Investigating different factors influencing women's economic activities

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C H R O N I C L E	A B S T R A C T
	There are many studies on how to share women's involvement in economic activities and what sectors of industries could contribute more to their job involvement. This paper presents an empirical investigation to learn how economic growth in service industry, agricultural industry as well as other industries could contribute on economic growth. The study uses vector error correction to study the relationship between value added and women's job opportunities in Iran over the period 1951-2003. In industrial sector, the results of the survey indicate that an increase of one percent on growth domestic product (GDP) and wage increases 4.47% and reduces 1.95 % of women's employment, respectively. In addition, an increase of one percent on GDP and wage increases 0.24% and reduces 0.25 % of women's employment in service industry, respectively. Finally, an increase of one percent in GDP increases wage by 4.47% and reduces women's employment by 1.95%, respectively.

1. Introduction

Nowadays, women's employment plays essential role on market development and economic growth. Women are accounted for half of the society in all communities and in many business activities, women are considered as primary sources of job opportunities (Martin & Roberts, 1984; Martikainen, 1995; Hakim, 2004). Huber and Stephens (2000) performed a study on women's employment, and the social democratic service state and reported an interactive impact of women's labor force participation and social democratic governance on public delivery of welfare state services. Pettit and Hook (2005) investigated the structure of women's employment in comparative perspective. They analyzed social survey using multi-level modeling methods to synthesize structural and institutional accounts for variation in women's employment. They reported through demographic characteristics that there was some consistency in their relationship with women's employment across various countries, yet there was significant variation in the impact of demographic characteristics on women's employment in the world.

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Women's employment may lead to negative consequences such as late time marriage, pregnancy and other family oriented issues (Floge, 1985). Women may prefer not to give birth because of the fear of losing their jobs. In such circumstances, society may face old generation with bad consequences and government ends up having insufficient funds for pension plans (Cohen & Blanchi, 1999). Nevertheless, there is no doubt that some women could act as entrepreneur in society and can contribute to economy by building innovate ideas.

Xavier et al. (2012), for instance, explored women entrepreneurs who made a change from salaried employment to ownership of small and medium businesses. They used a convenience sample comprising 153 women started their own businesses and concentrated on; first, the factors that cause women to abundant employment for business ownership. They also investigated their personal and entrepreneurial characteristics and the existing challenges these women faced during the transition from salaried employment to business ownership. The main factors detected to have spurred women to leave employment for business ownership were a need to reach personal growth, independence and the economic payoff. Passion for the business, listening and communication skills, and self-discipline were among the most common personal skills.

The main entrepreneurial skills included confidence, creative thinking in problem solving, leadership, being efficient and effective in executing plans, being analytical, entrepreneurial and business knowledge, balancing skills between personal and business life, and flexibility. There were also some challenges faced by the respondents such as shortage of professional staff, shortage of general staff, issues of development and growth, financial constraints due to high overheads and a insufficient consultation advice from experts.

2. The proposed study

This paper presents an empirical investigation to learn how economic growth in service industry, agricultural industry as well as other industries could contribute on economic growth. The study uses vector error correction to study the relationship between value added and women's job opportunities in Iran. The proposed study of this paper uses the following regression analysis,

$$LnFLF_t = \alpha_0 + \alpha_1 Ln\,FLF_{t-1} + \alpha_2 LnVaAdC_t + \alpha_3 Lnw_t + \alpha_4 LnNEW_t + \alpha_5 LnMLF_{t-10}, \tag{1}$$

where $LnFLF_t$ and $LnFLF_{t-1}$ represent logarithm of female labor force at time t and $t-1$, respectively. In addition, $LnVaAdC_t$ represents logarithm of value added constant price at time t, Lnw_t represents logarithm of wages at time t, $LnNEW_t$ denotes the logarithm of the number of educated women and finally and finally, $LnMLF$ is associated with male labor force. The coefficients, $\alpha_i\ i=0,\ldots,5$, are estimated through statistical vector error correction technique. The proposed study gathers historical data over the period 1951-2003. The study uses two well-known tests of Akaike Information Criterion (AIC) and Schwarz Information Criterion (SC) to find out whether the data are stationary or not and Table 1 shows details of our survey.

Table 1
The summary of Akaike Information Criterion and Schwarz Information Criterion test

Sector	Interval	AIC	SC
Agriculture	(1-1)	-13.85	-11.87
Industry	(1-1)	-11.29	-9.31
Service	(1-1)	-14.75	-13.35

The study also uses Johansen (1991) test as a likelihood method for the analysis of cointegration in VAR models with Gaussian errors, seasonal dummies, and constant terms. This test helps use find likelihood ratio test of cointegration rank and find the asymptotic distribution of the test statistics. Tables 2-4 demonstrate the results of the implementation of this test.

Table 2
The summary of Johansen's cointegration test for agricultural sector

Number of cointegration	Eigenvalue	Likelihood	Critical value	
			At 95%	At 99%
Zero	0.86	127.96	94.15	103.18
At least one in longterm	0.65	71.11	68.52	76.07
At least two in longterm[*]	0.55	41.25	47.21	54.46

Table 3
The summary of Johansen's cointegration test for Industrial sector

Number of cointegration	Eigenvalue	Likelihood	Critical value	
			At 95%	At 99%
Zero	0.89	179.18	94.15	103.18
At least one in longterm	0.79	118.78	68.52	76.07
At least two in longterm	0.71	75.64	47.21	54.46
At least three in longterm	0.56	41.88	29.68	35.65
At least four in longterm	0.50	19.54	15.41	20.04
At least five in longterm[*]	0.02	0.72	3.76	6.65

Table 4
The summary of Johansen's cointegration test for Service industry

Number of cointegration	Eigenvalue	Likelihood	Critical value	
			At 95%	At 99%
Zero	0.79	101.77	68.52	76.07
At least one in longterm	0.56	57.29	47.21	54.46
At least two in longterm	0.50	34.49	29.68	35.65
At least three in longterm*	0.35	14.81	15.41	20.04

As we can observe from the results of Table 2, Table 3 and Table 4, there are, at least, two, five and three long term relationships for agricultural, industrial and service industries, respectively. Next, we present details of our findings.

3. The results

In this section, we present details of our findings on testing the effects of GDP on women's employment in different sectors of industrial, agricultural and service industries.

3.1 The effects of GDP on women's employment in agricultural industry

We first present details of our findings on testing the effects of GDP growth on women's employment in agricultural industry as follows,

$$\ln FLFAG = 236.28 + 6.26\ln(VAAGC) - 1.78\ln(WAG) - 1.19\ln(NEW) - 17.94\ln(MLF) - 3.33DAG$$

t-student	5.55	-5.13	-3.63	-4.21	-4.28

As we can observe from the results of regression analysis, the results of the survey indicate that an increase of one percent in growth domestic product (GDP) increases wage by 6.26% (t-value = 5.55, Sig. = 0.000) and reduces women's employment by 1.78% (t-value = 5.13, Sig. = 0.000), respectively. In addition, women's educational backgrounds influence positively on their employment, $\alpha = 1.19$ (t-value = -3.63, Sig. = 0.000). In this industry, women and men could replace their positions and an increase of one percent on men's employment could reduce women's employment by 17.94% (t-value = -4.21, Sig. = 0.000).

3.2 The effects of GDP on women's employment in service industry

Next, we present details of our results on testing the effects of GDP growth on women's employment in service industry as follows,

$$\ln FLFSER = 6.68 + 0.24\ln(VASER) - 0.25\ln(WSER) + 0.17\ln(NEW) + 0.28\ln(MLFSER)$$

| t-student | 3.1 | -4.1 | 23.21 | 2.58 |

As we can observe from the results of regression analysis, the results of the survey indicate that an increase of one percent in growth domestic product (GDP) and wage increases 0.24% (t-value = 3.1, Sig. = 0.000) and reduces 0.25% (t-value = 4.1, Sig. = 0.000) of women's employment, respectively. In addition, women's educational backgrounds influence positively on their employment, α = 0.17, t-student = 23.2. In this industry, women and men could replace their positions and an increase of one percent on men's employment could reduce women's employment by 0.28% (t-value = 2.58, Sig. = 0.000).

3.3 The effects of GDP on women's employment in industrial sector

Finally, we present details of our results on examining the impacts of GDP growth on women's employment in industrial sector as follows,

$$\ln FLFINDUS = 219 + 4.47\ln(VAINDUSTC) - 1.95\ln(WINDUS) + 1.08\ln(NEW) - 15.74\ln(MLFFINDUS) - 2.3DINDUS$$

| t-student | 3.64 | -5.69 | 8.77 | -4.44 | -4.85 |

The results of regression analysis indicate that an increase of one percent in GDP and wage increases 4.47% (t-value = 3.64, Sig. = 0.000) and reduces 1.95% (t-value = -5.69, Sig. = 0.000) of women's employment, respectively. In addition, women's educational backgrounds influence positively on their employment, α = 1.08, (t-value = 8.77, Sig. = 0.000). In this industry, women and men could replace their positions and an increase of one percent on men's employment could reduce women's employment by 15.74% (t-value = -4.44, Sig. = 0.000). In this regression analysis, there is a dummy variable, which describes the effects of 8-year war.

4. Conclusion

In this paper, we have presented a time series analysis to study the effect of GDP growth on women's employment in three sectors including service, industrial and agricultural industries. Using over 50-year time series data, the survey has concluded that the increase on GDP could positively influence on women's employment in three sectors of industry. In addition, an increase on wages had negative effect on women's employment in all three sectors. Finally, the study has concluded that men could replace women's job and vice versa.

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