Women's Participation
in the Industrial Sector of Irān:
Evaluating the Scopes for Creating Jobs for Women

Zahrā Afshāri, Ph.D.
Department of Economics, Al-Zahrā University
Imān Sheibāni, M.Sc.
Ph.D. Student, Department of Engineering, University of Michigan

Abstract

As in other countries, in Irān men and women are not randomly distributed across the labour market. Such a structure is more easily seen in the industrial sector. There are men's jobs, primarily engaged by men. Similarly there are instances of women's jobs where labour force is predominantly female. Mixed occupations, to be sure, exist. These a few areas where labour force is comprised of men and women in the same proportions. Women's work is distinguished primarily, though not exclusively, by responsibility for certain tasks associated with daily and intergenerational reproduction. The other significant dimension of women's jobs concerns their terms and conditions. These jobs are less likely to be complemented by expensive capital equipment, thus are less productive, more likely to be temporary and insecure, less likely to be organized, and contain dimmer prospects for promotion. Unstable supply of women characterizes their labour markets. These are common features of secondary labour markets which are less well paid.

The remainder of the paper is organized as follows: first we consider the structure of women's employment in the industrial sector of Irān on the basis of ownership, skills, education, and its distribution in provinces of Irān. In the second part of the paper, we will discuss job creation ability of sub sectors of the industry.

Keywords

Women; Participation; Industrial Sector; Labour Market; Job Creation; Irān;

TRENDS IN LABOUR FORCE PARTICIPATION OF WOMEN IN IRĀN

Education, fertility, and the age distribution of the population are among factors which have attracted increasing number of women to the labour market in Irān. There are two kinds of data on rates of labour force participation of women in Irān: the ILO[1]'s data and those of national series extracted from household and labour force surveys. According to national report prepared by Statistical Centre of Irān, women's participation in labour market of Irān in 1976 was 12.9% (compare to 70.8% for men). But it drastically decreased in 1986 and plunged to 8.2%. Again, it enjoyed an increasing trend; in 1991, 1996 and 2001, the labour force participation of women rose to 8.7%, 9.2% and 12.1% respectively.

According to ILO reports (International Labour Organization, 1996), the labour force participation of women has changed from 19.8% in 1960 to 30.1% in 2000 that apparently shows an increase of 52% (United Nations, 2003). The difference in the rate of labour force participation depends on different definitions. Despite the significant growth of female participation in the labour force and despite the high potential in Irān for women to participate in the labour force, actual rates remain among the lowest in the world.

The finding that female rate of participation are significantly lower in Irān than in other regions is supported by dual data sources mentioned earlier. If we compare Irān With MENA[2] countries, a conclusion can be reached: that countries like Algeria, Irān, Iraq, Syrian Arab Republic and Yemen, whose economies are highly related to natural resource, have lower average labour force participation than do countries like Egypt, Lebanon, Morocco, and Tunisia which are labour abundant nations. Even among the first category of nations, women's labour force participation in Irān is considered the lowest. The low labour force participation of women in Irān is costly not only to women but also to their families and to the society at large. It not only results in high economic dependency but also in lower rates of return for women's education as compared to that of men. Therefore an increasing labour force participation of

---

[1] International Labor Organization
[2] Middle East and North Africa

women is to their own benefits, which in turn increases the family welfare (Afshāri, 2002).

THE STRUCTURE OF WOMEN PARTICIPATION IN THE INDUSTRY

It is a worldwide phenomenon that women usually perform different tasks and work in industries which are typically different from places where men work. We can define two kinds of segregation: industry (or horizontal) and occupational (vertical). By industry (or horizontal) segregation we mean a situation where more men are found in industry x and more women are found in industry y. While by occupational (vertical) segregation we mean the fact that men hold managerial positions and women hold lower level positions. This paper is concerned with both kinds of job segregation.

Some part of such a sex-based industry (or horizontal) segregation may be the result of skills or preferences, the rest may be explained by constraints imposed on opportunity, cultural paradigm or so on (Afshāri, 2001b).

On the basis of 1996 population census, 34.52% of women were employed in the industry. This sector is seen as the second important sector in terms of women's employment. A glance over the trend of women's share in industrial sector shows that in 1976, 1986, and 1996, the shares were 53.8%, 22.9%, and 22.8% respectively (Statistical Centre of Irān, 1996).

The industrial census results of 1998 reveal that 40.25% of large scale industries (industries encompassing more than 50 people) were public and 59.75% were private. The industry provided employment for 55960 women. Among them 70% worked in industries with more than 50 employees and the rest were occupied in industries with less than 50 employees. In the first category, 54.7% were unskilled, 33.5% were skilled, 3.2% were technician, and 6% were engineers. Among them 63.5% were employed in production and the others were occupied in non–production sector. Moreover 51.2% and 48.8% were employed in public and private industries respectively. As we will consider later, the women are occupied in a few industries, mostly those industries with characteristic feature of a dual market system,

i.e., bearing instability, low productivity, and low wages. These features make women employment very vulnerable to economic fluctuations. As a result of dual labour market the unemployment rate of women has always been above that of men. In 1996 the rate of women unemployment in Irān was 12.5% (compare to 8.4% for men). In rural areas these rates were 14.4% and 8.4% accordingly. As we will see later, the structure of women's participation in industry is neither identifiable by industries nor by regions.

THE PROVINCIAL DISTRIBUTION OF WOMEN IN INDUSTRY

As **Table 1** shows, the role of women in the economy in general and their role in industry in particular, is not the same in all provinces.

Table 1. Provincial Percentage Distribution of Women in Industry
(Extracted from Statistical Centre of Irān, 1999)

Province	Public	Private	Cooperative	% of Women
Tehrān	43.5	56.4	0.50	33.8
Khorāsān	16.2	83.7	1.82	12.45
Gilān	38.2	61.8	1.70	9.73
Esfahān	38.4	61.6	0.64	5.83
East Āzerbāijān	42.9	57.1	0.31	5.13
Ghom	8.7	91.3	0.10	4.77
Ghazvin	38.2	61.8	0.00	3.82
Markazi	53.3	46.7	0.77	3.60
Māzandarān	46.6	53.4	1.50	3.35
Fārs	41.1	58.9	0.94	2.80
Khoozestān	77.7	22.3	0.33	2.70
West Āzerbāijān	34.5	65.5	5.00	2.36
Kermān	35.8	64.2	6.30	2.32
Semnān	19.5	80.5	3.80	1.84
Golestān	37.0	63.0	1.50	1.63
Zanjān	34.4	65.6	0.81	1.56
Yazd	18.2	81.8	0.35	1.33
Hamedān	20.1	79.9	2.00	0.85
Booshehr	29.6	76.4	3.60	0.72
Lorestān	38.8	61.2	2.00	0.66
Sistān and Baloochestān	55.3	44.7	1.90	0.65
Kermānshāh	33.5	66.5	3.10	0.50
Kordestān	39.5	60.5	5.90	0.48
ChāhārMahāl and Bakhtiyāri	12.4	87.6	5.60	0.47
Hormozgan	59.2	40.8	2.00	0.44
Ilām	55.7	44.2	9.20	0.27
Ardabil	30.4	69.6	0.90	0.24
Kohkilooyé and BoyerAhmad	46.2	53.7	5.20	0.11

This is due to different levels of development and education. It can also be attributed to cultural differences and differing share that industry holds in a region. Over one third of women in industry are employed in Tehrān (33.93%). The following are shares held by some of the provinces: Khorāsān (12.45%), Gilān (9.73%), Esfahān (5.83%), and East Āzerbāijān (5.13%). These are the most important provinces for women's occupation in this respect. The least important provinces are Kohkilooyé and Boyer-Ahmad (0.11%), Ardabil (0.24%), and Hormozgān (0.44%). In Irān while sex segregation by industry widely varies within the provinces, the overall level of segregation is not higher than the average for the country.

THE PROVINCIAL DISTRIBUTION OF WOMEN IN THE PRIVATE, COOPERATIVE, AND PUBLIC INDUSTRIES

As **Table 1** shows, in ChāhārMahal-e Bakhtiyāri 83.7%, Khorāsān 83.7%, Yazd 81.8%, Semnān 80.5%, and Hamedān 79.9% of women are occupied in private industries. But in Khoozestān 77.7%, Hormozgān 59.2%, Ilām 55.2%, and Sistān and Baloochestān 55.3% of women work in public sector. After the imposed war, and the beginning of privatization process in Irān, the structure of woman's employment in industry began to change in favour of private industries. In public sector compare to private sector. The women are less vulnerable to social and economic volatility. As we will discuss later, a drastic change in the structure of labour market, on the one hand, and another change in **Patriarchal structure of the family**, on the other, are required to make women less vulnerable.

THE PROVINCIAL DISTRIBUTION OF WOMEN IN INDUSTRY ON THE BASIS OF SKILLS

Educational achievements of the Iranian women within last two decades have been impressive. The average year of schooling of women rose from one year in 1960 to 4.5 years in 1999 (Barro and Lee, 2000). Moreover during the last two decades Irān has achieved impressive increases in the literacy of women. It rose from 22.9% in 1970 to 71.4% in 2002 (World Bank, 2003). Providing women with the skills they need for the job market is an Iranian as well as a worldwide

challenge. The provision of lifelong learning and vocational skills is also critical for women. In particular, since women leave market due to many reasons, in order to re-enter the labour market they need to upgrade their skills. Despite the impressive nation-wide achievement, the differences are noticeable among the provinces. The lowest literacy rate is 56.8% for Sistān and Baloochestān and the highest is 88.3% for Tehrān (Statistical Centre of Irān, 2001). The rate of female literacy rose from 6.2% in 1990 to 9.5% in 2000 (World Bank, 2003). This difference in skills and education caused different pattern of job segregation in the Iranian provinces.

   Table 2 summarizes the provincial distribution of Women in Industry on the basis of skill.

Table 2. Provincial Distribution of Women in Industry on the Basis of Skill
(Extracted from Statistical Centre of Irān, 1999)

Province	Engineers (%)	Technicians (%)	Skilled (%)	Unskilled (%)	Total 1000 Women
Tehrān	8.5	4.9	28.4	58.3	19063
Khorāsān	3.9	1.3	34.3	60.5	7016
Gilān	2.6	0.7	42.6	54.2	5483
Esfahān	12.6	2.5	34.2	56.3	3283
East Āzerbāijān	5.1	3.5	19.7	71.7	2892
Ghom	3.6	1.2	39.4	55.8	269
Ghazvin	6.7	4.4	37.3	51.6	2151
Markazi	7.4	3.1	25.5	64.0	2030
Māzandarān	5.1	1.6	39.2	54.1	1888
Fārs	5.6	4.3	26.8	37.1	1581
Khoozestān	5.7	1.8	9.7	82.8	1525
West Āzerbāijān	1.4	0.2	9.5	89.0	1329
Kermān	6.8	1.7	25.2	66.3	1306
Semnān	3.5	1.7	18.5	76.2	1035
Golestān	3.1	0.4	8.1	88.5	916
Zanjān	3.6	0.9	41.3	52.4	876
Yazd	4.6	15.4	69.5	24.3	748
Hamedān	3.6	0.0	11.9	84.5	481
Booshehr	3.2	0.6	2.9	93.3	407
Lorestān	7.5	2.6	30.3	59.7	327
Sistān and Baloochestān	4.7	2.4	35.1	56.8	364
Kermānshāh	18.2	7.3	26.3	48.2	284
Kordestān	5.9	0.8	83.6	9.7	179
ChāhārMahāl and Bakhtiyāri	2.2	0.4	65.6	31.7	267
Hormozgan	6.7	0.6	48.6	44.1	245
Ilām	0.0	0.0	85.1	14.9	154
Ardabil	9.8	1.0	12.6	72.5	135
Kohkilooyé and BoyerAhmad	46.2	0.0	2.4	91.9	63

As shown in **Table 2**, although in all provinces the majority of women in industry are unskilled yet the differences among the provinces are noticeable. Booshehr and West Āzerbāijān have the highest share of unskilled women in their labour force. In general, the share of specialized women, i.e., technicians and engineers, in labour structure is not noticeable. Kermanshah and Esfahān respectively have the highest share of engineers in their total women's employment. The differences in provinces are partially due to the production function of industries (characteristic of the industry) allocated in the province and the rest can be explained by the degree of gender, social, and economic development.

RANKING INDUSTRIES ON THE BASIS OF WOMEN PARTICIPATION IN THE INDUSTRIAL SECTOR
(OCCUPATIONAL OR HORIZONTAL SEGREGATION)

By industry (or horizontal) segregation we mean more men are found in industry x and more women are found in industry. As mentioned earlier, about one third of women are employed in industrial sector. This sector currently is the most important one for occupation of unskilled women and in the future, as the industrial process continues, it would remain a potentially important sector in creating job for women. It means that the growth of this sector will have significant impact on women's employment. Nevertheless, because of the skewed distribution of women's employment in this sector, growth in different sectors will not have identical impact on women's employment. The latter will be discussed in the second part of paper.

With respect to **Table 3**, although women are employed in almost all of industries, nevertheless, only in two sectors, i.e., agriculture and textiles, more than half of the workers are women. Furthermore, in clothing and medical sectors more than 20% of workers are women. In radio-television and communication, plastic products, electricity, and papers and printing industries, women include 10-20% of the employees. In addition, in tobacco and cigarettes sectors 5-10% of the workers are women. This showed a much skewed gender distribution of the industry and severe horizontal job segregation in industry. As the data reveal, women are concentrated in a few labour-intensive jobs which complement housework. Most of these jobs are located in the

vicinity of their homes or are located very close to places where they live. We can recognize the gender duality of labour market, and its genuine shape, in industrial sector.

Table 3. Ranking Jobs on the Basis of Percentage of Women's Inclusion
(Extracted from Statistical Centre of Irān, 1999)

Total Sector Employment	Percentage of Women
Carpet	57.2
Medicine	23.4
Radio and Television	13.3
Plastic Products	13
Electricity	12.2
Paper Products	12.0
Printing	10.9
None Ferrous Minerals	6.1
Elastic Products	6.1
Tobacco	5.4
Textile	5.1
Industrial Machineries	4.3
Leather Shoes	4.2
Dairy	4.0
Vehicles	3.9
Pet Food	3.5
Cooper Products	3.2
Agricultural Machineries	3.04
Glasses	2.5
Shortening	2.63
Paper Paste	2.3
Aluminium Products	2.0
Petroleum Products	2.0
Manufacture	2.0
Wood Products	1.4
Metallurgies	1.3
Fertilizers	1.1
Cement	1.1
Construction Products	1.1
Sugar	0.76
Other Food Products	11.76
Other Chemical	10.0
Other Industrial	3.5

THE WOMEN DISTRIBUTION IN INDUSTRY ON THE BASIS OF SKILLS (OCCUPATIONAL OR VERTICAL SEGREGATION)

By occupational (vertical) segregation we mean men hold managerial positions and women hold lower level positions. In general, the majority of women employees in industry are unskilled labour;

nevertheless, there exist some differences among industries. **Table 4** summarized the results on the basis of industry.

Table 4. Distribution of Women in the Industry on the Basis of Skills
(Extracted from Table 2 and Statistical centre of Irān, 1987)

Group		Engineers	Technician	Skilled	Unskilled
Wood and its Products, Paper and Printing	Paper	41.2	0.0	17.6	41.2
	Printing	8.2	2.4	74.5	14.9
	Paper Products	6.1	2.0	25.2	66.6
	Manufactured Products	0.0	0.0	26.3	73.7
Cement and Glasses	Glasses and its Products	12.5	3.6	47.3	36.6
	Cement	60.0	13.3	6.7	30.0
	Others	1.6	0.64	18.1	79.7
Food, Products, Beverages, and Cigarettes	Dairy	35.5	10.8	18.2	40.0
	Sugar	26.1	30.4	30.4	13.0
	Shortening	28.6	5.8	25.7	40.0
	Pet Products	87.5	0.0	0.0	12.5
	Tobacco	4.6	2.0	22.6	76.2
	Other Food Products	6.9	2.1	16.4	74.6
Textile, Clothing, and Leather	Textile and Clothing	0.02	0.5	48.7	49.0
	Carpet	0.0	0.0	35.5	64.5
	Clothing	0.11	0.17	42.9	56.9
	Shoes, Skin, and Leather	2.9	1.7	60.1	35.3
Plastic Materials	Fertilizer and ...	33.3	40.0	10.0	27.0
	Plastic Materials	58.7	18.1	19.0	5.4
	Medicine and its Products	10.8	4.5	26.4	48.4
	Petroleum Products	30.4	8.9	28.6	32.1
	Elastic Products	6.5	1.5	25.9	66.2
	Other Chemicals	13.9	5.5	28.9	57.7
Ferrous and Non-Ferrous Metals	Iron and its Products	38.2	14.7	14.7	32.4
	Copper and its Products	18.1	8.3	13.9	6.9
	Aluminium and Non-Ferrous Metals	55.6	0.0	11.0	33.0
	Metal Construction	41.7	0.0	33.0	25.0
	Industrial Equipments	19.2	7.8	21.2	51.8
	Agricultural Equipments	53.3	6.7	0.0	40.0
	Radio and Television	3.7	4.3	40.1	51.2
	Motor Vehicles	4.8	6.0	45.1	32.9
	Others	16.8	10.1	34.2	39.9
	Electricity	3.6	3.4	31.6	61.4

1. Paper, other Printing Materials, and Wood Products

In production sub-sectors, i.e., wood products and paper products respectively, about 75% and 41.2% of the women workers are unskilled. In printing and wood products 74.5% of the women workers are semi skilled. The only exception is paper product industry. In this industry about 41.2% of the employees are engineers. The share of engineers in printing and paper product industries is noticeable.

2. Glasses, Cements, and Similar Industries

As **Table 4** shows, the distribution of women in this group is skewed. In cement sector around 60% of the women are engineers, while in glass industry the majority of workers are unskilled.

3. Food, Beverages, and Tobacco

In all industries of these groups, except sugar, most of the employees are unskilled. Furthermore, in the branch and pet foods (87.5%), and in the dairy and sugar sector (more than one fourth) of the workers are engineers.

4. Textile, Clothing, and Leathers

The majority of employees in this group are unskilled. Engineers and technicians include a small part of women workers.

5. Fertilizer

Most of the employees in this group are engineers and technicians. Nevertheless in other industries, the majority are skilled and unskilled labours.

6. Metal Industries

The majority of women employees in ferrous and non-ferrous and agricultural equipment industries are technicians and engineers. While in other sub-sectors of this group the majority are skilled and unskilled workers.

THE DISTRIBUTION OF WOMEN PARTICIPATION ON THE BASIS OF INDUSTRY OWNERSHIP

In 1990 the process of privatization in Irān was started. Therefore the share of state in industry has an increasing pattern. This change will affect the distribution of labour force in general and the distribution of women labour force in public and private sector. Nevertheless according to 1996 national census 40.25% of women employees in industrial sector are occupied in private sector and the rest are working in public sector. Only 1.04% is being employed in cooperative sector. It means that state employment dominates women employment in industry. Therefore with the progress of privatization; women's labour market will be seriously affected.

Table 5. Distribution of Women on the Basis of Industry Ownership
(Extracted from Table 1 and Statistical centre of Irān, 1987)

	Group	Cooperative	Private	Public
Wood and its Products, Paper and Printing	**Paper**	0.0	15.0	85.0
	Printing	0.1	47.2	53.8
	Paper Products	0.7	74.2	25.8
	Manufactured Products	2.2	45.5	52.3
	Group	2.3	47.8	52.2
	Paper	0.3	75.4	25.5
	Cement	0.6	30.6	69.4
	Others	1.4	73.2	26.8
Food Products, Beverages And Cigarettes	**Dairy**	1.6	42.8	57.2
	Sugar	1.6	58.4	41.6
	Shortening	0.0	62.6	37.4
	Pet Products	4.9	53.0	43.0
	Tobacco	0.0	0.0	100.0
	Other Food Products	2.6	65.3	34.7
Textile, Clothing, Leather	**Textile**	1.9	65.6	44.4
	Carpet	1.8	82.2	17.8
	Clothing	4.4	77.2	22.8
	Shoes, Skin, and Leather	0.3	47.2	52.8
Plastic Materials	**Fertilizer and …**	0.0	2.5	97.5
	Plastic Materials	0.1	85.2	14.8
	Medicine and its Products	0.5	59.0	41.0
	Petroleum Products	0.0	7.9	92.1
	Elastic Products	0.6	75.0	25.0
	Other Chemicals	0.5	64.5	45.5
Non-Ferrous Metals	**Iron and its Products**	0.5	19.8	34.1
	Copper and its Products	0.0	38.9	80.2
	Aluminium and Non-Ferrous Metals	0.7	47.3	61.6
	Metal Construction	5.6	73.3	52.7
	Industrial Equipments	0.6	66.7	26.5
	Agricultural Equipments	0.2	38.8	33.3
	Radio and Television	1.4	62.8	61.2
	Motor Vehicles	0.2	43.7	37.2
	Electricity	0.7	65.9	56.3

According to **Table 5**, the role of women in public, private, and cooperative sectors of the economy can be summarized as follows:

1. Food, Beverages, and Tobacco Industries

In this group 65.3% of women are engaging in private sector and the rest are in public sector. The occupation of women in cooperative sector is negligible (2.6%). The only exceptions are tobacco industry that are managed fully by state and diary and fish industries that are absolutely managed privately.

2. Wood Products, Paper, and Printing Industries

About ¾ of workers in paper products are employed in private sector. The role of cooperative sector is not considerable. In remaining industries of this group the role of public sector is noticeable**.**

3. Chemicals, Plastic, and similar Industries

With exceptions of fertilizer and petroleum, the majority of workers are employed in private sector. Only a small percentage of employees work in cooperative sector.

4. Textiles

Excluding shoes, leather, and animal skin industries, most of the employees in this group are working in private sector. Similar to other groups, the share of cooperative sector is negligible. The only exception is clothing industry.

5. Glasses, Cement, and similar Industries

In this group with exception of cement, all employees are engaged in private sector.

SUMMARY

In Irān while sex segregation by industry widely varies within the provinces, the overall level of segregation is not higher than the average for the country. In other words, regional segregation in Irān over the past two decades has decreased. The industry segregation has decreased from 0.47 in 1992 to 0.39 in 2000. But the occupational segregation has increased from 0.18 in 1992 to 0.22 in 2000 (World Bank household and labour force survey). It is noticeable that in 2000, occupational segregation (In West Africa 0.23, East Asia and the Pacific 0.32, Central and Eastern Europe 0.26, the remaining parts of Europe 0.40, and America 0.45) was higher than that of Irān. But occupational segregation in South Asia was 0.2, which was lower than Irān. In all MENA countries occupational segregation (0.34) was greater than Irān. The only exception was Tunisia (0.19) and Morocco (0.13) (Data for MENA from case studies; Data from rest of the world from Sayed and Tzannatos, 1998).

Occupational segregation leads to over supply of workers in women dominated industries and undersupply in men dominated industries. Therefore it causes lower wages for the woman-based industries and higher wages in men-based industries. It will accelerate gender wage gap. This situation will result in economic inefficiency and have adverse effect on economic growth. Moreover, it affects women socioeconomic status including power, skill and earning. Finally it limits women opportunity for job mobility and career progress and reduces the women's possibilities for autonomy at work.

If occupation is selected with regard to family consideration, the high presence of female in an industry makes that industry to be related to family responsibilities. Therefore, women concentration in those industries reinforces a gender division of labour. In that case the labour force decisions are influenced by family responsibilities. Furthermore it tends to decrease labour force participation of women. Similar to the world wide reports, in Irān women are employed in a narrower range of occupations than are men (International Labour Organization, 2003).

In the second part of the paper the job creation ability of each industry will be examined. In other words, we want to know that which industry creates more job opportunity for women within the existing labour market structure. This helps us to evaluate the role of different growth strategies on one hand, and the impact of privatization process on women employment in Irān, on the other. That can help policy makers to adjust women labour market. For this purpose, we will have a brief review of input-output technique. The adjusted employment coefficient of industries will be calculated on the basis of public-private and cooperative sectors, and skilled-unskilled labour. To do so an input-output technique has been applied.

METHODOLOGY

As mentioned earlier, the distribution of women in industrial sector is skewed. It means that women are concentrated in a limited number of industries. Therefore, the ability to create jobs in general, and for women in particular, is highly affected by industrial growth strategies. This paper aims to examine the impact of sectoral growth on creating job for women (Sheibāni and Afshāri, 2001). For this purpose an input –

output framework is applied. This paper concludes that growth in industry and agriculture has the highest job creation potentials for low educated (for illiterate and primary school level) women. For women with junior high school degree, health sector has the highest job creation ability. While for educated women (high school diplomas and above that) education and health are the most important sectors. With the present segmented labour market the progress in privatization process creates more jobs for women with education less than high school level, but does not bear significant impact for high school diplomas and more highly educated women.

The purpose of model developed here is to assess the employment performance of different industries. A model was used for linking input-output analysis to women employment in industry (Afshāri, 2001a). A Leontief production function is applied. The main characteristics of this production are as follows (Afshāri, 2001a):

1. Constant returns to scale
2. Only one technology per industry
3. Different technology for different industries

Due to difference in nature of production functions, employment coefficient (job creation per unit of output) of the sectors is not the same. Sectors with high labour coefficient are called labour intensive sectors. In this paper a 78*78 input-output table prepared by Statistical Centre of Irān were applied (Statistical Centre of Irān, 1987) to calculate direct labour coefficients. Then coefficients are adjusted for gender, skilled labour, and type of ownership.

The following production function is applied to each sector.

$$y_j = \min (K_j / u_j) \qquad (1)$$

It follows that the value of primary input (labour) required for producing one unit of jth good is given by:

$$U_j = K_j / y_j \qquad (2)$$

$$V_j = L_j / y_j \qquad (3)$$

y_j = total output of the jth industry
K_i = capital
L_j = labour
U_j = capital used per unit of output
V_j = labour used per unit of output

j = industries (1, 2, 3 … 35)

In order to adjust labour coefficient for women the following equation were applied.

$$V_{Fj} = V_j \times F_j \qquad (4)$$

V_{Fj} = women labour coefficient in sector j
F_j = the share of women in sector j

To find the adjusted women labour coefficient on the basis of skill the following formula were applied.

$$V_{Fji} = V_{Fj} \times S_i \qquad (5)$$

V_{Fji} = adjusted women labour coefficient on the basis of skill
S_i = the share of women in i^{th} skill
i = skills (1, 2, 3 … 9) as following:
    1: High ranking officials and managers
    2: Specialized women
    3: Technicians
    4: Secretaries and etc.
    5: Clerks and service workers
    6: Skilled workers in agriculture
    7: High skilled workers in industry
    8: Workers in charge of office affairs
    9: Unskilled labour

The adjusted women labour coefficients on the basis of ownership (private, public, and cooperative sectors) are calculated as the following.

$$V_{FjPr} = V_{Fj} \times Pr_j$$
$$V_{FjPu} = V_{Fj} \times Pu_j$$
$$V_{FjCo} = V_{Fj} \times Co_j \qquad (6)$$

V_{FjPr} = women labour coefficients in private sector
V_{FjPu} = women labour coefficients in public sector
V_{FjCo} = women labour coefficients in cooperative sector
Pr = the share of women in private sector
Pu = the share of women in public sector
Co = the share of women in cooperative sector

A COMPARATIVE STUDY OF THE DIRECT JOB CREATION POTENTIALS OF INDUSTRIES (WHICH SECTOR CREATES MORE JOBS)

The increasing pattern of women participation in labour market in the last two decades has caused high women unemployment in Irān. Whereas the general unemployment rate in Irān was 14.2%, but for women's unemployment the figure was 19.45%. The unemployment rate for educated women was 22.92%, a figure which was higher than the average unemployment rate (Statistical Centre of Irān, 2001:81). So creating job is the most important government concern. Therefore, it is essential to recognize the industries that could create more jobs.

Table 6. Labour Coefficient in Industrial Sector (Women-Total)
(Extracted from Table 3 and Statistical centre of Irān, 1987)

Sectors	Women Labour Coefficient	Rank	Total Labour Coefficient	Rank
Carpet	0.028	5	0.05	69
Clothing	0.066	3	0.229	22
Medicine	0.03721	4	0.159	45
Radio and Television	0.023	17	0.178	40
Plastic Products	0.00247	23	0.19	33
Electricity	0.0362	4	0.297	15
Paper Products	0.004	10	0.094	60
Printing	0.023	6	0.211	29
None Ferrous Minerals	0.005	14	0.243	18
Elastic Products	0.0108	27	0.178	40
Tobacco	0.01166		0.216	26
Textile	0.00964	12	0.189	34
Industrial Machineries	0.00925	13	0.215	37
Leather Shoes	0.0042	14	0.1	59
Dairy	0.00972	11	0.023	74
Vehicles	0.00399	16	0.114	64
Pet Food	0.001575	29	0.045	71
Cooper Products	0.00438	16	0.137	50
Agricultural Machineries	0.0054416	13	0.179	38
Glasses	0.0045	15	0.18	35
Shortening	0.0035611	18	0.124	53
Paper Paste	0.01166	8	0.216	25
Aluminium Products	0.0017	28	0.085	64
Petroleum Products	0.0021	26	0.104	56
Steel	0.0225	25	0.173	41
Wood Products	0.0027	21	0.138	48
Wood Industry	0.00382	14	0.273	17
Fertilizers	0.00233	24	0.212	28
Cement	0.003	19	0.273	17
Construction Products	0.00249	22	0.226	23
Sugar	0.0866	2	0.114	55
Other Food Products	0.00399	20	0.025	73
Other Ferrous and Non Ferrous Products	0.01324	7	0.217	24

In order to evaluate the role of sectoral growth (growth strategies) on job creation for women, the direct labour coefficient was adjusted. The result of applying **Equation (1)** to the 78×78 Iranian input-output table shows that the most labour intensive sub-sector of industry ranked 15 among 78 sectors of economy. **Table 6**, column (1) ranks industrial sector on the basis of labour intensity. The coefficient shows the amount of increase in labour expenses caused by one unit increase in sector's value added. If wage average in all sectors is assumed identical, then higher coefficient means more labour intensity.

Comparing Columns (1) and (2) of **Table 6**, shows that women labour coefficients are quite different from average labour coefficients. It means that women's unemployment is highly affected by the growth strategies. Furthermore, the impact of various economic growth strategies on creating job for men and women is not the same. Textiles, sugar and cube sugar, medical instrument and electricity have the highest coefficient respectively. On the other hand, pet foods, aluminium, nonferrous metals, plastic products, petroleum products, and fertilizers have the lowest coefficients respectively. Because of the existence of different skills and consequently different wages in different sector, we had to adjust the coefficient by skill.

The Adjusted Women Labour Coefficient on the Basis of Skill

The **Equation (5)** was applied to adjust women labour coefficient on the basis of skill. The findings are summarized in **Table 7**. The first row of the table shows that, for engineers, the highest coefficients belong to sugar and cube sugar, chemical products, non ferrous metals, and medicine respectively. The second row of the table reveals that sugar and cube sugar, chemicals and electricity respectively have the highest coefficient for technicians. As the skilled workers are concerned, the textiles, sugar, and cube sugar, printing activities and medicine products have the highest coefficients. Finally for unskilled women; textiles, diary, and clothing have the highest ability to create jobs.

Table 7. Labour coefficient in Industrial Sector on the Basis of Skills
(Extracted from Table 4 and Statistical centre of Irān, 1987)

Sectors	Engineers	Technicians	Skilled	Unskilled
Carpet	0	0	0.01775	0.0325
Clothing	0.00007	0.000112	0.02831	0.755
Medicine	0.00402	0.00168	0.01354	0.1801
Radio and Television	0.00659	0.00765	0.07139	0.00911
Plastic Products	0.00143	0.00045	0.00047	0.000133
Electricity	0.00130	0.00123	0.0145	0.0225
Paper Products	0.00069	0.00023	0.00264	0.00751
Printing	0.00189	0.00055	0.01714	0.00343
None Ferrous Minerals	0.00616	0.00037	0.0141	0.011055
Elastic Products	0.00071	0.00016	0.00284	0.00719
Tobacco	0.000536	0.00023	0.00416	0.008891
Textile	0.000002	0.00005	0.00177	0.00472
Industrial Machineries	0.00067	0.0004	0.0061	0.00159
Leather Shoes				
Dairy	0.00297	0.00105	0.00301	0.003888
Pet Food	0.00138	0	0	0.0002
Cooper Products	0.0031	0.00036	0.00088	0.0003
Agricultural Machineries	0.0029	0.00037	0.0047	0.0021
Glasses	0.0225	0.0064	0.001	0.06588
Shortening	0.000932	0.00019	0.0851	0.0013
Paper Paste	0.00206	0	0	0.00206
Aluminium Products	0.00095	0	0.00019	0.00056
Petroleum Products	0.00023	0.00019	0.0006	0.00067
Steel	0.00086	0.00033	0.0003	0.00073
Wood Products	0	0	0.00135	0.0028
Wood Industry	0	0	0.00074	0.00206
Fertilizers	0.00078	0.00093	0	0.00063
Cement	0.00208	0.0004	0.0002	0.0006
Sugar	0.02261	0.02634	0.0634	0.01126
Other Food Products	0.00021	0.00006	0.0005	0.00224
Other Ferrous and Non-Ferrous Products	0.00104	0	0.00082	0.00062
Chemicals	0.01446	0.00572	0.00289	0.006

The Adjusted Women Labour Coefficient on the Basis of Industry Ownership

The Iranian women have tended to participate heavily in public sector employment. One apparent reason is that the public sector profession has been considered more appropriate or acceptable for women. Moreover, the work condition, including maternity leave benefits and working hours are more favourable than those of the private sector. Although the women have benefited from public sector jobs in the past, because of the privatization process that started since the last

decade, those benefits will not be as significant for the next generation of female workers. Furthermore, as the demographic pyramid moves toward school age, there will be a declining demand for teachers which is considered to be the most important job for educated women. Therefore, the role of industrial growth strategy is very important for creating jobs for women.

Table 8. Labour Coefficient on the basis of Industry Ownership
(Extracted from Table 1 and Statistical centre of Irān, 1987)

Sectors	Cooperative		Private		Public	
	Women	Total	Women	Total	Women	Total
Carpet	0.00005	0.00055	0.000804	0.0402	0.0116	0.216
Clothing	0.0015	0.0177	0.00192	0.0108	0.01503	0.522
Medicine	0.00008	0.0009	0.022	0.0938	0.0163	0.0652
Radio and Television	0.00019	0.00304	0.01455	0.1094	0.00879	0.0661
Plastic Products	0.00006	0.00019	0.021	0.1619	0.00365	0.0281
Electricity	0.00008	0.0022	0.0243	0.1995	0.0123	0.1013
Paper Products	0.00008	0.00066	0.00858	0.0698	0.0042	0.1836
Printing	0.00053	0.0049	0.011	0.101	0.012	0.1101
None Ferrous Minerals	0	0	0.1076	0.174	0.00397	0.0651
Elastic Products	0.00001	0.00119	0.0081	0.1335	0.00272	0.0445
Tobacco	0	0	0	0	0.0116	0.216
Textile	0.00018	0.0036	0.00632	0.1242	0.00428	0.0839
Industrial Machineries	0.00002	0.00182	0.00616	0.143	0.00308	0.0716
Leather Shoes	0.00001	0.00003	0.0017	0.0534	0.00222	0.0528
Pet Food	0.00032	0.00242	0.00075	0.0324	0.00068	0.0194
Cooper Products	0.00002	0.00037	0.00567	0.0567	0.0027	0.0844
Agricultural Machineries	0.00002	0.00036	0.00211	0.0695	0.0033	0.1096
Glasses	0.00001	0.00065	0.0081	0.1335	0.0028	0.0459
Dairy, Shortenings	0.00006	0.000107	0.00204	0.0776	0.00122	0.0464
Aluminium Products	0.00032	0.0006	0.00198	0.0472	0.0009	0.0448
Petroleum Products	0	0	0.004	0.0083	0.0193	0.967
Steel	0.00019	0.00087	0.00039	0.06658	0.0018	0.1388
Wood Products	0.00444	0.00317	0.00174	0.1242	0.002	0.1425
Fertilizers	0	0	0.000166	0.0053	0.00227	0.2067
Cement	0.00005	0.0063	0.00092	0.083	0.00209	0.1895
Construction Products	0.0014	0.0127	0.00183	0.1661	0.00066	0.599
Sugar	0.00026	0.0021	0.0023	0.066	0.00036	0.0474
Other Food Products	0.000037	0.00065	0.00067	0.0215	0.00192	0.0037
Other Ferrous and Non-Ferrous Products	0.00001	0.00323	0.00967	0.1588	0.00354	0.0581
Other Industrial Product	0.00006	0.00129	0.00617	0.0681	0.0017	0.485
Dairy	0	0	0.0031	0.01	0.00041	0.0132
Other Chemicals	0.00002	0.00052	0.00039	0.06658	0.0047	0.0473
Wood Industry	0	0	0.00174	0.1242	0.002	0.1425

Table 8 shows the adjusted women labour coefficients for public sector. It shows the amount of job created for women as a result of 100 unit increase in state-owned industries. The results indicate that textiles, electricity, tobacco products have the highest labour coefficients.

Table 8 indicates women's labour coefficient in private-owned industries. Electricity, medicine, plastic products, and similar industries, in addition to printing, reveal the highest coefficients respectively. It means that growth strategies putting priority on these sectors create more jobs for women.

Since cooperative industries do not play a significant role in the economy, women's labour coefficients in these sectors are very small. Nevertheless, in six industries (copper, shortening, petroleum products, fertilizer, paper, tobacco, and cigarettes) the labour coefficients are zero. Textiles (with exception of shoes), and wood products respectively have the highest coefficients. See **Table 8**.

Given the existing labour structure, feminization of the Iranian industry private sector can be attributed largely to the development of textiles and clothing industries. So promoting growth in these industries that traditionally have been opened to female participation, such as textiles, creates more jobs for the unskilled labour. In the longer run, jobs that have been traditionally closed to women can be opened to them, increasing the female share in industry.

Allocating a large role for the public sector, state control and market interventions, inward looking trade policies, and unfavourable investment climate all acted to limit the scope and dynamism of the private sector. These policies shaped the nature of female employment in Irān. While women have relatively good opportunities in the public sector, they have some disadvantages in private sector. They work mostly in low wage jobs and there is less potential for their future promotion.

CONCLUDING REMARKS AND SUGGESTIONS

We mentioned earlier that industry is the second important sector for women occupation. About one third of working women are employed in the industrial sector. With regard to job segregation in the Iranian labour market, the women distribution in industrial sector in not

homogeneous. Women are occupied in jobs which complement the house work. These jobs are located in labour intensive sectors with low wages and low productivity. For example, 88.7% of industrial women workers engaged in textiles, and 5.3% in clothing industries. The rest, that is 6%, occupied other industries. The majority of women employed in industrial sector have education below secondary level. And, 92.5% are working in private sector. Although with the existing structure, growth in textiles and clothing sector have the highest job creation potential and decreases women unemployment rate for those with education below the secondary schooling. Progress gained in the privatization process that started after 1990, increased the number of jobs in the industry.

Because of the accelerating pace which is increasing the pattern of women holding higher education in science and technology, and given the continuing and speeding process of privatization, especially in industry, the need for change in the structure of industrial sector labour market in order to absorb more qualified (better educated) women, is becoming more necessary. The challenge is greater, especially in terms of creation of job opportunities for women in private sector. If the private sector is not able to absorb greater numbers of well educated female labour force, women's unemployment will increase. This discourages women to look for work. Thus, policies geared towards increasing women participation in the labour force must strongly focus on implementing measures designed for the reduction of gender discrimination in the private sector.

In conjunction with the above change, facilitating the increase of women's participation in the labour market will have to involve reviewing and reforming all labour market regulations that ban women's entry into the private sector. These regulations consist of eliminating the distortions that increase the cost of women employees compared to men (such as provision of child care and the like) and eliminating regulations that limit women access to certain jobs (for example women can not take the position of a judge) or regulations that restrict women's working hours. Such reforms may include introducing new legislations in areas such as part time employment,

informal work condition, self employment and social security and insurance benefits.

The overall environment should be made flexible enough to create jobs that use a vast variety of talents and educational background offered by women as well as by men. Such an environment must make labour force participation attractive to women, including work arrangements that are compatible with women's family roles. Furthermore that environment must make the hiring of women more attractive to employers.

The emergence of such a change is not possible without a change in traditional gender paradigm. This paradigm is based on the recognition that men and women differ biologically and these biological differences determine their social functions, and that men and women carry out complementary responsibilities within the family: they have different but equitable rights associated with those responsibilities and so on. The traditional gender paradigm pervades much of the law that shapes the everyday, customary, law pertaining to women. Its elements, for instance, are centrality of the family, establishing men as the sole breadwinner and the unequal power holder of the private sphere. Today, families in Irān need flexibly to adapt to the changing economic circumstances. Few families are affluent enough to allow women to play only the traditional role of homemaker. Most of the labour laws in Irān are supportive of a greater economic role for women. Laws stipulate that women should receive equal compensation for work of equal value. They offer generous maternity leave benefits and protect women against job termination in case of marriage and pregnancy. Yet even where the laws are favourable, the traditional paradigm exerts a formidable influence on the actual behaviour in the labour market. Wage discrimination and sex-based job segregation remain. As do wide gaps between the intent of the family laws and their effects in practice. A host of labour market regulations do discriminate against women. They include those governing non-wage employment benefits which affect the families of working women, and restrict women's hours and their type of work. These regulations ultimately limit the flexibility of women workers and their potential to find jobs in private sector.

Yet, in the short run, reform in regulations on the one hand, and establishing institutional support for equal opportunities, on the other, will partially fill the traditional gender paradigm. Most of the job creation opportunities made both for men and women will inevitably appear in the private sector. A broad reform is needed to move toward more integration into the world economy, to diversify economies from the excessive weight of energy sector and to create a climate conductive to private sector investment and employment creation.

REFERENCES

1. *Afshāri, Zahrā*. 2001a. ***The Economics of Planning*** (In Persian). Tehrān, Irān: SAMT Publisher.

2. *Afshāri, Zahra*. 2001b. "The Gender Segmentation of Labour Market in Irān" (In Persian). ***Pazhoohesh Zan 1***(1):35–54.

3. *Afshāri, Zahrā*. 2002. "Women Employment and Family Welfare" (In Persian). ***Pazhoohesh Zan 1***(2):69–86.

4. *Barro, Robert J.*, and *John Lee*. 2000. ***International Data on Educational Attainment*** CID Working Paper 42. Cambridge, MA: Center for International Development (CID), Harvard University.

5. *Blau, Francine D.* 1998. "Trends in the Well-being of American Women, 1970–1995." ***Journal of Economic Literature 36***(1):112–165

6. Dex, Shirley. 1985. ***The Sexual Division of Work: Conceptual Revolutions in the Social Sciences***. Brighton, UK: Wheatsheaf.

7. *Humphries, Jane*, and *Jill Rubery*. 1984. "The Reconstruction of the Supply Side of the Labour Market: The Relative Autonomy of Social Reproduction." ***Cambridge Journal of Economics 8***(4):331–346.

8. *Garibaldi, Pietro.* 1998. "Job Flow Dynamics and Firing Restrictions." ***European Economic Review 42***(2):245–275.

9. *Garibaldi, Pietro*, and *Paolo Mauro*. 1999. ***Deconstructing Job Creation***. IMF Working Paper No. 99/109. Washington, DC: International Monetary Fund (IMF).

10. *Hartmann, Heidi.* 1976. "Capitalism, Patriarchy, and Job Segregation by Sex." ***Signs 1***(3):137–169.

11. *Heckman, James J.* 1974. "Shadow Prices, Market Wages, and Labor Supply." ***Econometrica 42***(4):679–694.

12. *Heckman, James J.* 1978. "A Partial Survey of Recent Research on the Labor Supply of Women." ***American Economic Review 68***(2):200–207.

13. International Labour Organization. 1996. ***Economically Active Population, 1950–2010***. Geneva, Switzerland: International Labour Office.

14. International Labour Organization. 2003. ***Time for Equality at Work***. Retrieved 2005 (http://www.ilo.org/dyn/declaris/DECLARATIONWEB.DOWNLOAD_BLOB?Var_DocumentID=1558).

15. *Lantican*, *Clarita P.*, *Christina H. Gladwin*, and *James L. Seale, Jr.* 1996. "Income and Gender Inequality in Asia: Testing alternative theories of development." ***Economic Development and Cultural Change 44***(2):235–263

16. *Pagán, José A.*, and *Miren Ullibarri*. 2000. "Group Heterogeneity and the Gender Earnings Gap in Mexico." ***Economía Mexicana 9***(1):23–40.

17. Pinchbeck, Ivy. 1930. ***Women Workers and the Industrial Revolution, 1750–1850***. London, UK: George Routledge.

18. *Sayed, Haneen*, and *Zafiris Tzannatos*. 1998. "Sex Segregation in the Labour Force." Pp. 302–313 in ***Women in the Third World: An Encyclopedia of Contemporary Issues*** edited by *Nelly P. Stromquist*. New York, NY: Garland Publishing.

19. *Sheibāni, Ebrāhim*, and *Zahrā Afshāri*. 2000. "The Impact of Sectoral Growth on Women Employment in Irān" (In Persian). ***Tahghighāt-é Eghtesādi 59***:36–45.

20. Statistical Centre of Irān. 1987. ***Input-Output Table of Irān*** (In Persian). Tehrān, Irān: Planning and Budget Organization.

21. Statistical Centre of Irān. 1996. ***The Statistical Yearbook*** (In Persian). Tehrān, Irān: Planning and Budget Organization.

22. Statistical Centre of Irān. 1999. ***The Detailed Result of 1996 Census*** (In Persian). Tehrān, Irān: Planning and Budget Organization.

23. Statistical Centre of Irān. 2001. ***Annual Statistics*** (In Persian). Tehrān, Irān: Statistical Centre of Irān.

24. *Tilly, Louise A.*, and *Joan W. Scott*. 1978. ***Women, Work, and Family***. New York, NY: Holt, Rinehart and Winston.

25. United Nations. 2003. ***World Population Prospects: The 2002 Revision***. New York, NY: Population Division, Department of Economic and Social Affairs, United Nations.

26. World Bank. 2003. ***Global Development Finance 2003: Striving for Stability in Development Finance***. Retrieved 2005 (http://www.worldbank.org/prospects/gdf2003/)

Authors

Zahrā Afshāri, Ph.D.,
Department of Economics, Al-Zahrā University
zafshari@alzahra.ac.ir

Professor of Economics, Al-Zahrā University, Tehrān, Irān.
She received her PhD from Indiana University, Bloomington, Indiana,
USA. She is the author of 8 books on economics of development and
on planning. She has written more than 50 articles for domestic and
foreign journals

Imān Sheibāni, M.Sc.,
Ph.D. Student, Department of Engineering, University of Michigan