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ISRAELI WOMEN'S INCOME IN THEIR THIRTIES

Note by the Central Bureau of Statistics, Israel¹

Supporting paper

I. INTRODUCTION

1. Most people's careers peak in their Thirties, and Forties. The formal data demonstrates that on average, women's income is in its peak during these years; however, men earn high incomes at these ages but they peak at their Fifties. Also, the number of hours worked is the highest at these ages (See Appendix 1).
2. The Mincer earnings function developed several decades ago reveals that an individual's age and years of schooling positively affect their income².
3. A new study by Golan and Yitzhaki demonstrating a new tool for measuring monotonic relationships (invariant sign relationships) between two gender variables, shows that although the relationship between age and income is positive, there are age ranges wherein women's income and men's income decline. This phenomenon among women occurs particularly in their Thirties.³ Based on the 2005 income survey, Golan and Yitzhaki assumed that this decline in income could be a result of the period of fertility in a woman's life and her family changes during that period⁴.
4. This study aims to examine what factors influence the increase or decrease in women's incomes during their thirties. The findings of Golan and Yitzhaki will be tested on the 2008 income survey. The data will be examined with regard to the employee population, using the LMA curve.

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² Age will have a positive effect at the middle range of the working age scale. At the lower end of the scale, young people are expected to learn and accumulate experience, while at the upper end of it, income decreases when getting old. In addition, age is somewhat an indicator of work experience and tenure that are not included in the earning function. For additional information see: J. Mincer (1974). *Schooling, Experience and Earnings*.

³ Yolanda Golan and Shlomo Yitzhaki (2009). *Monotonic and Non-Monotonic Relationships in the Labor Market*.

⁴ The data was found in cross sectional research and not in longitudinal research.

II. THE LMA CURVE⁵ (LMA- LINE OF INDEPENDENCE MINUS ABSOLUTE CONCENTRATION CURVE)

5. The LMA curve is a working tool that enables the researcher to assess monotonic relationships between two variables, according to Gini regression function; i.e. to what extent the correlation between two variables is of the same sign (positive or negative) within defined values and maintains the same sign when various monotonic transformations are applied. The area confined under the curve is the covariance of Y and F(x).

6. Although use of the tool is simple, the explanation of how it is applied is complex. The following brief explanation describes the work with this tool and its features.

7. Working with this tool requires selection of two variables, where the independent variable is shown on the X-axis as a cumulative percentage of the population, and the dependent variable is shown on the Y-axis as a cumulative value of Y, sorted in ascending order of the X variable. When the relationship between the two variables is found above the X-axis within the positive area, the relationship between the two variables is positive and the curve formed between them is concave. When the curve formed is convex and below the X-axis, the relationship is negative.

8. When the curve fluctuates and intersects the X-axis intermittently, the relationship lacks unequivocal direction, and the function between the variables is non-monotonic, where X explains Y. Even when the curve is occasionally convex and occasionally concave, but located above the X-axis, this means that the relationship between the variables is on the whole positive, but there are areas in which the relationship is negative.

III. FOCUSING THE RESEARCH POPULATION BY USING AN LMA CURVE – THE RELATIONSHIP BETWEEN AGE AND INCOME

9. To evaluate the cross sectional relationship between age and monthly income, the 2008 income survey by the Central Bureau of Statistics was selected⁶. The survey examines the fluent incomes of individuals and households. In this study the paid employee's incomes were selected. An employee in the income survey is defined as a person who had some income from wages or in the three months preceding the enumerator's visit. The survey examines about 20,000 employees each year, and the assumption is that results generated by such a large sample are statistically significant.

10. Golan and Yitzhaki investigated the income behavior among all employees aged 25-70, working a full-time job (over 30 hours per a week) in the 2005 Income Survey. They found that the incomes of employed women decrease within the age bracket of 30-47, then increase and then decrease again. Men's incomes also decrease, but between the ages of 33-70.⁷

11. In the initial stage, the findings of Golan and Yitzhaki were tested on the 2008 Income Survey in order to find and to focus the research population in this paper. The employee's population in the 2008 income survey included sample of 3,115 men and 3,156 women.

⁵ This section gives a brief description of the tool. For a more elaborate explanation, see the article by Golan and Yitzhaki.

⁶ Central Bureau of Statistics (2009). Income Survey 2007. Chapter C.

⁷ Golan and Yitzhaki (2009). Page 31.

Diagram 1. LMA Curve of Monthly Income Log⁸ and Age, by Gender, 2008



12. In 2008, as can be seen in Diagram 1, total income for both women and men increases with age – both curves are concave. The increase in income among men is more significant than among women. Among women aged 31-45, nearly totally consistent with the findings of Golan and Yitzhaki, there is a decline in women's incomes. Here too, ranges are discerned: between 31-34 years of age there is a decline in income, at age 35 there is an increase, between the ages of 36-39 again a drop, followed by an increase at ages 40-41, and then again a decrease in the 41-45 years range. Thus, on the whole, the age bracket of 31-45 years shows a very small increase in incomes, while most of the intermediate ranges marked by decreased income.

13. Checking those same parameters among all employees working in jobs of all scopes (full time and part time) yielded the same findings, even though the decline in income among women had already started at age 30. From here stems the selection of the 30-45 year old population as the research population for investigation in this paper.

14. The aim of this study is to find what happens to women's income in this age bracket and what relationships lead to a change in women's incomes in this age bracket. For purposes of comparison and a reference group, the data for men in the same age bracket will be presented here, although this study is meant to focus on women's income.

IV. CHARACTERISTICS OF EMPLOYED WOMEN AGED 30-45

15. The State of Israel is marked by its heterogeneity; that is, the existence of various population groups with different customs within the country. The predominant ones, ultra-Orthodox Jews and Arabs, account for separately 10% each, of the Israeli population. These groups are characterized by a traditional religious cultural system that preserves women's traditional roles. This is the reason that when examining working women aged 30-45, not many

⁸ The income LOG was selected here, as is customary for the earnings function in labor economics, in order to minimize the effect of extreme observations. Also see Mincer page 84.

will appear from those two groups, since from the outset they are not defined as participants in the labour force.⁹

16. The rate of participation of married women in the labour force is quite high, diminishing with an increase in the number of children. Also, the higher the woman's level of education, the higher her rate of participation in the labour force.

Table 1. Selected Characteristics of Employees and Population, by Gender, Percentages, 2008 (processed from the income survey)

	Population aged 30-45		All employees aged 30-45	
	men	women	men	women
Sample size	4,233	4,922	3,115	3,156
Total population	714,085	737,666	519,544	466,538
	percentages		percentages	
Total population	100.0	100.0	100.0	100.0
Academic	31.6	34.6	34.7	42.8
Persons with children	75.5	83.5	76.6	81.2
Persons without children	24.5	16.5	23.4	18.8
Married	79.5	78.1	80.9	75.6
Married with children	73.3	73.0	74.5	70.0
Not married with children	2.2	10.5	2.1	11.2
Average number of children for married people	2.8	2.8	2.6	2.5

17. As detailed in Table 1 the population being investigated in this study is composed of 3,156 women representing a total of some 467,000 women in the labour force, 43% of them academics, most of them married and most of them have children.

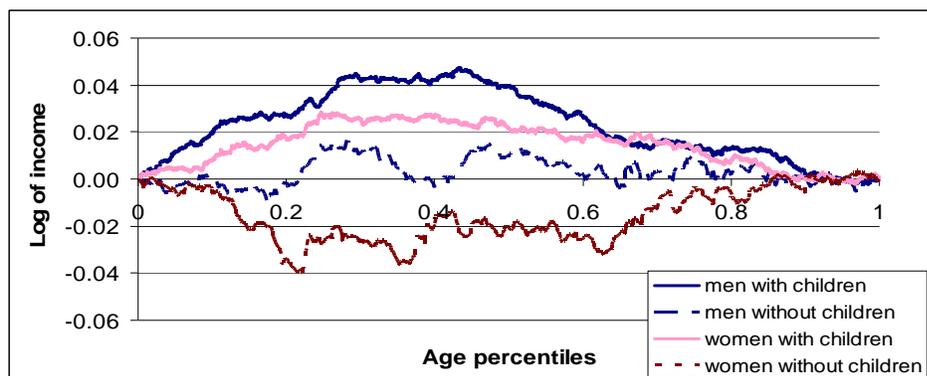
18. According to Table 1 the number of children among the working women is relatively lower than in the entire population. These findings underscore the contention that the characteristics of the working population as a whole, and of the women in particular, differ in composition and nature from the characteristics of the entire women's population in general and the characteristics of the non-working women's population in particular.

V. LMA CURVE FOR EMPLOYEES AGED 30-45 BY VARIOUS CHARACTERISTICS

19. As explained at the beginning, the uniqueness of the curve lies in presenting monotonic relationships and demonstrating the direction of the correlation. This section presents several central runs having strong relationships according to the LMA curve. The prominent finding is the difference in the correlation signs, upon isolation of the family connection; i.e. the existence of children and women's marital status.

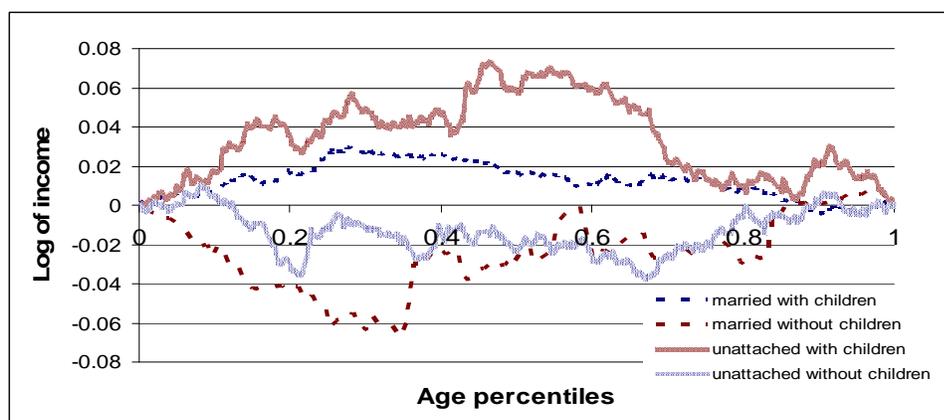
⁹ A participant in the labour force is defined as an individual who has actively looked for a job for at least 12 months before the surveyor's visit. For an elaborate explanation of the definition, see Publication no. 1377 of the Central Bureau of Statistics, page 30.

Diagram 2. LMA Curve of Monthly Income Log and Age, for Employees Aged 30-45 with or without Children, by Gender, 2008



20. It can be seen that the correlation between children and monthly income is positive for both, women and men, i.e., that when there are children, the income of men and women alike, increases with age. The opposite case, in which there are no children, appears to have a negative connection to women's incomes, whereas, among men, the lack of children does not appear to be so negatively correlated to income.

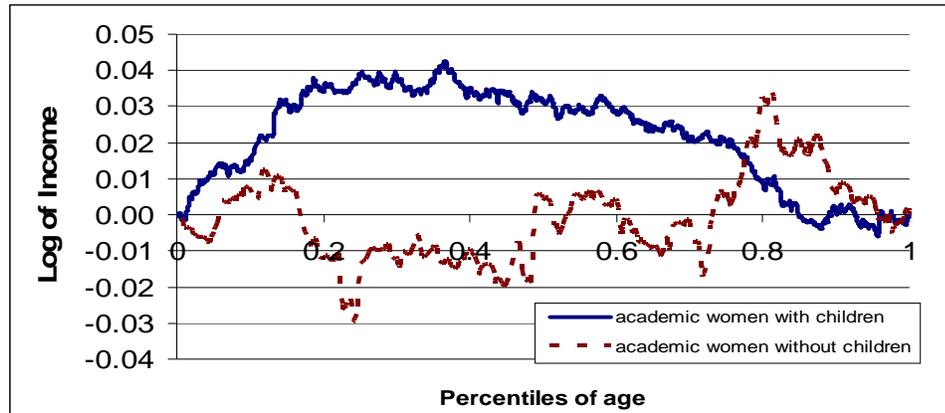
Diagram 3. LMA Curve of Monthly Income Log and Age, for Employed Women Aged 30-45 with or without Children, by Family Status, 2008



21. In Diagram 3 the positive effect of children on both married and unattached women with children is prominent¹⁰. In the case of unattached women with children, the area of the curve is positive but marked by numerous movements. Among unattached women without children, there is a convexity of the curve below the X-axis, meaning that the correlation is negative.

¹⁰ Unattached denotes women that are divorced, widows, separated or single.

Diagram 4. LMA Curve of Monthly Income Log and Age, for Employed Academic Women Aged 30-45 with or without Children, 2008



22. This diagram demonstrates a positive relationship between age and monthly income among academic women with children. Among academic women without children, the relationship between age and income appears to have no unequivocal direction, though on the whole it is perceived to be negative.

VI. CONCLUSIONS AND SUMMARY

23. The aim of the study was to examine the relationships that relate to the decline in the income of women aged 30-45. (From the findings, it emerges that men's income also declines within the same age bracket, but more moderately). It is apparent that women's family attachments and commitments tie them to the labour force; and therefore the income of women with children rises in this age group.

24. From an analysis of women's employment behavior it can be said that employed women are those that from the outset participate in the labour force and family bonds strengthen their connection with the labour force.

25. Women who participate in the labour force remain loyal to their workplace also after childbirth, as shown by Toledano in her article on post-childbirth employment¹¹. Toledano studied the behavior of working mothers before and after childbirth and found that post-childbirth leave from work is temporary, with the majority of mothers returning to work during the year following childbirth, most of them even to the same employer. The central finding in her study, which substantiates the conclusions raised here, is that the prospects of returning to work immediately after giving birth increase with the number of children. Toledano contended that childbirth does not lead to a change in the employment behavior of a mother who has already been in the labour force from the outset¹².

26. Loyalty to the labour force ties the women to their workplace and therefore their job mobility is subsequently low, due to family and childcare concerns. Hence, staying on at the same workplace, resulting in increased seniority, leads to an increase in their incomes. This can also be used to explain the difference between women with or without children, particularly that between single women and academic women with or without children.

¹¹ Esther Toledano, (2007). Employment of women after giving birth.

¹² Ibid, page 5.

27. The employment flexibility and job mobility of women without children or family is higher. Unattached women show a greater tendency to leave the workplace to advance themselves, due to fewer interpersonal and family commitments. This conclusion is corroborated by the social survey finding that more than 80% of men aged 30-45 willingly leave a job to advance themselves, compared to only 60% of women who leave jobs for the same reason (see Appendix 2). Women without family attachments are more flexible; hence, more can be expected to be found at home; due to a greater tendency to change jobs for their own career benefits, and a lesser tendency to compromise.

28. These findings are also corroborated by article by Shuki Hendels, who investigated job mobility of women during times of crisis; One of the conclusions being that women are less mobile in the labour force and tend to fill stable positions¹³.

29. The conclusion emanating from this is that the commitment of women to family relationships causes them to stay in the labour force and to hold on to their jobs, and thus an increase in their earnings is observed with age (and apparently also with increased seniority and work experience at the workplace).

30. Still left unanswered is the question of ranges of income decline within the 30-45 years age bracket. Income declines are seen also with men and not only with women. The assumption being that apparently work force parameters and priorities of both sexes not associated with the family unit are responsible for causing a decrease in income in this age group. In the LMA function runs carried out in this study (which examined the following variables: industry and occupation on the single-digit level, education, age of youngest child and religion) no significant factor could be tied to the reduction of income in this age bracket. Perhaps the variables in the income survey used for this study are insufficient, and there is a need for additional variables such as work experience, variables characteristic of longitudinal or time use surveys, or a different data source with a higher number of observations.

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APPENDIX

