Structural Transformation in Women Employment: A Study on SAARC Nations

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ABSTRACT

Women are one of the most dynamic forces on the globe, known for their determination and perseverance. Everyone witnesses the competency of women in various fields, and their desire to show their equality with men – in whatever field they enter into, be it in primary teaching or NASA science exploration or managing enterprises all over the globe. While we still see the presence of women employees in all the sectors of the economy, it is interesting to study the trends in their employment. With the help of World Bank Data for 29 years from 1991 to 2019, this study attempted to examine whether there is a structural transformation in women employment, and whether there is a significant variation in women employment across sectors in SAARC nations. Using trends analysis and Analysis of Variances, the study found that there is indeed a paradigm shift in women employment in SAARC countries (except Pakistan) from Primary Sector to Secondary and Tertiary Sectors. The study also found that there are statistically significant variations in women employment across sectors in SAARC members. For trends analysis purpose, this study considered the whole data for 29 years into three parts of 10 years which is based on convenience. Future researches may overcome this anomaly and find some scientific base to conduct this transformational analysis.

Keywords: SAARC Study, Structural Transformation, Women Employment.

JEL Codes: **J62, J21, R23, O53**

1.0 Background of the study

The United Nations' estimates (2019) put World Population as of 2019 to be around 7.7 billion (i.e. 770 Crores in India usage) of which approximately 137.5 crores are Indians (according to Worldometers' estimate for Feb. 2020). Of these, World Bank estimates (2018) for India predict 48% Females, so it works to an approximate 66 Crores, i.e. 0.66 billion Women in India. With almost equal strength by numbers, and with higher longevity (according to WHO estimates) by six to eight years, Women are a force to reckon in employment. Worldometers (2020) estimates the median age of India population is 28.4 years.

Traditionally, there are three sectors of the economy, viz., the Primary Sector (agriculture and allied activities), the Secondary Sector (industry and related activities), and the Tertiary Sector (activities related to services). Matt Rosenberg (2020) points out that the Services sector is further divided into two sub-sectors by name Quaternary Sector (which denotes the occupations that involve intellectual dispositions, i.e. information- and knowledge-based services) and Quinary Sector (activities pertaining to human resources and hospitality).

Women's participation in various activities (be it economic or social or religious) is observed all over the world in general, in India particular. In the recent three to four decades, especially after the emergence of Women's Liberation Movement (Women's Lib), their role in all the sectors of the economy are pronounced. Owing to a gradual increase in Female education level in the country, we are bound to see changes in the women employment – a migration from unskilled to semi-skilled to skilled jobs.

A shift in employment from one economic sector to another economic sector is what is known as 'structural transformation'. According to Herrendorf et al. (2014), "Structural transformation refers to the reallocation of economic activity across the broad sectors agriculture, manufacturing and services." There is a likely shift in employment, especially of women, is noticed; a migration from primary to secondary and more particularly tertiary sector is observed. It would be interesting to empirically verify this phenomenon with the help of data. Specifically, this study intends to examine the sectoral shifts in women employment in South Asian Association for Regional Cooperation (SAARC) countries, viz., Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka in the recent three decades of time. Meenakshisundaram & Kannan (2020) did a study on SAARC

Nations with reference to India's Balance of Trade. Upinder Sawhney (2010) studied growth and structural changes in SAARC economies through certain indicators of the economy.

2.0 Purpose and Methods of the study

The study intends (i) to evaluate the comparative proportions in Women employment to examine the structural transformation in SAARC countries; and (ii) to analyse whether there is a statistically significant variation in sector-wise employment of women across SAARC nations. In order to attain these purposes, data pertaining to 29 years from 1991 to 2019 in respect of women employment in all the eight SAARC countries and the five BRICS nations from the official website of World Bank were gathered, analysed using Microsoft Excel and SPSS packages. Analytical tools such as mean, standard deviation, coefficient of variation, compounded annual growth rate, trend analysis, correlation analysis and Analysis of Variance (ANOVA) were used in this study. In order to examine the first objective, decadal changes for the first two and the next two decades of data were computed and analysed, along with the changes over the entire study period of 29 years. For the second objective, the post hoc analysis using Tukey HSD measure was computed and results were analysed and interpreted.

3.0 Analysis and Discussion

The analyses and related discussions presented in this section of the paper are in two parts, viz., (i) Structural Transformation in women employment in SAARC countries, and (ii) Analysis of variations in women employment across SAARC members. The first part presents and analyses the structural transformation in women employment – the shift in women employment from primary sector to services sector in most of the countries of the SAARC group. The second part examines whether there is a significant variation in women employment among the SAARC members – in respect of primary, secondary and tertiary sectors.

3.1 Structural Transformation in Women Employment in SAARC countries

Primary Sector (also known as Agriculture Sector) refers to any industry involved in primary production involving extraction and collection of natural resources, such as farming, hunting, fishing, mining and forestry. (Chand, S.N., 2006). Secondary Sector (also known as Industry Sector) involves industries which manufacture finished product that are either directly used by consumers, or used in further manufacturing or used in construction activities. Normally, secondary sector gets the raw materials from primary sector, processes them and makes them

fit for consumption within the country or exporting to outside the country. The third of the 3-sector economic model is the Tertiary Sector (also known as Services Sector). This involves the production (rather rendering) of services, that is, intangible goods. Production of Information (that is useful for analysis and decision-making) is currently regarded as the fourth sector, viz., the Quaternary Sector. Human Resources personnel and hospitality services are considered as another major part of services sector and named as the Quinary Sector.

Table 1: SAARC Women Employment in Primary Sector (1991 to 2019)

SAARC Countries	***Decadal Average of Women Employment in Primary Sector***			*Decadal Change (1) [1991-2000 to 2001-2010]*	*Decadal Change (2) [2001-2010 to 2011-2019]*	*3-Decadal Change (3) [1991-2000 to 2011-2019]*
	1991-2000	*2001-2010*	*2011-2019*			
Afghanistan	80.951	77.368	56.590	-4.43%	-26.86%	-30.09%
Bangladesh	84.237	70.500	62.776	-16.31%	-10.96%	-25.48%
Bhutan	77.502	71.336	66.148	-7.96%	-7.27%	-14.65%
India	75.239	70.414	58.820	-6.41%	-16.47%	-21.82%
Maldives	8.916	7.096	2.868	-20.42%	-59.58%	**-67.83%**
Nepal	87.858	83.837	80.994	-4.58%	-3.39%	-7.81%
Pakistan	65.810	69.135	73.443	5.05%	6.23%	**11.60%**
Sri Lanka	45.571	40.672	31.623	-10.75%	-22.25%	-30.61%

Source: Computed based on World Bank Data

Table 1 provides information on decadal average of women employment in primary sector, by taking the 10-years period (1991 to 2000, 2001 to 2010, and 2011 to 2019). An observation of the table reveals that except Pakistan (which shows an increase in three decades) all other SAARC nations show a clear decline in women employment in primary sector. While Nepal clocked a small decline of about 8%, with Bhutan about 15%, India registered a 22% decline, Maldives recorded the highest (with 68% decline in women employed in primary sector).

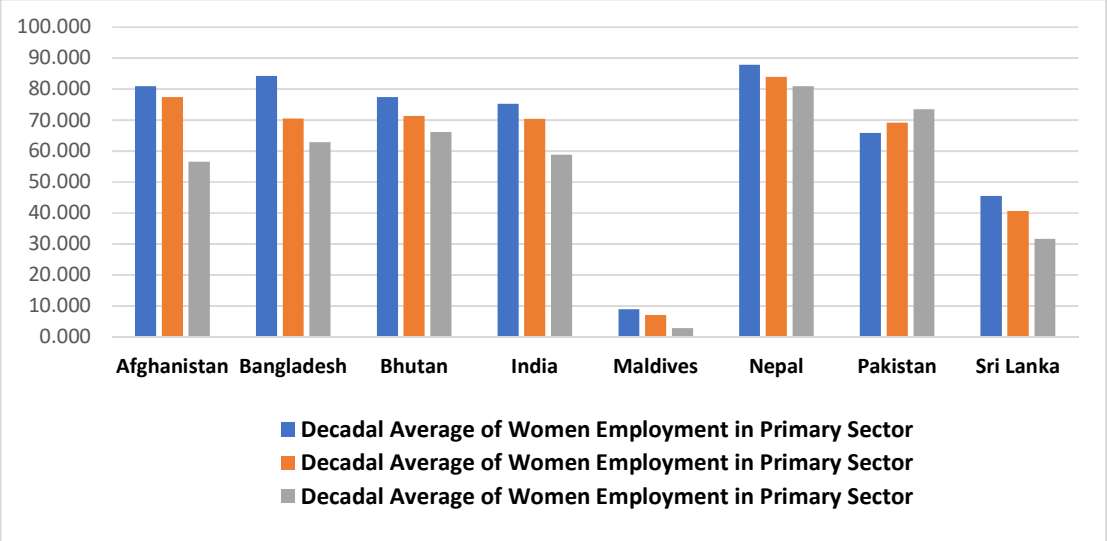


Chart 1: Transformation in Women Employment in Primary Sector

Pictorial representation in Chart 1 clearly depicts the change in women employment in primary sector among the SAARC nations. As seen in the Chart, Afghanistan, Bangladesh, India, Maldives, and Sri Lanka showed a steep decline, while Bhutan and Nepal showed moderate decline in the reported period. Pakistan showed a gradual increase in women employed in primary sector in the study period.

Table 2: SAARC Women Employment in Secondary Sector (1991 to 2019)

SAARC Countries	***Decadal Average of Women Employment in Secondary Sector***			*Decadal Change (1) [1991-2000 to 2001-2010]*	*Decadal Change (2) [2001-2010 to 2011-2019]*	*3-Decadal Change (3) [1991-2000 to 2011-2019]*
	1991-2000	*2001-2010*	*2011-2019*			
Afghanistan	8.460	9.718	16.062	14.86%	65.29%	**89.85%**
Bangladesh	7.837	11.491	12.107	46.62%	5.36%	54.48%
Bhutan	5.620	5.949	7.791	5.84%	30.97%	38.62%
India	11.645	14.564	17.412	25.06%	19.56%	49.52%
Maldives	39.111	32.382	17.100	-17.20%	-47.19%	-56.28%
Nepal	3.163	5.469	6.357	72.91%	16.23%	**100.97%**
Pakistan	15.743	14.088	13.067	-10.51%	-7.25%	-17.00%
Sri Lanka	25.387	25.076	17.851	-1.23%	-28.81%	-29.68%

Source: Computed based on World Bank Data

Table 2 presents information pertaining to women employment in secondary sector in three decades across SAARC countries. Nepal and Afghanistan showed huge transformation (101% and 90% respectively) in women employment in secondary sector, Bangladesh and India showed a high trend in migration of women employees towards industries (with 54% and 50% respectively). Maldives recorded a pronounced decline (56%) in women

employment in secondary sector, while Sri Lanka and Pakistan also followed the negative trends in women in industries (with 30% and 17% respectively). Chart 2 portrays similar trends graphically.

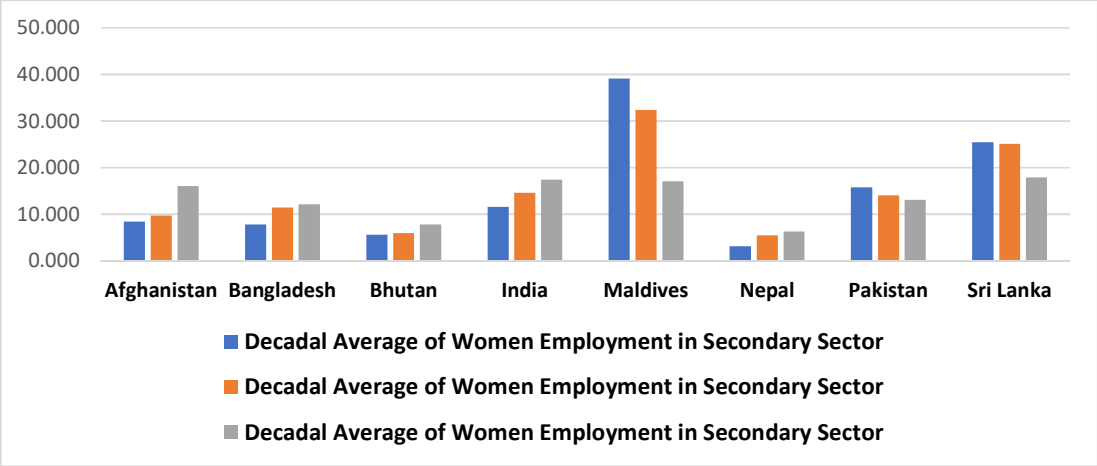


Chart 2: Transformation in Women Employment in Secondary Sector

Table 3: SAARC Women Employment in Tertiary Sector (1991 to 2019)

SAARC Countries	***Decadal Average of Women Employment in Tertiary Sector***			*Decadal Change (1) [1991-2000 to 2001-2010]*	*Decadal Change (2) [2001-2010 to 2011-2019]*	*3-Decadal Change (3) [1991-2000 to 2011-2019]*
	1991-2000	*2001-2010*	*2011-2019*			
Afghanistan	10.588	12.914	27.348	21.97%	111.77%	158.29%
Bangladesh	7.926	18.009	21.856	127.20%	21.36%	175.74%
Bhutan	16.878	22.716	24.693	34.58%	8.71%	46.30%
India	13.115	15.023	22.512	14.54%	49.85%	71.65%
Maldives	51.973	60.523	73.902	16.45%	22.11%	42.19%
Nepal	8.979	10.695	12.650	19.10%	18.28%	40.87%
Pakistan	18.447	16.777	13.490	-9.05%	-19.59%	-26.87%
Sri Lanka	29.042	34.253	42.014	17.94%	22.66%	44.67%

Source: Computed based on World Bank Data

Chart 3: Transformation in Women Employment in Tertiary Sector

Table 3 (and graphical presentation in Chart 3) presents the trends in women employment in Tertiary Sector in three decades in SAARC nations. Accordingly, Bangladesh and Afghanistan showed huge changes (176% and 158% increases respectively in women employment in Services Sector), India registered a 72% increase in 29 years. Pakistan is the only SAARC member to record a negative growth in women employed in services sector, while the remaining four nations clocked a fair growth (ranging from 40% to 46%).

Country by country analysis is presented across three sectors in the following tables. The in-cell charting technique available in Microsoft Excel is used to present a pictorial understanding of the trend (increase or decrease) of movements in each of the economic sectors.

Table 4: Transformation in Women Employment in Afghanistan (1991 to 2019)

AFGHAN WOMEN in	*1991-2000*	*2001-2010*	*2011-2019*	TREND
Primary Sector	**80.95**	**77.37**	**56.59**	
Secondary Sector	**8.46**	**9.72**	**16.06**	
Tertiary Sector	**10.59**	**12.91**	**27.35**	

Source: Computed using World Bank Data

Table 4 presents the structural transformation in women employment in Afghanistan over a period of 29 years. The trends indicate gradual reduction in women in primary sector, and a steep increase in women employed in secondary and tertiary sectors.

Table 5: Transformation in Women Employment in Bangladesh (1991 to 2019)

BANGLA WOMEN in	*1991-2000*	*2001-2010*	*2011-2019*	TREND
Primary Sector	**84.24**	**70.50**	**62.78**	
Secondary Sector	**7.84**	**11.49**	**12.11**	
Tertiary Sector	**7.93**	**18.01**	**21.86**	

Table 5 shows the picture for variations in trends for women employed in all the three sectors. The trends indicate paradigm shift in women employment in Bangladesh from primary sector to secondary and tertiary sectors.

Table 6: Transformation in Women Employment in Bhutan (1991 to 2019)

BHUTAN WOMEN in	*1991-2000*	*2001-2010*	*2011-2019*	TREND
Primary Sector	**77.50**	**71.34**	**66.15**	
Secondary Sector	**5.62**	**5.95**	**7.79**	
Tertiary Sector	**16.88**	**22.72**	**24.69**	

Table 6 depicts the scenario of reduction in women employment in primary sector, and a parallel increase in secondary and tertiary employment in Bhutan. This indicates the structural transformation in women employment in Bhutan in the three decades studied.

Table 7: Transformation in Women Employment in India (1991 to 2019)

INDIA WOMEN in	*1991-2000*	*2001-2010*	*2011-2019*	TREND
Primary Sector	**75.24**	**70.41**	**58.82**	
Secondary Sector	**11.65**	**14.56**	**17.41**	
Tertiary Sector	**13.12**	**15.02**	**22.51**	

Table 7 shows how India performed in Women Employment in the recent 29 years period. The trends clearly present the picture of decline in primary sector employment and a gradual pick-up in secondary and tertiary sector employment for Indian Women. This indicates the structural transformation happening in women employment in India during the study period.

Table 8: Transformation in Women Employment in Maldives (1991 to 2019)

MALDIVES WOMEN in	*1991-2000*	*2001-2010*	*2011-2019*	TREND
Primary Sector	**8.92**	**7.10**	**2.87**	
Secondary Sector	**39.11**	**32.38**	**17.10**	
Tertiary Sector	**51.97**	**60.52**	**73.90**	

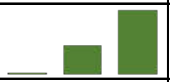
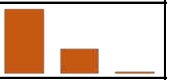
Table 8 shows the trends in Maldives. Women employees in Maldives showed very high preference for Services sector, which is indicated for a gradual fall in employment in primary and secondary sectors and a rise in tertiary sector among Maldivian Women in the study period.

Table 9: Transformation in Women Employment in Nepal (1991 to 2019)

NEPAL WOMEN in	*1991-2000*	*2001-2010*	*2011-2019*	TREND
Primary Sector	**87.86**	**83.84**	**80.99**	
Secondary Sector	**3.16**	**5.47**	**6.36**	
Tertiary Sector	**8.98**	**10.69**	**12.65**	

Table 9 indicates a sectoral shift in women employment in Nepal as well. The women employees in primary sector show a gradual fall, and the women employees in industry and services sectors show continuous increase in the study period.

Table 10: Transformation in Women Employment in Pakistan (1991 to 2019)

PAKISTAN WOMEN in	*1991-2000*	*2001-2010*	*2011-2019*	TREND
Primary Sector	**65.81**	**69.14**	**73.44**	
Secondary Sector	**15.74**	**14.09**	**13.07**	
Tertiary Sector	**18.45**	**16.78**	**13.49**	

Pakistan, as seen in Table 10, presents a different picture altogether. Pakistani women seem to favour employment in primary sector, and their employment in secondary and tertiary sectors are showing a gradual decline over the period of time. Pakistan also indicates a structural transformation but in the reverse order.

Table 11: Transformation in Women Employment in Sri Lanka (1991 to 2019)

SRI LANKA WOMEN in	*1991-2000*	*2001-2010*	*2011-2019*	TREND
Primary Sector	**45.57**	**40.67**	**31.62**	
Secondary Sector	**25.39**	**25.08**	**17.85**	
Tertiary Sector	**29.04**	**34.25**	**42.01**	

Table 11 presents the trends in Sri Lankan women employment. Accordingly, the decreasing trends are observed both in case of primary and secondary employment of women in Sri Lanka, while tertiary sector seems to be picking up quite consistently over the period of time. Structural transformation of a different nature, then, is observed in the case of Sri Lanka.

4.2 Analysis of Variations across SAARC Nations in Women Employment

In order to examine whether there is a significant variation in women employment in each of the three sectors in SAARC nations, one-way ANOVA was used. For that purpose, three null hypotheses are formulated thus:

$H_0$1: There is NO significant variation across SAARC nations in respect of women employment in Primary Sector.

$H_0$2: There is NO significant variation across SAARC nations in respect of women employment in Secondary Sector.

$H_0$3: There is NO significant variation across SAARC nations in respect of women employment in Tertiary Sector.

Table 12: Results of ANOVA on Women in Primary Sector in SAARC

ANOVA	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	130243.80	7	18606.26	398.52	**0.000**
Within Groups	10458.12	224	46.69		
Total	140701.92	231			

Table 13: Results of Post hoc analysis (using Tukey HSD) of Women employment in Primary Sector

SAARC	N	Subset for alpha = 0.05			
		1	2	3	4
Maldives	29	6.411			
Sri Lanka	29		39.553		
India	29			68.479	
Pakistan	29			69.326	
Bhutan	29			71.852	

Afghanistan	29			72.155	
Bangladesh	29			72.840	
Nepal	29				84.341
Sig.		1.000	1.000	0.232	1.000

In respect of Women in Primary Sector, a one-way ANOVA was conducted which revealed a significant variation across SAARC nations as to percentage of women employed in services sector at the $p<0.01$ level [$F (7, 224) = 398.52$, $p = 0.000$]. Post hoc comparisons using the Tukey HSD test indicated that the women in tertiary sector in Nepal, Sri Lanka and Maldives are significantly different from other SAARC members, while that of Bangladesh, Pakistan, Afghanistan, Bhutan and India are showing no such differences. Hence, it can be concluded that there is a significant variation in women employment in Primary Sector across SAARC nations.

Table 14: Results of ANOVA on Women in Secondary Sector in SAARC

ANOVA	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	14180.87	7	2025.84	83.202	**0.000**
Within Groups	5161.87	212	24.35		
Total	19342.74	219			

In respect of Women in Secondary Sector, a one-way ANOVA was conducted which revealed a significant variation across SAARC nations as to percentage of women employed in services sector at the $p<0.01$ level [$F (7, 224) = 83.202$, $p = 0.000$]. Post hoc comparisons using the Tukey HSD test indicated that the women in tertiary sector in Sri Lanka and Maldives are significantly different from other SAARC members, while that of Nepal and Bangladesh showed little differences among them, the data pertaining to Pakistan, Afghanistan, Bhutan and India are showing no differences among them. Hence, it can be concluded that there is a significant variation in women employment in Secondary Sector across SAARC nations.

Table 15: Results of Post hoc analysis (using Tukey HSD) of Women Employment in Secondary Sector

SAARC	N	Subset for alpha = 0.05				
		1	2	3	4	5
Nepal	25	4.693				
Bangladesh	29	6.407	6.407			
Pakistan	29		10.422	10.422		
Afghanistan	25			10.511		
India	25			14.386		
Bhutan	29			14.441		
Sri Lanka	29				22.941	
Maldives	29					29.960
Sig.		0.904	0.058	0.057	1.000	1.000

Table 16: Results of ANOVA on Women in Tertiary Sector in SAARC

ANOVA	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	56,848.31	7	8,121.19	237.06	**0.000**
Within Groups	7,673.90	224	34.26		
Total	64,522.21	231			

Table 17: Results of Post hoc analysis (using Tukey HSD) of Women Employment in Tertiary Sector

SAARC	N	Subset for alpha = 0.05				
		1	2	3	4	5
Nepal	29	10.710				
Bangladesh	29		15.726			
Pakistan	29		16.333			
Afghanistan	29		16.592			
India	29		16.689	16.689		
Bhutan	29			21.317		
Sri Lanka	29				34.865	
Maldives	29					61.727
Sig.		1.000	0.998	0.057	1.000	1.000

In respect of Women in Tertiary Sector, a one-way ANOVA was conducted which revealed a significant variation across SAARC nations as to percentage of women employed in services sector at the $p<0.01$ level [$F(7, 224) = 237.056$, $p = 0.000$]. Post hoc comparisons using the Tukey HSD test indicated that the women in tertiary sector in Nepal, Bhutan, Sri Lanka and Maldives are significantly different from other SAARC members, while that of Bangladesh, Pakistan, Afghanistan and India are showing no such differences. Hence, it can be concluded that there is a significant variation in women employment in Tertiary Sector across SAARC nations.

5. Findings and Conclusion

Increasing number of women in higher education and employment and the sustained efforts of various governments, especially of Indian Government, in empowering women prompted the need to study whether there is a paradigm shift in women employment over a long period of 29 years. The study took official data on women employment from the website of World Bank for all the SAARC member-countries from 1991 to 2019 (both inclusive). To analyse the trends in employment, the complete study period is broken into three decadal parts and the changes in every decadal part is computed in all the three sectors (primary, secondary, and tertiary) for all the eight nations. Except for Pakistan, all other SAARC nations indicated a sectoral shift from primary sector towards secondary and tertiary sectors. Only Pakistani

women showed their preference for agri-sector over secondary and tertiary assignments. Analysis of variance tests indicated significant variations in women employment across three sectors in all the nations studied.

5.1 Research Limitations and Scope for Further Research

The researchers preferred to use 'decadal parts' of the entire study period for analysing the shifts in employment. There is no evidence to back up this idea of breaking the whole period into 10-years' parts, even though the final results indicate a paradigm shift in women employment over the study period. Future researches in this area may take efforts to overcome this anomaly and find a more suitable scientific base for this analysis.

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