absolute disadvantage in meeting their primary needs and using public welfare, social, and economic infrastructure services. Thus, the concept of vulnerability is intrinsic in the concept of poverty; in other words, these two terms are two interpretations of a single reality. Robert Chambers in his *Rural Development: Putting the Last First* applies vulnerability as a concept lacking supportive and protective back–up against events such as social customs (provision of bridal trousseau, expenses of mourning ceremonies, or investment for family members), catastrophes (famine, robbery), natural disasters, morbidity and physical disability (disease, consecutive pregnancies), unproductive costs, and abuse or exploitation (Chambers, trans. into Persian by M. Azkia (Tehran, 1377/1998). In other words, vulnerability is the inability to cope with social problems, mostly unpredictable, that might endanger people's resources or lives; in most cases vulnerability is closely related to poverty. On one hand, vulnerability can be considered as the source of poverty; on the other hand, poverty can be considered as an intensifier of vulnerability. Apart from the interaction of these two concepts, their distinction is also significant. Fundamentally, with the poverty concept we are dealing actually with people or groups falling lower than the average of society with regard to income level and the use of educational, health, and other public facilities and services. However, with the vulnerability concept, we are dealing with people or groups not exposed to poverty but live so close to the poverty line that the occurrence of any adverse event such as drought, sickness of the family head or bread winner, flood, and the like would force them into poverty.

In the two studies upon which the present research is based, the concept of stratification is analyzed using the triple theoretical framework of wealth, dignity, and power postulated by Max Weber and the concept of poverty and vulnerability based mainly on the conceptual context provided by Chambers. Moreover, the theories of sociologists Anthony Giddens and Parkin also have been used to define the above-mentioned concepts in the framework of stratification theories. Based on the theories of Giddens, the basis of class distinctions pertains to having or not having the means of production. He believes that in the economic framework, capitalists have more power as compared with laborers because they have the right of ownership over the means of production while laborers have only the right to sell their labor force. Giddens also states that there is a third right: skill achievement and educational qualification. From his viewpoint, the rights to ownership, education or skill, and labor are the three main phenomena relevant to triple stratification in contemporary societies. The upper class controls the ownership of the means of production. The middle class, without exerting ownership over the means of production, possesses special skills and qualifications to exchange in the market, while the lower class only sells its labor force in the market (See further discussion of Giddens in Lahsaeizadeh (1994), 73-74). Moreover, Giddens embarks on defining the issues of stratification, inequality, and poverty, in general, in the framework of exploitative relations; some manifestations of such relations are shown in the relation between city and village and in relations based on gender. (Giddens, 1994, 24)

Frank Parkin like Weber, Karl Marx, and Giddens, believes that the ownership of assets and the means of production form the main basis for class distinctions. But in his view, assets are only one form of social exclusion and restriction that can be monopolized by a minority so as to be applied as the basis of dominance over others. Social exclusion can be defined as any process by which different groups try to exert their monopolized control over resources and limit access to them. In addition to assets or wealth, most of the specifications that Weber considered as the source of class distinctions can be used to create social exclusion. (Ibid, 228)

Research Methodology

Regarding the sociological quality of the issue under study and given the extent of the population under study, it was necessary to screen the population through sampling and the use of economic and social questionnaires. With emphasis on hypotheses of causal relations, survey research typical of sociological investigations was selected as

the main methodology in the two research studies. However, in some aspects of the research, direct observation and documentary evidence also were utilized.

To study the vulnerable strata, it is imperative primarily to study social stratification in the rural communities of Garmsar and Dasht-e Azadegan. To this end, the Cochran-Sharp formula was used to measure socio–economic characteristics in sample villages (21 out of 130 in Garmsar and 20 out of 133 in Dasht-e Azadegan) selected due to their developed status based on developmental indices. (Cochran 1979; and Sharp 1984) After the selection of the sample villages, a census was taken, and this showed that there were 725 rural families in the relevant villages of Garmsar and 1,371 families in the Dasht-e Azadegan villages. To help identify social stratification and the socio–economic characteristics of the vulnerable strata, a questionnaire with about 50 questions was prepared; some of the questions aimed to identify general socio–economic characteristics of respondents while others aimed at assessing the social stratification of subjects. The relevant questionnaires were filled out for all families residing in the sample villages, whether land owner or landless. The sample rural community was divided into different social strata and groups based on the data obtained from the questionnaires and on results from the construction of an index based on the multiple weighted method in which the weights of variables and concepts are obtained by advanced statistical applications such as factor analysis and regression. Then, the sample households for the study were chosen from different social strata on the bases of stratified random sampling.

Table (1): Frequency of major and minor rural strata in Garmsar area

Main strata	Frequency	Percentage	Minor strata	Frequency	Percentage
Poor villagers	382	52.7	Poor peasants Landless poor	68 314	17.8 82.2
Middle-class villagers	300	41.4	Middle–class peasants Landless middle –class	250 50	83.3 16.7
Upper–class villagers	43	5.9	Rich peasants Landless rich	34 9	79.1 20.9
Total	725	100	Peasants Landless	352 373	49 51

Table (2): Frequency of major and minor rural strata in Dasht-e Azadegan[1]

Main strata	Frequency	Percentage	Minor strata	Frequency	Percentage
Poor villagers	882	64.3	Poor peasants Landless poor	397 485	45 55
Non-poor villagers	489	35.7	Non – poor peasants Landless non- poor	303 186	62 38
Total	1371	100	Peasants Landless	700 671	51 49

The main method of indexing in the field of the distribution of social strata in these two research studies is based on data analyses like multiple regression and factor analysis. In addition, for comparison and to be complementary, the cluster method of analysis also has been used to classify and prioritize some of the elements involved in index construction based on the viewpoints of respondents (subjects). In this method, primarily by providing an operational definition of the concept of stratification based on the theoretical view of this research, the main indices were selected to determine the stratification status. It can be mentioned that the main indexing procedures were studied in the Garmsar region.

Operational Definition of the Stratification Concept and its Markers

In the present study, socio-economic stratification refers to the status of the people and their level of access to the triple factors of education, jobs, and assets, plus the proportion of their income to their expenses (good living

[1] The reasons for double classification of rural strata in Dasht-e Azadegan are the higher credibility of such a classification compared with the triple one, the ease of analyses for minor strata (landowner, landless), and its compatibility with the theoretical framework of Chambers for vulnerable strata in which comparisons are mainly made between the poor and non-poor strata.

conditions). The factors are defined thusly: Education refers to one's educational level within an eight-level continuum stretching from illiteracy to higher education; Jobs refer to the job dignity associated with the main and minor jobs in society, the determination, significance, and priority of which (socio–economic dignity) are sought from expert opinions and then jobs are classified according to a seven–level status scale; and Assets refer to the level of access to any constituents of assets such as owned land and gardens, livestock, owned agriculture machinery, housing value, car, truck, van, motorcycle, etc. The proportion of income to expenses refers to the annual proportion of income to the annual expenses of families. With respect to the method of assuming weights for the constituent variables of the index construction, some variables like job status as ascribed by the opinions of experts and assets as measured in their Rial currency equivalence were assumed weights and prioritized. Otherwise, the main variables in the research and also the first rate markers of the stratification index were studied and weighted by statistical procedures like multiple regression and factor analysis. The obtained weights were compared with the weights obtained from the cluster analysis (based on the viewpoints of the respondents) and completed.

The method of Rial currency exchange followed the regional prices with regard to multiple variables forming the index of wealth including the amount of owned land (shared, owned, or rented), the number of livestock, agriculture machinery, major assets (truck, car, van, and motorcycle), housing value, commercial cultivation, and gardening. This part of the research showed that the variable of farm land (for major crop cultivation) assumed the highest weight among all variables: its weight is 8.2. The second rank is major assets with 6.2; next is 5.4 for the number of livestock; 5.3 for agriculture machinery; 1.2 for lands under cultivation of commercial and orchard produce; and finally 1 for housing value.

The application of factor analysis shows that in the rotated factor matrix, the variables of crop land and fields under commercial and orchard cultivation have the highest loading on the first factor; the variables of housing value and major assets on the second; and the variable of the number of livestock on the third. Thus, all the variables of wealth can be narrowed down to the three general factors of land ownership, major assets and housing, and livestock.

Table (3): Rotated Factor Matrix of Wealth Index and Loading Values of Variables (Garmsar Region)

Variables	The first factor	The second factor	The third factor
Farm land	0.8856	0.0479	0.0983
Housing value	0.1444	0.7278	-0.3112
Agriculture machinery	0.3736	0.0797	0.3293
Major assets	0.0245	0.7650	0.3200
Livestock	0.0655	-0.0224	0.8717
Commercial and orchard Cultivation	0.8830	0.0361	0.021

At the next stage, to assume weights to the four main indices of the stratification concept that is jobs, education, assets, and the proportion of income to expenses, both the methods of regression and factor analysis were used. Multiple regression of the above-mentioned variables in correlation with the variable of self-assessment of the subjects about their socio–economic status provided for the following coefficients of scalability or weighting coefficients for independent variables.

Education	0.412
Proportion of income to expenses	0.247
Job	0.206
Assets	0.901

The above-mentioned weights were multiplied by 10 to simplify the coefficients and leads to the following equation for stratification:

stratification = (job $\times$ 2) + (education $\times$ 4.2) + (income/expenses $\times$ 2) + assets $\times$ 9. For further clarification, readers are referred to Table 4.

Table (4): The index construction to assess the social stratification concept in operational definitions – index-construction – weighting

Concept	The first-rate variable	The weight of the first – rate variable by regression	The second – rate variable	The eight of the second – rate variable by Rial currency exchange	The third – rate variable	The weight of the third – rate variable by Rial currency exchange
Stratification	Assets	0.901	Farm land, orchards, non-commercial land	8.19	owned dry farmland (omitted) rented irrigated land irrigated shared land (omitted) vaqf dry land (omitted)	7 -- 1.5 1 -- --
			Commercial and orchard lands	1.24	Vegetables	10
					Orchard	3
			Agriculture machinery	5.37	Tractor Thresher Poison-sprayer Motor pump Electric-motor (omitted)	30 5 2 12 --
			Major assets	6.21	Truck Car Van motorcycle	70 20 15 2
			Housing value	1	--	--
			Livestock	5.41	Sheep and lamb Goat and kid Cow and calf	0.1 0.08 0.5
	Education	0.401				
	Job	0.206				
	Proportion of income to expenses	0.247				

After assuming weights to each variable, the next step involves the combination of variables to obtain the final distribution of scores of the subjects on the stratification index. The scores on the stratification index of all 725 families under study in the 21 sample villages of Garmsar were assessed. Then, the obtained scores were divided into three equal parts based on their intervals of variance. The lowest part of the scores distribution was considered to involve the low stratum of society; the middle part of the distribution indicated the middle class; and the highest part was considered to involve the upper class in society. The scaled continuum showed scores of 125 and 16 in its initial and extreme points used as the maximum and minimum scores to obtain the variance.

Variance = the maximum score – the minimum score = 125 – 16 = 109 interval of the three parts = 109:3 = 36.33

The poor class comprises the ones falling below the score of 52.33. The first class = 16 + 36.33 = 52.33

The middle class are the ones falling within 52.33-88.66.

The second class = 52.33 + 36.33 = 88.66

The upper class comprises the ones falling above the score of 88.66. The third class = 88.66 + 36.33 = 124.99

After the above classification, the triple strata achieved were divided into two groups of peasants (with land) and the landless. Finally, six rural strata were distinguished by subdividing the groups of peasants and the landless into three poor, middle class, and upper class strata. Of the total number of families, 52.8, 42.1, and 5.1 percent respectively fell in the lower class, middle class, and upper class strata. The distribution of rural strata in the Garmsar region appears in Table 1 above.

Research Findings

The results of the two studies can be summarized as socio– economic characteristics and environmental factors. Before discussing these data in detail, however, it is necessary to address the methodological findings as they relate to the main research objectives.

- First, a study of the major research conducted in the field of rural stratification indicates the pivotal role of land ownership in the identification of rural strata. However, since the rural community in Iran has experienced many transformations since 1979, other socio–economic variables also have a role in determining the rural strata. (On post-revolutionary changes in rural areas see Mostafa Azkia, "Rural Society and Revolution in Iran," in Eric Hooglund, ed., *Twenty Years of Islamic Revolution: Political and Social Transition in Iran since 1979* (Syracuse, 2002), pp. 96-119). Therefore, the social strata have been subdivided distinctly in both studies by using a multiple assessment method of many socio–economic variables.
- Second, in a few studies conducted on rural stratification, the multiple assessment method has applied. The principle in these studies has been the application of weighted or non-weighted methods using the opinions of experts. In the present research, in assuming weights to variables and indices, more precise statistical procedures showed a higher efficiency in determining the significance of indices and variables.
- Third, on the whole, the findings of the two studies indicate the utility of index construction based on operational definitions to make theoretical concepts measurable and to quantify concepts. The major measures taken to assess the rural strata more precisely are a combination of variables according to their significance and priority for the population under study, including the use of statistical methods and evaluating the validity of the indexing system through methods such as factor analysis.

Generally, the findings of both studies show that social stratification in the sample rural communities has undergone many changes in the contemporary era leading to social variety and structural complexity. The pre-revolutionary traditional rural strata completely, albeit gradually transformed after the revolution so that the proportion of non-farmers now exceeds the proportion of farmers in densely populated villages. The relatively rich stratum with good living standards that previously comprised a very low percentage of the rural population has increased significantly and further is subdivided into minor strata. The data from the field research conducted in the Garmsar and Dasht-e Azadegan regions reveal thirteen characteristics about rural social groups that are summarized below.

1. **Poor peasants.** The poor peasants mainly earn their living through agriculture. They belong to the lowest level with respect to wealth among peasants and rank fourth among other strata (in a six-level classification) of Garmsar and third (in a four-level classification) in Dasht-e Azadegan. This stratum owns on average 2.5 hectares of irrigated crop land in Garmsar and 4.7 hectares in Dasht-e Azadegan. The total irrigated land owned by this stratum in both villages is estimated to be between one-third one-half of the amount of land owned by the non-poor strata. Poor peasants in the Garmsar region comprise 17.8 percent of the total poor population, while in Dasht-e Azadegan 45 percent of the poor are peasants.

Regarding the ownership of agricultural machinery, the data from both studies show that poor peasants lack suitable machinery; to have access to such machinery, they must seek the support of other strata. With respect to public facilities, welfare services, home appliances, and housing, poor peasants living in villages of the Garmsar region mostly lack appropriate access to those goods and services deemed necessary to maintain basic living standards. However, these differences in access are not as significant for the poor and non–poor strata in Dasht-e Azadegan, an indication of the similarity of these villagers' life styles and the need for the government to help assure basic living standards for this region's whole rural society.

2. **The landless rural poor.** Members of this stratum, according to the data, are mainly laborers active in different sectors of agriculture. They earn their living expenses with difficulty, with some of them renting or share-cropping farm land or raising livestock a very limited scale. The members of this stratum comprise 82.2 of the total poor in Garmsar and 55 percent of the poor population in Dasht-e Azadegan.
3. **Dependent Poor.** According to the data, a small number of the extremely poor in both regions are comprised of female-headed households, elderly-headed families, high-member families, families with no employed members, families whose heads are simple laborers, and families dependent on support from welfare organizations.
4. **Family Size and Dependency Rate.** In the Garmsar region, the average family size of poor villagers owing land is estimated to be 3.9; among the landless poor, average family size is 4.3. In Dasht-e Azadegan, average family size among the poor is significantly higher: 7.3. In Garmsar, the dependency rate for poor household heads corresponds to family size, i.e., about 4 people for each poor peasant who owns land and 4.3 persons for each landless poor family head. In Dasht-e Azadegan, however, more than one household member in many poor families earns income, and, as a result, the average dependency rate is 4.1 for poor families compared with 3.1 for non-poor families. On average, the dependency rate of poor peasants in Garmsar is less than that of middle and upper class villagers, while in Dasht-e Azadegan the reverse is true.
5. **Female-headed Households.** About 6 percent of family heads in Garmsar and 2.8 percent in Dasht-e Azadegan are women. Of the total female-headed households in Garmsar, 12 percent are poor peasants and 67 percent are landless poor. Thus, about 79 percent of all female-headed households are poor. In contrast, a smaller number--51 percent--of all female-headed households in Dasht-e Azadegan are poor, while the other 49 percent are in the non-poor strata. Among Dasht-e Azadegan's poor female-headed families, 43 percent are land-owning households and 67 percent are landless. While the gender of family heads has a significant impact on stratification in Garmsar, this is less the case in Dasht-e Azadegan.
6. **Vulnerability.** According to the data from the two studies, the vulnerable strata in both the groups owning land and the landless have family heads whose average ages are less than those of other strata. This is mainly due to the overpopulation in these two regions and the land deficiency among the lower strata leading. This situation leads to land fragmentation and a rise in the number of landless among the poor youth. Because the small sizes of many owned land plots are not economical, peasants feel obliged to rent or sell them, and in this way join the landless groups.
7. **Literacy.** With regard to literacy rates, the research findings in Garmsar show that the vulnerable population's access to educational facilities compared unfavorably with that of other strata. Consequently, the highest illiteracy rate among people over six years of age was observed in the group of poor peasants—40 percent being unable to read and write. In Dasht-e Azadegan the illiteracy rate was approximately equal for the poor and non-poor strata, 36 percent. In both regions, there was a very significant difference between the male and female population of the vulnerable groups, with a much higher percentage of females being illiterate.
8. **Migration.** One of the major problems for the vulnerable strata in Garmsar is migration, observed both among the poor and rich strata. Among the rich, entire families migrate collectively, but this phenomenon is rarely observed among the vulnerable strata. Rather, individuals in poor families migrate in search of better job opportunities. The migration of the rich strata is usually not motivated by economic factors but undertaken mainly to meet secondary needs such as access to higher education for their children. A major difference in migration patterns between Garmsar and Dasht-e Azadegan is the migration destination. In the Garmsar region the destination is mostly to a city, while in Dasht-e Azadegan the migration attempts, while low in number overall, are to larger and more developed villages. The effect of migration, as commonly observed in both regions, is that a high number of villages are being deserted and converted into farmland.
9. **Productive factors and Stratification.** The findings also show that in Garmsar the variable of land ownership has no major role in social stratification. In Dasht-e Azadegan, the role of land ownership has remained, to some extent, a determining factor but is being replaced by ownership of water supply systems due to the extraordinary importance of water resources in this region and the sole reliance of agriculture on water from the Karkheh River. On the whole, the ownership of production factors in agriculture, as referred to in many stratification theories, can and does play a role in the social stratification of Iranian villages.
10. **Impotence Factor.** The findings of both studies show that there is a pervasive feeling of powerlessness among the vulnerable strata. This impotency in Garmsar is manifest in psychological attitudes and emanates from the dominating and unfair relations between the rural poor and rich strata, as well as the attitudes and behavior of rural officials, influential people, and merchants who buy crops at low prices

before harvest. In contrast, feelings of impotence among the rural strata of Dasht-e Azadegan have no economic aspect but rather are influenced by tribal relationships.

11. **Isolation.** According to the findings in the Garmsar study, the vulnerable strata feel isolated with regard to many variables that comprise the isolation ranking. In Dasht-e Azadegan, however, there is a significant difference in that the poor strata do not have many feelings of isolation. The lack of such feelings in this region seems related to strong tribal relations that provide support for tribe members all areas of life.
12. **Credit Access.** The results of both studies show that the access rate of the rich strata to government aid and credits and to banks is much greater than that of the vulnerable strata.
13. **Poverty.** According to the results of both studies, poverty and inequality are observed more frequently in highly developed villages. There is also a very significant negative correlation between poverty and rural development. This has also been demonstrated in other studies, such as the research conducted by Zahedi Mazandarani on the correlation between these variables in villages of Qazvin. (Zahedi Mazandarani, TITLE, 1375/1996.) Thus, based on the results of these three studies conducted in three regions different from economic, social, geographical, and demographic viewpoints, it might be possible to generalize the above hypothesis to the whole country.

Economic Findings

The economic findings of these two research projects have been obtained by applying available models for studying the agricultural economy at the family level and are based on the measurement of income, expenses, and the determination of inequality levels and coefficients, the poverty line, and the percentage of people afflicted by poverty.

There are six important economic findings. First, applying the inequality scale on the proportion of income received by the lowest 10 percent income group to the highest 10 percent income group showed that the lowest rural group in Garmsar received only 0.47 percent of total rural income, while in Dasht-e Azadegan the lowest stratum received 0.6 percent of total rural income. These figures indicate the extent of unequal income distribution among the families under study, with the inequality being more obvious in the Garmsar region.

The Ginni index for rural families was 0.51 in Garmsar and 0.39 in Dasht-e Azadegan, figures that emphasize the economic inequality among the villagers in both regions. In addition, the assessment of the income poverty line shows that 25 percent of the rural population in Garmsar and 30 percent in Dasht-e Azadegan live below the poverty line. The baseline for assessing the poverty line in Garmsar was a monthly income of less than 44,000 *tomans* (ca. $55) per household for a 4.5- member family.

In Dasht-e Azadegan, the poverty line was estimated at 98,000 *tomans* (ca. $110) per month for a 7.3-member family. (13. The official unit of currency in Iran is the *rial*. Ten rials equal one *toman*, which is unit)

Table (5): Accumulative income, partial share of total income, and accumulative percentage of income receivers in ten groups (Garmsar region 1995).

Income groups	Accumulative income (Rls in year)	Partial share of total income (%)	Accumulative percentage of income earners
First	11,382,080	0.47	0.47
Second	53,412,625	2.22	2.69
Third	79,249,450	3.29	5.97
Fourth	96,566,551	4.01	9.98
Fifth	130,208,505	5.40	15.38
Sixth	193,136.515	8.01	23.39
Seventh	239,784,825	9.95	33.34
Eighth	299,453.315	12.42	45.76
Ninth	413,619,960	17.16	62.92
Tenth	894,066.999	37.08	100
Total	2,410,880,825	100	----

Table (6): Accumulative income, partial share of total, and accumulative percentage of total income of rural families in Dasht-e Azadegan at different decimals of income (2001)

Income groups	Accumulative income (Rls in year)	Partial share from the total income (%)	Accumulative percentage
First	86,810,100	0.60	0.60
Second	151,055,000	1.04	1.64
Third	226,430,000	1.57	3.21
Fourth	321,624,171	2.22	5.43
Fifth	476,808,780	3.30	8.73
Sixth	669,457,620	4.63	13.36
Seventh	878,815,024	6.08	19.43
Eighth	1,320,590,593	9.13	28.57
Ninth	2,263,166,000	15.65	44.21
Tenth	8,069,000,000	55.79	100
Total	14,463,757,288	100	----

An examination of the percentage of poor and non-poor families in different exploitation systems in Dasht-e Azadegan shows that the highest number of poor families can be found in the family farming system (15.5 percent). The next highest group is in the *mosha'* (shared) system of farming (4.5 percent), while 2.4 percent is in production cooperatives. In other land exploitation systems such as mechanized agriculture and contract work, no poor families were observed.

The rate of being afflicted by poverty was estimated based on a probity analysis in Garmsar that showed poverty to be higher among the landless than among those owning land. In Dasht-e Azadegan, being a farmer or engaging in livestock production, as well as an increase in family size, was correlated with an increased rate of poverty affliction.

Environmental Findings

Based on the results of the two research studies, climatic conditions in both regions are dry, semi-arid, and ecologically unstable. Annual rainfall is low in both regions, while the dry season is long. Such a situation in the Garmsar plain derives from the region being adjacent to the great salt desert known as the Dasht-e Kavir, and its excessive reliance on underground water tables that provide variable quantities of water each ear. Among traits common to the agriculture system of both regions has been a decrease in the fertility of farm land due to the excessive application of fertilizers and pesticides, the unsuitable operation of machinery, the decrease in farm land area per capita due to population growth and the low efficiency of water use. All of these factors provide for the destruction and unsustainability of base resources.

The excessive development of commercial and specialized cultivation and the lack of compatibility in the composition and models of cultivation proportionate with available resources and needs have been observed in both regions and are important factors in intensifying the unsustainability of resources. For example, in both regions, the operation of wells and their excessive use have deteriorated the status of pastures qualitatively and quantitatively. Also, the factors that are relied upon for industrial development have led to a more unsustainable situation in Garmsar than in Dasht-e Azadegan. This has materialized through the deterioration of farm lands and their conversion into industrial and mining areas, the disposal of industrial wastes into the environment, and contamination of water and soil resources. Moreover, some special climatic and ecological factors, including saltiness, alkalinity, and stagnancy of farm lands have harmed low-laying lands. In Garmsar—but not in Dasht-e Azadegan--stony winds and water erosion of farm land further have deteriorated its status in comparion with Dasht-e Azadegan.

Among other major issues in the agricultural system of both regions is the fragmentation and dispersion of farm lands. This situation is aggravated by the lack of attention to crop rotation aimed at increasing the soil's fertility rate, the segmentation of sections into even smaller plots due to natural necessities such as soil composition and proximity to water resources, and the promotion of commercial and specialty cultivation. Besides natural factors, such human factors as inadequate knowledge and specialization, the weakness of agricultural research, education, and promotion, the low level of mechanization and inappropriate use of existing machinery, the excessive use of fertilizers and pesticides, the expansion of the land rental and contract system, and the financial weakness of a high percentage of farmers, all have given rise to the unsustainability of the environment, harming directly and primarily the rural vulnerable strata but other strata as well. At the same time, research results have shown that the role of

the poor in the destruction and unsustainability of base resources is insignificant in comparison with the destructive effects brought about by the practices of the rich farming families, such as their excessive use of fertilizers, pesticides, and ground water resources; their inappropriate irrigation techniques; their development of commercial cultivation; and their higher family size and higher population pressure on resources.

Conclusion

The summary findings of research in the rural areas of the Garmsar and Dasht-e Azadegan regions indicate the key point that development projects implemented by relying on the strategies of structural adjustment and privatization, especially in the agriculture sector, not only have been ineffective in terms of the preservation of sustainable resources but also have led to the expansion of vulnerability among poor villagers. The study of the correlations between poverty and the vulnerability variables emphasizes the major significance of social and economic support programs undertaken by the government and implemented through sound development programs based on the participation of villagers. To address the problem of rural vulnerability, the government needs to expand its social security program to the agricultural sector to include crop and livestock insurance, health insurance, and similar plans. Such expansion could play a significant role in improving the status of the vulnerable strata if it were undertaken in conjunction with an awareness–raising program to increase villagers' knowledge about the benefits of various insurance plans, and then was formulated and implemented in a manner that would motivate peasants to expand their coverage.

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