DIVERSIFICATION, EMPLOYMENT AND DEVELOPMENT: TOWARDS A LONG-TERM STRATEGY FOR AN OIL-EXPORTING COUNTRY: THE CASE OF IRAN

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Abstract

The study proposes a long-term development strategy for Iran as an oil exporting country to meet two long-term development goals: employment creation and diversification. In order to provide jobs for the rapidly growing active population-let alone face the challenge of unproductive employment and underemployment-by the end of the decade, between 900,000 to 1,100,000 jobs should be created each year. There is also an urgent need for diversification given the exhaustion of the oil reserve within about 30 years; economic and political risks of dependence on oil; and lack of employment opportunities in the oil sector. To provide an alternative to oil exports within a generation, non-oil exports need to expand by an annual average rate of 11 to 15 per cent. To attain the objectives of diversification and employment creation, there is a need for a dual policy in the choice of sectors and industries. For diversification, selection is to be made among manufacturing goods based on some proposed criteria. For employment creation, labor-intensive activities in other sectors are to be encouraged. It is argued that agriculture needs to increase yield per acre. Foreign exchange earnings and employment will increase through the promotion of tourism, heath and construction services. Finally, appropriate institutional and organizational frameworks need to be put in place.

I. Introduction

The purpose of this article is to shed some light on the following question: what sort of long-term development strategy should Iran, as an oil exporting country, follow in a globalizing and liberalizing world economy? It will be argued: that diversification out of oil and employment creation are two main long-term economic problems of Iran; that the solutions to these problems are interrelated; that all other economic issues should be dealt with in that connection in any long-term development strategy for the country; and finally, and more importantly, that the solution to those long-term problems hinges on the solution to the institutional obstacles created partly by the nature of oil and its impact on the economy and partly related to the nature of the power structure in the country. Policies required to achieve the objectives of the long-term strategy, including the policy towards membership of the WTO, and detailed analysis of organizational and institutional obstacles to development and their remedies are subjects of a separate study.

The following section is devoted to the clarification of the concepts of development and diversification as applied in this paper. Sections III and IV will deal with the importance of diversification and employment as two main elements of the development strategy. Section V is devoted to a proposed long-term development strategy at the aggregate and sectoral levels, and refers in particular to trade and industrial policy. The conclusion follows in the final section.

II. Meaning of Development and Diversification

Development is raising the whole social system or identifying the basic needs and improving the living standard of the masses of people (Myrdal, 1974 and Streeten, 1974). In this sense basic need includes not only socio-economic needs, particularly employment, nutrition, clothing, shelter, education, health, equality in income; but also political needs: equality of access to power, participation in decision-making, security, as well as even psychological needs such as satisfaction with the socio-political and economic system. In this sense, three main aspects of development which are highly pertinent to our argument are worth emphasizing. First, employment is an essential element of a development strategy. Second, growth is a necessary condition for development, but it is not sufficient. Growth is necessary because there is a need not only to satisfy the basic needs of people but also to raise their standard of living. In fact, the basic needs concept could also be considered as a dynamic one. What is a luxury today will be a basic need tomorrow. For example, food is a basic need for all societies, but at a low level of development a refrigerator is a luxury. At a higher level of development, however, it is a necessity. Third, socio-political factors, such as the participation of the masses in decision-making, and psychological factors are essential elements of, as well as conditions for development. They provide the sense of national unity and motivation for achieving the common goals of a nation (List, 1856, p.74).

Within this context both international trade and diversification are means to development; development is the end. Therefore, diversification takes two main characteristics. First, while diversification and development are interrelated, the key to the relation is development. Export diversification is a part of the diversification of the production structure and both are the result of development (Streeten and Elson, 1971). The diversification out of oil requires expansion of activities outside the oil sector, i.e. expansion of non-oil GDP, according to development objectives, to satisfy domestic demand and/or exports. Besides, the expansion of non-oil GDP and non-oil exports requires provision of back-up services. These consist of education, training and health, to the extent that they contribute to higher output and productivity, and infrastructural services such as transport, public utilities, etc[1]. The expansion of non-oil GDP and that of back-up services also figure among development objectives as indicated earlier.

Secondly, diversification should be regarded as a dynamic concept. In the long-run the ratios of oil export earnings and oil export volume in GDP and in exports are to decrease not merely because of the gradual depletion of oil; more importantly because of growth in non-oil GDP and non-oil exports, thus GDP. Nevertheless, despite this long-term objective, the country may go "into" oil in the short-and medium-run by increasing the share of value of oil in GNP and exports by raising the price of oil through collective action of the exporting countries within OPEC. Such contradiction between short- and long-term objectives is plausible as oil itself is to be used as a means to diversification.

To explain further, let X_o and X be the value of exports of oil and total exports, respectively. X_o/X and X_o/GNP then, will show the ratios of X_o to the total value of X and to GNP, respectively. The ways in which the degree of concentration of X_o over X (or over GNP) can be reduced may be shown by two extreme examples: static and dynamic. In a narrow static sense the numerators (X_o) in the above two fractions are replaced by some other products without an endeavour to expand the denominators. In this sense, to decrease commodity concentrations in exports, the production and export of oil is contracted and the resources engaged in its production are transferred to another export product. In a dynamic sense, raising the price of oil first increases the degree of concentration in X_o; nevertheless it is reduced in the long run by increasing the denominators of the aforementioned fractions.

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[1] One may also add other back-up services for export expansion such as marketing, export financing, etc.

Obviously, the price increase may involve some supply restriction; that is, the volume of exports might be below what these otherwise would have been. However, such a restriction is different from the supply contraction required by diversification in a narrow static sense[2].

III. Objectives of Diversification

Although oil provides ample sources of finance and foreign exchange, there are three main reasons for the need for diversification out of oil. Oil is exhaustible, concentration in trade in oil involves heavy risks, and oil exports do not provide employment for the growing labor force.

1. Exhaustibility

The present proven reserves of crude oil in Iran are estimated to be about 96.4 to 100 billion barrels in the year 2000[3]. Assuming that present crude oil production of around 4 millions barrels per day (b/d) will continue in the future, the reserves would last for about 68 years. It should be mentioned, however, that even if one assumes that the present level of exports were maintained[4], domestic consumption would be increasing rapidly. The present level of consumption is estimated to be around 1.6 m/b/d[5]. Assuming the rate of population growth of at least around 1.6 percent[6], a modest annual average growth rate of per capita non-oil GDP of 5 percent[7] and a conservative elasticity of domestic consumption of oil products of around 1.1 to 1.3[8]. Table 1 shows the life of oil reserve. It includes two scenarios based on alternative assumptions on elasticities for domestic consumption of oil products, with respect to non-oil GDP, which result in annual average domestic consumptions of 7.1 percent

and 8.1 percent (5x1.1 + 1.6 = 7.1 and 5x1.3 + 1.6 = 8.1)[9]. We have also added an arbitrary scenario of annual average growth rate of domestic consumption of oil products of 5 percent, which corresponds to per capita non-oil GDP growth of 3.4 percent per annum. It is assumed that the present exports of crude oil of 2.4 m/b/d will be maintained for 25 years, but afterwards it would decline. The annual decline would then be equal to the increase in the domestic consumption of oil.

According to the table on the basis of the last two scenarios shown in the table, the next generation would be left with between 8.5 to over 11 years of oil reserves. Afterwards, the country has to import its total domestic consumption of oil. If one assumes growth in domestic consumption of 5 percent a year, the life of the reserve left for the next generation would be only 18 years. Afterwards, the country has to import nearly 13 m/b/d of oil products. Moreover, even under this unrealistic assumption exports will reach nil after 7.5 years beyond 2025. Otherwise, exports will reach zero in two and a half or three and a half years as shown for the second and third scenarios. Therefore, even under the most conservative assumption the life of the proven reserve is not that long if one presumes that the present generation intends to use most of the reserves at the cost of the next generation, and the future exports will not exceed the current yearly volume. In fact, the Government may attempt to expand exports further to satisfy its need for foreign exchange.

In short, on the basis of present information under the most optimistic and conservative assumptions the country has hardly a maximum of one generation, 25 years, to develop an alternative to exports of petroleum. The urgency of the need for diversification becomes clearer taking into account that the dependence of the country on oil has dramatically increased over half a century since the nationalization of the industry and over a generation since the oil price rise of 1973-74.

Assuming that the ratio of imports to non-oil GDP remains the same during the next 25 years i.e. imports and non-oil GDP grow at the same rate, and population grows a minimum of 1.6 percent a year, let us consider two different scenarios on the basis of growth rates of imports of 5.1 and 6.6 percent (equivalent of percapita annual average non-oil GDP growth of 3.4 and 5 percent). Currently imports of goods stand around 15 billion dollars. Nevertheless, this low level of imports is due to import compression, while enhancing growth requires higher imports. Thus one can assume the initial import level of around 20 billion dollars for commercial goods prevailed on average over 1969-1972 or $25 billion for 1970. Taking into account the current non-oil exports of around 3.5 billion dollars, table 2 provides figures on non-oil exports of

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[2] For details, see Shafaeddin (1986).

[3] Website *www.net.iran.com* based on Mash'al, Oil Ministry of Iran, September 2000, No. 183, pp.30-32.

[4] This is a wrong assumption as the Third Plan aims to raise exports and the Government is planning to raise the production capacity to 6 ml b/d (see *Bahar Newspaper*, 17 Mordad, 1379, p.4).

[5] See *MEES*, 13.2.2001.

[6] Central Bank of Iran, *Economic Trend*, No. 21, 1379, second quarter, p.1. The Plan organization's estimate is 1.7 percent (see section IV).

[7] As discussed in Section VI, this rate is not sufficient for employment creation and the expansion of non-oil exports.

[8] The elasticity for recent years is not representative since oil products have been rationed. The period 1950-56 shows an elasticity of about 1.33. In recent years, the elasticity of electricity consumption in relation to non-oil GDP is also estimated at 1.3. Electricity consumption is more representative of actual total energy consumption; nevertheless, there have been shortages of electricity, which makes this estimate also conservative.

[9] Non-oil GDP growth rate of 5 percent, elasticities of 1.1. and 1.3 and annual population growth of 1.6.

goods needed in year 2025 at constant 2001 prices. Depending on which scenario we consider, the non-oil exports of goods needs to increase to 52 billion dollars or 123 billion dollars. This amount of foreign exchange earnings requires non-oil exports to grow between 11.4 percent to 15.3 percent per year. Even the most conservative scenario indicates that the tasks involved are colossal as compared to the performance of the Iranian non-oil sector during the last 50 years. We have repeated the same exercise taking into account trade in services as shown at the bottom of the table. The initial level of non-oil exports of goods and services are assumed to be 5 billion dollars based on the figure for the year 2000.

The experience of China and East Asian countries show that annual average growth rates of exports (only goods) of around 10 to 14 percent have been feasible during the last two decades. Generally speaking, during 1980-1999 the corresponding rate for "major exporters of manufactures," among developing countries, has been around 11 percent[10]. Whether or not similar export expansion is possible in the particular context of Iran is a matter of speculation as it is not clear whether the country has the requirements for such an endeavor. Getting "into oil" is much easier than getting out of it. But what is clear is that the country has a "race with time" in developing non-oil exports. Such a race will be more evident when one considers the risks involved in trade in oil.

2. The Risks of Concentration in Oil Exports

During the life-time of the oil reserves, heavy concentration in oil exports involves four types of risks, in order of importance: the risk of developing a substitute for oil and/or a substitute for OPEC oil; instability in the OPEC agreement and the risk of its breakdown; the general political risk of interruption and cessation of trade and finally demand-induced instability in export earnings. Let us say a few words about each.

There is always a risk that an alternative to oil products and to OPEC oil may be found or developed. Moreover, there will be progress in the economy in the use of oil. Such risks in fact are increased due to the collective action of OPEC for price increases. Currently the proven reserves outside OPEC are not a threat. But new reserves of oil and gas may be found. With respect to alternatives to oil products, the development of fuel cell is the most serious one. Fuel cell generates energy by combining hydrogen and oxygen. For the time being hydrocarbons are the main source of hydrogen fuel. Nevertheless, the advantage of using fuel cell in the economy is the use of energy and the lack of pollution. It is estimated that if 10 percent of automobiles in the USA are powered by fuel cells, oil imports would be cut by 13

percent and 60 million tons of the greenhouse gas carbon dioxide would be eliminated. While the first fuel cell cars are scheduled to go on sale in 2004, it is hoped that in 20 years 40 percent of the buses and 10 percent of new cars sold in the world will run on fuel cells (Muller, 2001, p.36). Estimates of energy efficiency of fuel cells vary between 1.74 to 2.6 times greater than an internal combustion engine in 2010, that is a minimum of 60 percent savings in fuel.

The disadvantage of fuel cell is that it is not commercially viable at present; the cost of fuel cell itself as well as the manufacturing of engines to run with fuel cell is high. However, it is estimated that by 2004 viable commercial fuel cell vehicles will become available. Even if such development by 2004 is optimistic, there is little doubt that within a decade or two the fuel cell alternative will become commercially viable at a large scale. In fact, the officials of General Motors of USA believe that mass production of fuel cells for the auto industry will begin in 2008. The company has set a goal of becoming the first automaker to sell 1 million fuel cell vehicles[11].

Another source of economizing in the use of energy, through fuel cell, is in the transmission of electricity. Fuel cells provide the possibility of local power stations for buildings (residential fuel cell system) and factories. Thus it does not involve a loss of electricity through transmission networks.

It is also estimated that fuel economy in traditional i.e. combustion, engines will improve significantly by 2010. By then the fuel efficiency for passenger vehicles could increase from 23.8 miles per gallon (mpg) to 32 mpg or even higher[12].

The technology in the use of energy for the economy is emerging rapidly. For example using a "high-tech silicon nitride" and special pans in cooking increases efficiency in the use of energy from 50 to 60 percent to around 90 percent (Muller, 2001, p. 40). The concept of "passive houses" would result in energy savings of 80 to 90 percent for heating residential buildings (Ibid, p. 36) through using solar energy and prevention of waste of energy.

Wind power is being rapidly developed in some European countries. For example, Denmark generates "13 percent of its electricity from wind turbines and is well on its way to meeting its target of 50 percent by 2030." The use of wind power is growing at an annual average rate of 40 percent worldwide (Muller, 2001, p. 30).

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[10] Based on UNCTAD (2000), table 1.7.

[11] *Yahoo.com*: "GM unveils hydrogen fuel cell", 7.8.2001.

[12] The information on fuel cells and fuel efficiency is based on *Fuel Cell 2000*, site: http:11216.51.233, which is in turn based on industry and USA Government sources.

Another risk is related to the instability in the OPEC agreement, if not its breakdown, leading to instability in price, volume, and thus export earnings of the member countries (Shafaeddin, 1986 and 2001a). This risk is in addition to the risk of instability in the demand for crude oil caused by changes in the world economic situation[13]. The high income and low price elasticity of oil could work as a double edge sword for the stability of OPEC, particularly that during the recession the oil companies may attempt to move demand, at the margin, from one country to another, in order to snatch a few cents through discount pricing or cheating by exporting countries[14].

The price declines of over 60 percent between 1980 and 1986 and about 63 percent between 1990 and 1998 were partly caused by weak OPEC solidarity and partly by the turmoil in oil exports caused by the temporary hikes in prices in 1980 and 1990 due to the Iranian revolution and the Gulf War in the early 1990s. Whatever the reason, during the last two decades instability in oil price and export earnings have been significantly higher than those for the period before the OPEC action of 1973-74. For example, the coefficient of variations[15] for oil export earnings of Iran for 1979-1999 was 26.6. The corresponding figures for the period 1954-70 and 1960-70 were 4.5 and 3.84[16], respectively. In the 1950s and 1960s, the instability in earnings resulted from volume instability as "posted price" changed little. Since the early 1970s, price instability has also been significant. Therefore, it is not surprising if oil revenues declined by 50 percent in some periods, e.g. 1975-1977 (1996-98)[17]. We do not need to go into details about the detrimental impact of instability in export earnings as the literature is vast. It is worth mentioning however that the resultant uncertainty affects, *inter alia*, private and government decisions on investment, adversely, with detrimental influence on growth and development of the economy[18].

Finally, heavy dependence on oil also involves the risk of interruption or cessation of trade and the imposition of sanctions for political, economic or military reasons. The sanctions imposed on Iraq by the UN and on Iran and Libya by the United States are only two recent examples. Such risks not only influence export earnings directly, but

also reduce the bargaining position of OPEC and its member countries, thus the price of oil and the terms of trade (Shafaeddin 1986). It should be emphasized that the collective action of the member countries through OPEC increases the risk of interruption of trade. The Governments of importing OECD countries, alone or by collective action, may take retaliatory measures against OPEC, or any one OPEC country, in response to deep intervention and involvement of OPEC Governments in trade in oil.

In short, diversification away from oil exports is urgently needed, as oil resources are not sufficient to earn much foreign exchange beyond the next generation. Moreover, while (the) OPEC agreement provides extra financial means necessary for development, at the same time it increases the risks of concentration in trade in oil. Thus it increases further the urgency of the need to accelerate the development of the non-oil sector, i.e. diversification out of this exhaustible natural resource.

IV. Employment

The creation of employment for the rapidly growing labor force will be critically important in the future in Iran, particularly because the country is presently suffering from a severe unemployment problem.

Even if oil were not exhaustible and trade in oil did not involve any risk, diversification would be needed to provide employment. Exports of oil directly provide little opportunities for employment. In 1972, i.e. before the oil price increase of 1973, the oil sector, including gas, petrochemicals and activities related to domestic distribution and consumption of oil products accounted for over 22 percent of the GDP of Iran. It, however, provided jobs for about 41000 workers or about 0.55 percent of the economically active population in that year. Similar situations were observed in other oil exporting countries. For example, in the same year, oil accounted for 45.3 percent of the GDP of Saudi Arabia, but provided only about 15000 jobs, the equivalent of 0.69 percent of the economically active population of the country. In the case of Venezuela corresponding figures were 15.3 percent for GDP, and 23000 for jobs, that is 0.71 percent of the economically active population[19].

Presently, the oil sector accounts for 14 percent[20] of Iranian GDP, at constant 1982 prices, but provides employment only for over 102000[21] people, or nearly 0.6 percent

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[13] For more details, see Shafaeddin (1980 and 2001.a).

[14] For more details, see Shafaeddin (2001.a).

[15] This coefficient is defined as standard deviation divided by means and presented in percentage terms.

[16] Calculated by the author based on balance of payment data provided by Central Bank of Iran, *Annual Reports*, various issues.

[17] Based on *Ibid*.

[18] See e.g. Willson (1971) for a survey.

[19] See Shafaeddin (1980), table A.3.2.

[20] In 1978.

[21] SCI, *Statistical Yearbook*, 1928, table 3.20.

of the economically active population of the country, which is about 18 millions. The country suffers from severe unemployment as will be explained shortly.

If oil cannot provide employment, the burden of job creation is on the other sectors of the economy, i.e. non-oil sectors. What is this burden? While non-oil GDP accounts for 86 percent of the aggregate income of the country, the non-oil sectors ought to provide employment for almost the whole labor force. It is estimated that the Government should provide additional employment for 765000 people each year during the next five years, i.e. the period of the Third Plan in order just to provide jobs to the newcomers to the labor market.

Other oil exporting countries also suffer from severe unemployment problems. For example, Saudi Arabia[22] has recently been facing unemployment among its youth, particularly educated ones. Unofficial estimates for the rate of unemployment are 30 percent for Algeria (1991), 15 percent for Bahrain (1998), 15 to 20 percent for Indonesia (1998), 30 percent for Libya (1998), and 14.2 percent for Trinidad and Tobago (1998)[23].

To highlight the magnitude and nature of the employment problem of Iran in the future, let us examine forces on the supply side of the labor market and their implication for the present and future employment situation. Before doing so, however, let us review the present situation briefly.

1. Unemployment Rate and the Need for Employment Creation

The country is presently suffering from an unprecedented high unemployment rate. The official estimate of the unemployment rate for (1978) by the CBI is 15.1 percent, i.e. over 2.6 millions, out of an economically active population (EAP) of 17.9 million. During the same year, the total number of population was 63.8 millions, over 63 percent of whom lived in the urban areas (CBI, 1979, no.2). A survey by the Statistical Centre of Iran (SCI) estimates the unemployment rate at 14.3 percent in 1979[24]. According to the same survey, the unemployment rate varies from 7.02 percent for Eastern Azarbayegan province, to 26.73 percent for Systan and Bluchestan, 24.53 percent for Lorestan, 23.5 percent for Kurdesdan and 12.09 percent for Tehran (Ibid, p. 34). Nevertheless, unofficial estimates are higher and there is a wide variation in the unemployment rate among regions and among educational

groups. For example, according to one estimate the unemployment rate was on average 18 percent in 1978 (see table A.1)[25], in the year 2000, it reached 30.6 percent for both Kerman and Kermanshah provinces, 28.7 percent in Ilam, 27.2 percent in Khouzestan –the oil rich provinces– and 25.3 percent in Kohkilouyeh[26].

The estimate of the unemployment rate among youth and university graduates is even higher. According to an unofficial estimate, the rate of unemployment among youth was 40 percent in 1978 (Azimi, 2000). According to 1975 population census, the rate of unemployment of university graduates was over 35 percent (see below). According to the SCI sample survey of 1979, over 60 percent of the unemployed population in the 15-64 age range, were among those in the 15-24 age group, and 34 percent in the 25-44 group (SCI, Ibid, p. 25). According to the same survey, while over 80 percent of those who were employed were literate, the literacy rate among the unemployed population was 92.5 percent (Ibid, p. 32). Even worse is that unemployment has become a chronic phenomenon. For example, 15.5 percent of the unemployed population was without a job for more than four years, 11.3 percent for three to four years, 19.1 percent for two to three years and 22.4 percent for one to two years (Ibid, the table at the bottom of p.33). Furthermore, there are indications that the country suffers from disguised unemployment of around 4 to 5 millions (Azimi, Ibid).

In fact, according to the official figures even among those who are regarded as employed, over 12 percent work for 28 hours or less, of which 7.1 percent work for 21 hours or less.

The underestimation of the unemployment rate is partly due to the definition of employment and the coverage of data. The official definition of the employed population includes those who did not have a regular job but worked at least two days during the seven days before the date of the survey, seasonally unemployed persons, those in conscription for military service, those studying at military, police and secondary educational establishment and all students who receive scholarships with obligations to work for the Government after graduation (Ibid, Introductory Chapter). Moreover, there is also an item under "others" included in the non-active population the definition of which is not clear (SCI, 1979.a, p.18). Unavailability of data does not permit estimating the effects of all such definitions in unemployment rates. Nevertheless, two points can be explored with the help of available data. One is the impact of the item "others." It was mentioned earlier that some unemployed people searched for jobs for more than four years. It is very likely that many who looked for

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[22] See Robin Allen, "More and more Saudis find fewer jobs…," *F.T.* , June 23, 2000.

[23] Based on the *World Factbook 2000*, reported on site *www.bartleby.com*.

[24] Statistical Centre of Iran (SCI); *A Sample Survey of Employment and Unemployment for Iranian Households, Year 2000 (1379)*, Statistical Centre of Iran (SCI), 1379 (in Farsi), p.18.

[25] Azimi (2000) estimates a rate of 17 *per cent*.

[26] *Kar va Kargar*, quoted in website *www.labournet.org/2000/oct/iran*.

jobs for a long time stopped looking further. Therefore, even though they were unemployed, they could not be included in the figures for "unemployed persons" because they were not looking for jobs. The definition of an unemployed person is one without a job who is looking for a job. In other words, those who got out of the job market because of disappointment are not regarded as "unemployed." If one were to include this category ("others") in the active population for the 1979 sample survey, the additional unemployment rate would be 8.62 percent, 6.1 percent and 20.1 percent for the total population, men and women, respectively (based on Ibid). Accordingly, after such an adjustment, the unemployment reaches nearly 22 percent. In fact, our speculation is backed by the fact that the figure for women is greater than that for men. Women's unemployment has been more common in recent decades, and they have suffered more than men from chronic unemployment. Therefore, it is justified to assume that they have been more discouraged than men to continue searching for jobs. In fact, 18-79 percent of unemployed women searched for jobs four years and longer against 14.73 percent in the case of men (Ibid, Table at the bottom of p. 33).

Another factor which underestimated the *increase* in unemployment rate after the 1955 census is the discrepancy in the coverage of seasonal employment. Until 1965 seasonally employed persons were included in the figures on unemployed persons. In the 1965 and 1975 censuses, they are regarded as part of the employed population. When the necessary adjustments were made, the figures on the unemployment rate for 1955 declines from 11.3 percent to 3.7 percent for the total population, from 5.1 to 4.4 percent for the urban population and from 14.2 to 3.1 percent for the rural population (see Mehran *et al*, pp. 7-9 and Table 6). Therefore, the increase in unemployment from 3.7 percent in 1955 to 14.1 percent in 1965 is significant).

It is estimated that in 1979 the number of the unemployed population reached 3.63 million, since the Government has managed to create only 280 thousand and 400 thousand jobs in 1978 and 1979, respectively. During the same year the official unemployment rate reached over 19 percent (table A.1). It is estimated that between 1977 and 1989 (1998-2010) an additional 9 million will enter the work force, which will reach a total number of 28 million over the same period. A conservative figure of 26.3 million for EAP is also estimated. While population will grow by an annual average rate of 1.7 percent, the working population and EAP will increase by annual average rates of 2.5 percent and 3.4 percent, respectively (World Bank, 2000, tables 2.1, 2.2 and 2.3). Hence, between 1977 and 1999 around 7,500,000 to 9,200,000 new workers will enter the labor market. Therefore, in order to resolve the problem of open unemployment during the next decade (i.e. by 2010), there is a need for the creation of over 1.1 to 1.3 million jobs a year if one assumes the objective of full employment as is shown in table 3. If one assumes a tolerable unemployment rate of 4 to 5 percent in year 2010, there is a need for the creation of about 980,000 to 1.17 million new jobs each year over 2001-2010 (the same table). If one aims at shifting the disguised unemployed labor force to a fully productive one to improve the competitiveness of domestic producers in the domestic and international markets, another 400 thousand new jobs need to be created each year.

The significance of these figures becomes clearer if one examines the number of jobs created during the last two decades. Over 1961-70, about 290 thousand new jobs were created each year. These numbers declined to 200 thousand and 62 thousand in 1976 and 1977, respectively before rising to an estimated figure of 220 to 280 thousand in 1978 (Azimi, Ibid). The Government aimed at the creation of 750,000 jobs each year for the period of the third development plan i.e. 1979-1984[27]. In practice, only 400,000 new jobs were created during the first year of the plan, that is 1979.

More importantly, about a third of the new jobs to be created should be suitable for satisfying the supply of new graduates from the universities. Yet more is needed during the period of the Third Plan to keep the rate of unemployment of women equal to that of 1978 (official rate of 16.9 percent), each year about 180,000 jobs should be created for women (Qaffari, 2001).

Once again, it is clear that Iran has to race against time to avoid a socio-economic crisis in the next decade or so.

2. The Impact of Oil Revenues on Employment

I have shown elsewhere that an increase in oil revenues will affect employment, positively and/or adversely (Shafaeddin, 2001b). I have argued that the positive impact of increases in oil revenues on employment emerges mainly through the availability of financial resources and foreign exchange necessary for investment. Further, it contributes, *ceterus paribus*, to the credit worthiness of the country thus influencing inflow of capital. It, however, has also negative effects on foreign exchange earnings in the non-oil export sector. Its adverse effect on employment is related to the impact of oil revenues on labor productivity, directly and through increases in the capital-output ratio, capital labor ratio (K/L) and import coefficient.

Thus, when oil revenues increase, their positive impact on employment through higher investment is limited by changes in the contribution of the oil sector to average labor productivity, increases in K/L, K/Y ratios and increases in the import coefficient. The increase in the capital-labor ratio will negatively affect future

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[27] Even then the number of the unemployed workforce in 1978 (about 3.3 millions) would be maintained.

employment when oil revenues fail to increase even if abundance of capital currently provides opportunities for sufficient increase in employment at present. The waste of imports in this way reduces possibilities of expansion of investment in the future. Such negative effects on future employment can be particularly aggravated if the increase in imports is partly financed by the capital inflow facilitated by increases in oil revenues. The accumulated debts have to be paid back. If the debt repayment coincides with a drop in oil revenues, temporary or not, investment and employment will be severely affected. This was, in fact, the experience of Iran during the 1990s. The oil revenues increased substantially in the early 1990s and provided the government with the possibility of increasing borrowing from abroad as its credit worthiness improved. Then oil revenues dropped and the government had to reimburse debts, which had been accumulated mostly during the early 1990s. Thus, to remedy the negative impact of the fluctuation in oil revenues on employment, particularly when oil revenues jump up substantially, the government is advised to allocate oil revenues more smoothly over the course of a business cycle rather than to inject them into the economy in bulk when they accrue.

The recent policy of creating a foreign exchange reserve fund by the government is an effort in the right direction provided the eventual allocation of these reserves are done efficiently. While the negative impact of fluctuation in oil revenues on employment can to some extent be remedied, the negative impact of the decline in oil revenues on employment in the long-run when the trend in oil revenues changes remains, unless necessary measures and policies are taken.[28]

In a separate study; I have argued that there is a relation between employment and diversification objectives as employment creation requires foreign exchange. I have also calculated the investment requirement of employment creation during the next decade and referred to the policies required for such investment (Shafaeddin 2001b). Therefore, the following pages are devoted to the strategy for diversification.

V. Diversification into What?

It will be argued in this section that in choice of sectors, industries and products, the government should follow a dual policy to attain the objectives of diversification and employment creation. For export, development of international competitiveness is important; it requires expansion of activities some of which may not contribute sufficiently to resolving employment problems. Therefore, these activities should be complemented with those which are more labor intensive. For export expansion, mainly goods among manufactured products are to be selected. For employment

creation expansion of other activities are required. Moreover, although agriculture cannot contribute much to export expansion directly, its expansion is essential as it contributes to the competitiveness of exports of manufactured goods indirectly. Moreover, it helps foreign exchange savings. Let us consider the role of various sectors, manufacturing, agriculture and services separately.

1. The Role of Manufacturing Sector

For export expansion the manufacturing sector has to play the principal role for two main reasons. First, the share of agricultural products in world exports is relatively low and it grows slowly. In 1997 agricultural products constituted only 12.1 percent of world exports of non-fuel and 6.5 percent of non-fuel exports of developing countries. The corresponding figures for manufactured goods were 81.5 and 78.9 percent, respectively (based on table 4). Moreover, the world exports of manufactured goods, particularly capital goods, are on average expanding a lot faster than those of agricultural raw materials and food products during the 1990s (table 4). This is expected as demand for raw materials and food grows slower than manufactured goods under the influence of Engel's Law and technological development which lead to efficiency in the use of raw materials. More importantly, the same table indicates that developing countries have managed to expand their exports of manufactured goods much faster than the world as a whole. In particular, their exports of capital goods expanded exceptionally fast even though from a low base.

In fact, no agricultural products figure among the first 50 products (at 3 digit level) with the highest value in world exports during 1997-98, except for meat (which ranks 33rd).[29] Further, while 20 (out of 136) products showed an average growth ratio of over 10 percent over 1990-98, no agricultural product appears in the list (table 5).[30] Similarly except for coffee (ranked 22), fruits (ranked 28), fish (ranked 31) and sugar (ranked 60), the first 50 items with highest value in exports of developing countries are manufactured goods.[31] Except for coffee, rice, vegetable oil, cereals, sugar, milk and margarine, no agricultural product appears among the 84 products (out of 136) at 3 digit levels with an annual average growth rate of 10 percent and greater for export value from developing countries over 1990-98 (table 5).

Table 4 also indicates that the exports of services have been growing reasonably fast, particularly from developing countries. We will return to the services issue shortly.

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[28] For more details see Shafaeddin (2001b)

[29] Based on UNCTAD, *Handbook of Statistics*, 2000, table 4.3.

[30]The average rate of growth of world non-fuel exports over the same period was around 10 *per cent*.

[31] *Ibid*, table 4.5.

The second, and less important for our argument, for giving priority to industrial products in export diversification is the lack of supply capabilities in the agricultural sector mainly due to shortage of water. Nevertheless, agriculture has a role to play in export expansion indirectly as will be shortly argued.

2. Efficiency and the Choice of Industries

There are two main issues to be tackled as far as the manufacturing sector is concerned: making the present industries efficient; choosing industries for export expansion and investment. As mentioned earlier most domestic industries work with half capacity. A number of industries work with less than 20 percent capacity utilization[32]. There have also been indications that industrial productivity has fallen (1999). Close analysis of the causes of under-capacity utilization requires further research. The lack of imported inputs can be one important reason. It is however very likely that the lack of demand could be another reason. The lack of income growth, inflation and maldistribution of income could all have contributed to the lack of demand for domestic products in favor of foreign-made items which has led to smuggling. It is estimated that over two billion dollars worth of imports of commercial goods were smuggled in 1979. Low quality, old technology, lack of skilled labor also may be other reasons affecting the sector on the supply side. Moreover, public enterprises are believed to be less efficient than private ones. According to IMF (2000, p.82) these enterprises accounted in 1976 for 15 percent of the number and 70 percent of value added of enterprises in the industrial sector, respectively. They accounted for about 15 percent of GDP and their losses are equivalent to about 34 percent of their value added or 5.1 percent of GDP.

While improving efficiency is necessary for industrial products to compete in both domestic and international market production for exports, it requires further attention as foreign taste and quality requirements are often different from the taste of the local population.

All products cannot be exported, as the country does not have the capacity for such expansion. Moreover, the country cannot by definition develop dynamic comparative advantage in all products. Therefore some selectivity is required.

The question of selectivity and the choice of products and industries for output and export expansion takes particular importance in investment decisions. For this purpose there is a need for a clear criteria requiring further search. Roughly speaking however one could think of three important criteria. These are international market dynamism, externalities and linkages and technological development. It should be mentioned that two industries, in particular, meet these criteria. These are electronic and electric industries. Table 5 provides data on 20 of the most dynamic products in world exports during 1980-98. Accordingly, 8 of them are electronic and electric products. Similarly, according to table 6, 8 out of 20 dynamic products in exports of developing countries and 6 out of 20 in exports of developing countries, excluding first tier NIEs, are electronic and electric industries. These products also remained among important dynamic products in the 1990s. In fact, some of them (transistors, optical instruments, electric power machinery, electricity distributors equipment, telecommunication equipment) have shown higher growth rates in the 1990s as compared to the 1980-98 period. Generally speaking, almost all dynamic products for 1980-98 also remain dynamic in the 1990s. The only graduation from the list is silk. Notable additions to the list in the 1990s are fixed vegetable oils (SITC 423, 424), organic and non-organic compounds (SITC 515), articles of rubber (SITC 628) and essential oils and perfumes (SITC 551)[33]. Moreover, electronic and electric industries are the backbone of modern industrialization. Electric products constitute, for example 20 percent, of output of automobile industries. Therefore, they provide linkages with other industries. Further, they contribute to technological development and provide externalities.

Other activities which meet some of those criteria include chemical and petrochemical industries. Products of these industries include relatively dynamic ones; during 1990-98 the rate of growth of exports of chemicals as a group (SITC 5) was 7.6 percent and 10.5 percent for world and developing countries, respectively (see table 4). The rate of growth of world exports of medical and pharmaceutical products exceeded 12 percent over the same period. Further, petrochemicals are inputs to polymerization products, plastics, all travel goods etc., which figure among dynamic export products of developing countries. It goes without saying that the country has ample resources of oil and gas, which are natural source inputs to production of petrochemicals and related industries.

3. Employment Effects of Modern Industries

Obviously, not all these industries may be necessarily labor intensive, particularly those that require large economies of scale. In fact most large modern industries have made a smaller contribution to employment than to output.

Generally speaking, the contribution of modern industries to output is more than their contribution to employment. In technical terms, the elasticity of employment in the

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[32] See footnote 38.

[33] UNCTAD, *op. cit.* Table 4.5.

manufacturing sector with respect to growth in manufacturing value added is less than one. Therefore, annual average growth rate in employment in the manufacturing sector is less than the annual average growth rate in the value added of the sector. In 1999, the manufacturing sector of Iran accounted for 19 percent of non-oil GDP, and for about the same proportion of employment[34]. Nevertheless, the aggregate figures on employment are inflated by traditional carpet weaving industries that are labor intensive. In 1975, these industries employed about 1.81 million people[35] or about 71 percent of labor force employed in the manufacturing sector. Unfortunately figures in value added of these industries are not available to measure their contribution to output. Nevertheless, available data on output and employment of large (modern) industries provide some evidence on changes in their contribution to employment and output. For example, during the period 1974-77 output and employment in these industries increased by 49 and about 19 percent, respectively[36]. Similarly, the corresponding indices of output and employment increased by 80 percent and 11 percent between 1990-91 and 1998-99[37].

Hence, direct contribution of modern industries to employment is limited. Nevertheless, through establishing small and medium sized labor-intensive industries with linkages with large industries, large industries can contribute to employment indirectly. Moreover, services related to those industries are also sources of additional employment.

While modern industries do not directly contribute to employment much, they can provide employment for the highly educated labor force. In fact, availability of a large army of highly educated labor is an advantage in the development of these industries, which apart from their large size, are often technology, skill and knowledge intensive. Apart from the unemployed educated population, in 1978, over 20 percent of university students were studying in the technical and engineering field. The electric, electronic and petrochemical industries mentioned earlier are among industries that could benefit from them. By contrast, provision of employment for the semi-educated and unskilled labor force can be left to a large extent to agriculture and other sectors.

4. The Role of Agriculture and Water Management

Agriculture has an extremely important role to play in both non-oil export expansion and employment. In the expansion of non-oil exports its role is more indirect through the provision of cheap basic food items. The acceleration of investment in industrial and other activities increases the income of the population, which together with rapid increases in population, particularly in urban areas, increases their demand for basic needs, including food items. If the demand pressure cannot be met by domestic production, it will put pressure on the balance of payments. Total imports of agricultural products increased from $48 million in 1973 to $256 million in 1977, and an average of $2571 million in 1998-99. In per capita terms imports of these products increased from $7.1 in 1975 to about an average of $42 in 1998-99. Not only were imports of agricultural products over 104 times greater than their exports for 1998-99, but they also amounted to over 25 percent of domestic value added in agriculture over the same period[38]. Therefore, the expansion of agricultural products can, on the one hand, ease the balance of payments pressure by foreign exchange savings. On the other hand, it can provide cheap sources of main items of necessity for wage earners in the urban sector, thus contributing indirectly to low wages thus competitiveness of manufactured goods vis-à-vis foreign products in the domestic and international market.

The development of agriculture is very much consistent with the objective of resolving the unemployment problem. Presently, about 38 percent of the population still lives in rural areas, but the rate of rural-urban migration is high as explained in section IV. The higher the income gap between urban and rural areas, the greater is the incentive for migration of rural dwellers to urban areas. Unfortunately, such a gap has been not only wide, but is growing due to the neglect of agriculture and rural development both during the Shah's regime and since the revolution of 1978.

a. Some problems of agricultural development

Agriculture is a 'supply determined' industry. According to Kalecki (1963), supply-determined industries are those activities whose growth rates are limited by physical, organizational and institutional factors. Physical obstacles to agriculture include availability and quality of land, necessary infrastructure, irrigation network, technical and other agricultural services, technological capacity and marketing facilities. Among institutional obstacles one may refer to the ownership system and lack of credit facilities. Development of agriculture, therefore, requires extensive public

[34] SCI, *Statitistical Yearbook*, 1979.b, table 3.8 and CBI, *Annual Report*, 1978, table 2.

[35] SCI, *op.cit.*, 7.20.

[36] CBI, *Annual Report 1977-78*, pp. 110-111.

[37] CBI, *Annual Report 1998-99*, tables 30 and 32.

[38] Figures are calculated based on CBI, *Annual Reports*, various issues.

investment in physical, institutional and organizational factors. Moreover, incentives to farmers are important for investment in the private sector.

We have shown elsewhere that during the Shah's regime, agriculture suffered from both the lack of investments and incentives (Shafaeddin, 1980, 1988), basically due to deficiencies in government policies. Since the revolution, the same deficiencies in policies geared toward agriculture have continued[39]. Hence, the lack of employment and the low level of income in rural areas have led to a slow growth in agricultural products and the migration of labor to urban areas.

We may refer to the case of wheat as an example of government policies in agriculture, as it is the main agricultural product and main staple food item. The combination of subsidization and pricing policies of the government has weakened incentives for wheat production. The consumption of wheat is subsidized, and the purchase price of wheat from the farmers is periodically fixed by the government. During 1974-76 for example, wheat production suffered from over a 40 percent negative rate of protection[40] (Shafaeddin, 1988). The imported wheat also involved some inland costs (the difference between the *cif* price and the silo-gate-price). By contrast, the purchase price of domestic wheat was silo-gate-price. As a result, in 1970 the purchase price of domestic wheat was 61 percent of the silo-gate-price of imported wheat (Ibid.). Moreover, between 1959-1974 the official purchase price was always below the official sale price. In other words, subsidies were paid on imports, but the farmers bear the burden of the cheap sale price.

Further, there had been continuous deterioration in net barter internal terms of trade of wheat, *vis-à-vis* other products. During 1950-59, the relative price of wheat in relation to wholesale price of domestically produced and consumed goods declined by 25 percent. Over 1959-1977, it declined by another 20 percent. In the meantime, the cost and opportunity cost of production, increased drastically. For example, during 1971-1977 alone, the wage index in the urban construction sector (the opportunity cost of labor engaged in agriculture) increased by about five times while the wholesale price index of wheat increased only by 50 percent (Ibid).

Since the 1978 revolution the same pattern has continued. According to an official estimate, the *cif* price and official sale price of imported wheat in year 2000 were $170 and $105 *per* ton, respectively. Therefore, wheat production suffered over 38 percent negative protection.

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[39] For period up to 1985, see Majtahed and Esfahani (1989).

[40] The difference between the domestic and border prices divided by the border price (see Lutz and Scandizzo, 1980).

The changes in the official purchase price of wheat in relation to wholesale price indices of domestically produced and consumed goods, wages of unskilled labor in the construction sector in urban areas and consumer price indices are shown in table 7. Accordingly, throughout the period the purchase price was below those prices, and particularly below the wages. It is also evident that yield of wheat production, which was stable until recently, has responded in particular to some improvement in the relative price of wheat in relation to the wages in the construction sector in the 1990s.

While we have concentrated on the example of wheat, the situation of other staple products – meat, poultry, sugar, barley, vegetable oil, rice, etc. – is not any better. All these are subject to price controls and subsidization. Only fruit products have escaped government control.

In short, the combination of slow growth in yield and the biased government pricing policy (the former caused mainly by the latter) contributed to slow growth in the production of agricultural products, low income of the farmers and the migration of rural populations to urban areas due to the widening gap between urban and rural income.

b. A strategy towards agriculture and water management

The government strategy for agriculture should focus on increasing the income of farmers per unit of land. This can be achieved by attempting at policies which aim at interrelated objectives of maximizing yield and providing the farmers with remunerative prices. This proposal is based on three main reasons. First, maximizing yields contributes to output growth necessary for the diversification of the production and export structure. Even though the possibilities for exports of agricultural products are limited, the sector contributes to foreign exchange savings directly and to the competitiveness of exports of manufactured products indirectly as mentioned earlier.

Secondly, the improvement in the income of farmers in relation to their compatriot workers in urban areas reduces migration to the cities, and thus the demand for urban employment.

Third, in Iran fertile land is a scarce resource, the scarcity of which to a large extent is related to the scarcity of water. The total cultivable land in the country is 154,590 square kilometers, which account for less than 10 percent of the total area of the country. Moreover, the shortage of water is the reason behind the fact that only over 44 percent of available land is irrigated (table 21). Although the rainfall of the country is small, there is evidence that the water resources are not utilized sufficiently for irrigation. The average annual rainfall for the country is about 250 to 300 millimeters. Table 8 provides data on rainfall and available land of the country. The

main provinces where available land is located are classified in two groups. The first group includes those with a significant proportion of both irrigated and dry cultivation. The second group contains provinces with significant dry land and limited irrigated land, with the exception of Kerman.

The table indicated first of all that even though in most provinces in group I the average rainfall is less than those in group II, except for Kerman, irrigated land in group I accounts for a significant proportion of the total irrigated land of the country. In other words, more attention has been paid to water management in the provinces included in group I. In fact, in addition to the exploitation of underground water, these provinces accommodate most of the 43 dams of the country.

Secondly, by contrast in group II the lack of water management has limited the possibility of irrigation despite a relatively high degree of rainfall. The exceptional situation of Kerman, despite its low rainfall, is explained by the existence of the "Jiroft" dam. Group II includes some provinces which are partly mountainous, thus irrigation is difficult. Nevertheless, such natural condition cannot fully explain the situation. For example, Kermanashah province is not particularly mountainous.

Therefore, in a sense the agricultural strategy should also be geared to the maximization of output per unit of water, as it enhances the expansion of irrigated land. Water management would imply that every drop of water should be utilized efficiently through investment in water exploitation, irrigation network, new methods of irrigation, etc. Moreover, water management and "intensive" use of land are complementary. To improve yield per unit of land, water management alone is not sufficient. Investment in agricultural services, provision of inputs, credits, marketing facilities, transportation – all are part and parcel of the same strategy. Above all, price incentive should not be ignored. It is an essential – but not the only part – of the proposed agricultural strategy. There is strong evidence that farmers in developing countries do respond to price incentives. For example, in the case of wheat analyzed above, the production of this product responded consistently to changes in prices and support services in Mexico[41].

Finally, it should be emphasized that as available land is concentrated in a few provinces, pursuing a strategy of intensive agriculture is facilitated. According to table 21, around 55 percent of available land is located in seven provinces (out of 25) and another four provinces account for another 17 percent of available land. Such concentration of fertile land makes investment in infrastructure and agricultural

services and water management easier than if the fertile land was evenly distributed. In other words, in its agricultural strategy the government may focus on these provinces.

5. The Role of Tourism and Other Services

The services sector is responsible for nearly 45 percent of employment according to the 1975 population survey. In fact, its contribution to employment has risen significantly, from about 42 percent of the total in 1965. The role of the public sector in employment in the services sector is important, and unproductive employment in this sector is more common than elsewhere. Hence, some of the employed population in the service activities are those engaged in the informal sector with little contribution to output. Hence, a great deal needs to be achieved in changing the unproductive labor force into a productive one in this particular sector.

Here, we would like to refer to the importance of three activities in particular, which are both labor intensive and could also contribute to foreign exchange earnings. These are: tourism, health services and construction services. Despite its potential, tourism is very underdeveloped in Iran. In 1978, Iran earned about half a billion dollars from tourism. This is insignificant as compared to the earnings from tourism in the case of Thailand, Malaysia, Indonesia, Turkey and Greece. There is no figure on employment in tourism in Iran. The available data indicate that in 1975 only 85000 people were employed by the hotel and restaurant industries, the services of which were almost entirely utilized by the Iranian nationals themselves. Subject to investment and a suitable environment for tourism, there are possibilities for investment and development of recreation facilities and sites both around the Caspian Sea for the summer season, and along the Persian Gulf for the winter season. All around the country there are cultural and natural sites that could be developed for tourism.

Expansion of health services can complement tourism. There are numerous spas waiting for exploitation. Moreover, Iran has the most advanced health services in the Middle East. If the necessary infrastructure and facilities, for health care, and accommodation, transport, etc. are provided, the country can attract many patients from the Persian Gulf region for treatment, operations, natural therapy, etc.

In 1977, nearly 134000, or over 10 percent of total university students were studying medical and health sciences in public universities, where they have the reputation of enjoying higher educational quality; nearly 100000 were also studying in the same field in Azad University[42]. The country has developed excess supply of labor force in

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[41] See Hall and Price (1982).

[42] Based on CBI, *Annual Reports*, 1977, table 44.

health services, which at least partially can be directed toward health services for visiting foreign patients.

Construction services are another field in which Iran has expertise. The country has in fact a long experience in the construction of dams, roads and bridges, skyscrapers, etc. Once again, if provided with the necessary incentive, assistance and market information, the private sector could develop its activities in the neighboring countries in Central Asia and the Gulf region.

Conclusions

An attempt was made in this study to propose a long-term development strategy for Iran as an oil exporting country. We have regarded employment creation and diversification out of oil as two main long-term development objectives of the Iranian economy. While the official unemployment rate is about 15 percent, the unofficial figures are much higher. Moreover, unemployment is estimated to be around 30 percent for university leavers. Not only the rate of growth of the active population is high, but also the structure of the active population is changing in favor of the highly educated manpower, and of women as well, particularly in urban areas. It was shown that in order to provide jobs for 95 percent of the active population by the end of the present decade, between 900000 to 1100000 jobs should be created each year. To eliminate unproductive employment and underemployment, there is a need for 300000 to 400000 additional jobs per year. Such elimination is important for obtaining international competitiveness

Although oil reserves appear, at first glance, to be ample, there is an urgent need for diversification out of oil. Such urgency arises for three main reasons: the present oil reserves will be almost exhausted within about 30 years; concentration in oil involves high risks; and above all oil does not provide employment directly. Those risks are related to the development of new sources of energy and of OPEC oil, their efficient use, particularly through fuel cell and the instability in the OPEC agreement. To provide an alternative to oil exports within a generation, non-oil exports need to expand by an annual average rate of around 11 to 15 percent.

It is argued, that to attain the objective of diversification and employment creation, the government should follow a dual policy in the choice of sectors and industries. For exports, the development of international competitiveness is important; it requires the expansion of activities some of which will not contribute sufficiently to employment problems. Therefore, these activities should be complemented with those that are more labor intensive. For export expansion the government should be selective; mainly goods among manufactured products are to be selected as they include the most dynamic products in international and internal markets. To choose among industries, some criteria are introduced. Particular importance is given to chemicals and electrical and electronic industries, which also require highly educated manpower.

Although agriculture cannot contribute much to export expansion directly, its expansion is essential as it contributes to the competitiveness of exports of manufactured goods indirectly. Moreover, it helps foreign exchange savings. More importantly it contributes to employment creation and the slowdown of migration to urban areas. Taking into account the natural conditions of Iran, the distribution of fertile land, the supply of water, and considering government bias against agriculture, particularly through its pricing and trade policy, we have argued that Iran has to concentrate on intensive agriculture, so as to increase yield per acre. Such policy at the same time contributes to the reduction in urban-rural income disparity and encourages peasants to remain in agriculture. Water management, investment in agricultural infrastructure and back up services, and most importantly the provision of remunerative prices for agricultural products are necessary conditions of agricultural development in Iran.

As the services sector is the main actual and potential contributor to employment, we have identified three service industries that can contribute significantly to both foreign exchange earnings and employment. These are tourism, heath services for foreign visitors from the Persian Gulf and Central Asian regions, and construction services.

Finally, the achievement of development objectives and the implementation of strategies outlined in this study require appropriate institutional and organizational setups, which are lacking at present.

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Table 1: Life of Oil Reserves of Iran in Year 2025

Illustrations	Annual Average Growth Rate of Domestic Consumption (%)		
	5	7.1	8.1
1. Domestic consumption in year 2025 (m/b/d) [1]	5.344	8.9	11.2
2. Cumulative domestic consumption in year 2025 (b/b)	27.6	32.1	35.8
3. Cumulative exports in year 2025 (b/b) [2]	21.9	21.9	21.9
4. Cumulative depletion in year 2025 (b/b): 2+3	49.5	54.0	57.7
5. Present proven reserves (b/b)	100.0	100.0	100.0
6. Remaining reserves at the end of 2025: 5-4	51.5	46.0	42.3
7. Daily production in year 2025 [3]	7.744	11.3	13.6
8. Total production in year 2025 (m/b/d)	2.827	4.125	4.964
9. Life of remaining reserves (6÷8) in years [4]	18.2	11.2	8.5
10. Numbers of years after 2025 when oil export will be nil	7.5	3.5	2.5

Notes: [1] Based on the assumption of initial consumption of 1.6 m/b/d. [2] Assuming constant exports of 2.4 m/b/d. [3] Item (1) plus exports of 2.4 m/b/d. [4] Assuming that yearly production would be constant after year 2025; increases in domestic consumption would be offset by a decline in exports.
Source: Author's calculation; figures for current domestic consumption and exports used in the calculations are based on: MEES, 13.2.2001 and Dresdner Kleinwirt Benson Bank, reported in www.payvand.com/news, 15.2.2001.

Table 2: Foreign Exchange Needs from Non-Oil Exports in Year 2025

Goods	Initial imports (billion dollars)					
	15		20		25	
Growth Rate of imports [a] (%)	5.1	6.6	5.1	6.6	5.1	6.6
Non-oil exports ($ billions)	52.0	74.0	69.4	98.9	86.7	123.6
Growth rates [a] of exports	11.4	13.0	12.7	14.3	13.7	15.3

Goods and Services	Initial imports (billion dollars)					
	18.3		25		31	
Growth rate of imports [a] (%)	5.1	6.6	5.1	6.6	5.1	6.6
Non-oil exports ($ billions)	63.5	90.4	86.7	123.6	107.8	153.2
Growth rates [a] of exports	10.7	12.3	12.1	13.7	13.1	14.7

Notes: [a]: Annual average.
Source: Author's calculation.

Table 3: Estimates of the Number of Additional Jobs Needed to Reach Full Employment in 2010

	EAP in 2010	
	26,300,000	28,000,000
Number of unemployed persons in 1979 (2000)	3,630,000	3,630,000
Addition to the labour force 1979-1989 (2000-2010)	7,500,000	9,200,000
Total	11,130,000	12,830,000
Number of jobs to be created annually until 2010 to reach		
- full employment in 2010	1,113,000	1,283,000
- 95 per cent employment rate	981,500	1,143,000
- 96 per cent employment rate	1,007,800	1,171,000

Source: Estimates by the author based on table A.1

Table 4: Growth of World and Developing Countries Exports (1990–1997)

	SITC	World			Developing Countries		
		Value (1997) ($b.)	% Share	Growth Rate 90-97	Value (1997) ($b.)	% Share	Growth Rate 90-97
1) All goods	0 to 8	5413.8	100.0	6.4	1592.0	100.0	8.6
2) Fuel	3	422.0	7.8	-0.8	239.5	15.1	-7.4
3) Non-fuel:	0 to 8-3	4990.4	92.2	6.4	1352.0	84.9	10.6
4) Agricultural raw materials	2-(22+27+28)	129.6	2.4	3.3	41.4	2.6	7.4
5) All food items	0+1+22+4	469.5	8.7	5.6	156.1	2.8	7.6
6) All primary products (non-fuel)	0+1+2+4+68	774.0	14.3	5.0	256.8	16.1	7.8
7) Manufactured goods:	(5+6+7+8)-68	4065.3	75.1	7.7	1066.9	67.1	13.8
8) Machinery and equipment	7	2136.0	39.5	8.5	492.0	30.9	18.3
9) Chemicals	5	505.5	9.3	7.6	83.9	5.3	13.0
10) Other manufactured goods of which:	6+8-68	1423.9	26.3	6.6	491.1	30.8	10.5
11) Textiles and clothing	26+65+84	393.6	7.3	6.9	214.5	13.5	9.7
12) Services [1]		1322.9	24.4	6.8	293.7	18.5	9.03

Notes: [1]: 1990-98
Source: based on UNCTAD (2000), tables A.1 to A.13.

Table 5: Dynamic Products in World Exports, by Average Rate of Growth in Value During 1980-1998

Product	Code SITC Rev.2	Rank	1980-98 Growth Rate of Export Value (%)	1980-98 Share in World Exports (%)	1990-98 Growth Rate of Export Value (%)
	-1	-2	-3	-4	-5
Transistors, valves, etc.	776	1	16.3	2.2	18.6
Automatic data processing equip.	752	2	15.0	2.1	13.3
Office and machinery parts	759	3	14.6	1.5	11.7
Optical instruments	871	4	14.1	0.1	16.9
Perfumery, cosmetics, etc	553	5	13.3	0.3	10.8
Silk	261	6	13.2	0.04	4.34
Under garments knitted	846	7	13.1	0.4	11.9
Articles of plastic nes	893	8	13.1	0.8	9.3
Electric power machinery nes	771	9	12.9	0.3	13.9
Musical instruments and parts	898	10	12.6	0.5	7.4
Leather etc manufactures	612	11	12.4	0.1	5.1
Non alcoholic beverages nes	111	12	12.2	0.1	9.1
Medical instruments nes	872	13	12.1	0.3	9.8
Electricity distributing equipment	773	14	12.0	0.4	12.9
Telecommunications equipment	764	15	11.9	1.9	13.1
Under garments non-knitted	844	16	11.9	0.2	8.5
Cereal etc preparations	48	17	11.9	0.3	8.8
Knitted etc. fabric	655	18	11.7	0.2	9.8
Medicinal, pharmaceutical prod.	541	19	11.6	1.2	12.3
Electrical machinery nes	778	20	11.5	1.2	11.4
All commodities			6.0	100.0	7.1
Manufactured goods [a]			8.7	75.1	7.7

Notes: [a]: End year is 1997

Source: UNCTAD, Handbook of Statistics, 2000, table 4.3 and Mayer, Butkevicin and Kadri (2001).

Table 6: Dynamic Export Products of Selected Country Groups, By Average Rate of Growth of Export Values During 1980-1998

Rank	Code SITC Rev.2	Product	Code SITC Rev.2	Product	Code SITC Rev.2	Product
		Developed countries		**Developing countries**		**Developing countries excl. 1st-tier NIEs**
1	776	Transistors, valves, etc	752	Automatic data processing equip	763	Sound recorders, phonographs
2	844	Under garments non-knit	871	Optical instruments	871	Optical instruments
3	553	Perfumery, cosmetics, etc	759	Office, adp machy parts, acces	759	Office, adp machy parts, acces.
4	871	Optical instruments	582	Prdts of condensation, etc	761	Television receivers
5	752	Automatic data processing equip	741	Heating, cooling equipment	881	Photogr apparatus, equip. nes
6	893	Articles of plastic nes	655	Knitted, etc, fabric	752	Automatic data processing equip
7	759	Office, adp machy parts, acces	531	Synth dye, natrl indigo, lakes	655	Knitted, etc. fabric
8	898	Musical instruments and parts	773	Electricity distributing equip	894	Toys, sporting goods, etc
9	541	Medicinal, pharmaceutical prdts	712	Steam engines, turbines	762	Radio l broadcast receivers
10	846	Under garments knitted	781	Passenger motor vehicl, exc bus	898	Musical instruments and parts
11	872	Medical instruments nes	872	Medical instruments nes	885	Watches and clocks
12	48	Cereal etc preparations	763	Sound recorders, phonographs	893	Articles of plastic nes
13	111	Non alcoholic beverages nes	583	Polymerization, etc, prdts	666	Pottery
14	764	Telecom equip, parts, acces	776	Transistors, valves, etc	895	Office supplies nes
15	771	Electric power machinery nes	771	Electric power machinery nes	679	Iron, steel castings unworked
16	783	Road motor vehicles nes	679	Iron, steel castings unworked	773	Electricity distributing equip.
17	98	Edible products, preps nes	774	Electro l medical, xray equip	785	Cycles, etc, motorized or not
18	514	Nitrogen l function compounds	592	Starch, inulin, gluten, etc	741	Heating, cooling equipment
19	873	Meters and counters nes	516	Other organic chemicals	831	Travel goods, handbags, etc
20	73	Chocolate and products	761	Television receivers	531	Synth dye, natrl indigo, lakes

Source: UNCTAD, Mayer et al. (2001)

Table 7: Indicators of Official Purchase Price of Wheat in Relation to Various Prices and Wage Indicators, and Development of Wheat's Yield (1974-2000)

	Official Purchase Price		CDI	Wage	WPI	Relative Price Indices of Wheat in Relation to			Yield of Wheat
Year	RI/kg	Index	Index	Index	(DPCG)	CPI	Wages	WP (DPCG)	Kg per hect
1974	10	100	100	100.0	n.a.	100.0	100.0	n.a.	n.a.
1978	14	140	176.5	312.9	n.a.	79.3	44.7	n.a.	1020
1980	20	200	243.5	487.5	n.a.	82.1	41.0	n.a.	970
1982	30	300	355.2	722.5	100.0	84.5	41.0	100.0	1080
1984	40	400	762.1	1146.8	n.a.	52.9	34.9	n.a.	1040
1986	46	460	578.5	1119.9	153.9	79.5	41.2	99.6	1150
1987	48	480	759.8	1192.1	195.5	63.2	40.3	81.8	n.a.
1989	n.a.	n.a.	1567.8	1567.8	286.1	n.a.	n.a.	n.a.	n.a.
1991	n.a.	n.a.	1503.7	2207.2	448.3	n.a.	n.a.	n.a.	1420
1992	150	1500	1880.9	2743.1	596.5	79.7	54.7	83.8	1533
1993	225	2250	2310.7	3372.1	756.2	97.3	66.7	99.2	1577
1994	260	2600	3124.1	3973.8	1065.2	83.2	65.4	81.4	1603
1995	330	3330	4666.5	5339.8	1689.0	71.3	62.3	65.7	1710
1996	410	4100	5749.3	7163.0	2114.6	71.3	57.2	64.6	1583
1997	480	4800	6744.0	8258.4	2323.3	71.2	58.1	68.9	1593
1998	600	6000	8082.4	9105.1	2591.8	74.2	65.1	77.2	1934
1999	672	6720	9741.6	10321.1	n.a.	69.0	n.a.	n.a.	n.a.
2000	795	7950	10968.4	n.a.	n.a.	72.5	n.a.	n.a.	n.a.

Notes: CPI=Consumer price index; wage index=index of wage of unskilled construction workers in urban areas; WP(DPCG)=wholesale price of domestically produced and consumed goods.
Sources: Mojtahed and Esfahan (1989) for prices of wheat, CPI and wage index over 1974-85; others. CBI, Annual Reports, various issues.

Table 8: Fertile Land and Average Rainfall of Iran

	Average annual rainfall (millimeters per annum) [a]	Fertile land Irrigated	Dry	Total
Area (1000 hectares)		6914	8545	15459
Share in total		44.7	55.3	100
Share of provinces:				
Group 1:				
1) Khorasan	270	16.6	15.8	16.2
2) Fars	328	9.3	4.5	6.2
3) Kuzestan	244	8.3	6.7	7.2
4) East Azarbayejan	363	6.2	10.2	8.4
5) West Azarbayejan	296	6.1	5.7	5.4
6) Mazandaran	1401	5.1	6.8	6.1
7) Zanjan	318			
Total		57.3	54.8	55.4
Group 2:				
1) Kordestan	497	2.1	9.8	6.4
2) Lorestan	526	2.7	6.2	4.7
3) Kermarshah	488	1.7	5.7	3.9
4) Kerman	148	5.1	0.1	2.3
Total		11.6	21.6	17.3
Total above		68.9	76.4	72.7
Other provinces (14)		31.1	23.6	27.3
Grand total		100.0	100.0	100.0

Notes: [a]: For provincial capitals
Sources: SCI (1978), tables 1.7, 4.1, 4.2, and 4.3

Table A.1: Changes in Population and its Structure 1935-1985

Year	Population Total (million)	Urban %	Population at working [a g e a] (million)	EAP [b] (million) Total	Unemployed[f]	Number of Students [g] (million)
1935	18.95	31.3	12.78	6.07	0.16	0.69
1945	27.79	38.0	17.0	7.84	0.73	1.94
1955	33.71	47.0	23.0	9.8	1.0	4.44
1965	49.45	54.4	32.89	12.82	1.82	6.53
1975	60.06	61.2	45.4	16.03	1.46	12.63
1978 [c]	62.8	63.2	49.86	18.2	3.28	-
1979 [d]	63.7	-	51.09	18.80 [e]	3.63	-
1980 [d]	64.7	-	52.43	19.4	-	-
1985 [d]	69.7	-	56.4	25.5	-	-

Notes: a. 10 years and above. b Economically active population. c Estimates. d Forecasts and planned (for unemployment). e The activity rate estimated by the SCI through sample survey of 1970 is 37.19 per cent. Applying this rate result in EAP of 19 millions. f Figures for 1935, 1945 and 1955 include seasonally employed population. g Inactive; those at age 10 and above who are working and do not seek jobs.
Source: SCI (1997), CBI (2000) and Management and Plan Organization of Iran quoted in Aftabé Yazd, 23.01.2001.