DEMOGRAPHIC STRUCTURE AND PRIVATE SAVINGS: SOME EVIDENCE FROM EMERGING MARKETS

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Agenda

1 Abstract

2 Introduction

3 Data

4 Empirical Results

5 Conclusion

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Abstract

› This paper tests the life cycle hypothesis that private saving rises with a higher percentage of working population and fall with higher percentages of the young and retired groups.

› Consistent with this hypothesis, our results from annual data for fourteen emerging markets suggest that age structure is a prime determinant of national saving.

› The results reveal a significant positive (negative) relationship between the national saving ratio and the percentage of working (children) population groups in the majority of the countries.

› The results are less conclusive regarding the statistical relationship between national saving and the elderly population group and several explanations for the apparent weak relationship are discussed.

Introduction

› The life cycle hypothesis of Modigliani argues that the working group in the population saves for retirement and thus their saving rates tend to be higher.

› In contrast, the very young and the elderly save very little primarily due to their low or falling income, respectively. Therefore, the life cycle hypothesis implies that private saving rises with a higher percentage of the working population, and falls with a higher percentage of the young and aging population.

› The hypothesis also contends that factors like elderly dependency ratio, declining fertility rates, life expectancy, and income levels are all possible determinants of private saving.

Introduction (continued)

› The main purpose of this study is to investigate the socio-economic factors associated with private savings and demographic trends in several emerging markets.

› Through its potential effects on national saving, demographic trends can impact a host of many macroeconomic variables including government revenues (taxes) and government spending (particularly for health care and social security), interest rate, inflation, and economic growth. According to Modigliani's life cycle hypothesis, the working (middle age) group is considered to be the catalyst for fueling economic growth through saving. Another implication of the life cycle hypothesis is that young and old groups are the least likely to save.

Introduction (continued)

› This paper tests empirically the relationship between saving behavior and age dependency over four decades (1960-2001) for fourteen emerging markets2. Most of these countries are located in the Middle East, the rest being from North Africa.

› These regions have grown relatively fast in the past four decades primarily due to increased oil revenues. The economic expansion in these countries has been accompanied by an increase in population size in the region. It is therefore interesting to assess the possible impact of saving patterns on economic growth in these countries.

Introduction (continued)

› We examine the response of private saving to three population groups; namely, the young (15 years of age or younger), the working population (age 15-64 years) and the aging group (65 years and older).

› The sample spans more than four decades and comprises fourteen emerging markets in these regions.

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Data

› Our data is obtained form the World Development Indicators (2003) and span the annual period 1960-2001 and includes fourteen developing countries in the Middle East and North Africa: Algeria, Bahrain, Egypt, Iran, Israel, Jordan, Kuwait, Libya, Morocco, Oman, Saudi Arabia, Syria, Tunisia, and the United Arab Emirates. Data availability is one of the main reasons for selecting these countries.

› For each country, the variables of interest are: gross domestic savings as a percent of GDP; percent of population of 15 years of age and younger (designated as children); percent of population of 65 years of age and older (designated as retired), and the percent of population between 15 and 64 years of age (designated as the working group).

Empirical Results

› The main objective of this study is to test the validity of the life cycle hypothesis in the case of fourteen emerging markets. In particular, we tested if the national saving ratio significantly rises with a larger percent of the working population and, moreover, whether the national saving ratio decreases with a larger percent of children and retired population.

› Table 1 assembles the empirical results from the estimated regressions.

› These results suggest the presence of a positive relationship between the percent of the working population and the national saving rate in the vast majority (13 of 14) of the countries examined.

Empirical Results (continued)

› Figure 1 corroborates this verdict and indicates similar trends between the percent of the working population and private savings in most of these countries. Clearly, these findings are consistent with the implication of the life cycle hypothesis that national saving rate rises with a larger working population.

› As to the percent of children in the population, the empirical results, both from the regression estimates and from the charts, overwhelmingly support the presence of a negative relationship with national savings (11 out of 14).

› Finally, the results from both the regression estimates and from the trend charts do not reveal a uniform conclusion across the countries regarding the nature of the relationship between the percent of retired population and national saving. In particular, while three out of fourteen countries display positive relationships between the two variables, the results show eleven countries to possess negative relationships.

Empirical Results (continued)

› Several factors may have contributed to the lack of correlation between the aging group of the population and the saving rate. In particular, note that factors other than population groupings could also influence private savings.

› Of course, this paper does not intend to specify a complete model for private savings that include all possible factors behind changes in private savings. Rather, the main focus of this paper is only to isolate the demographic impact on private saving.

Table 1. Regression Estimates of the impact of Population Groupings on Private Savings in Selected Emerging Markets

Country	Estimated Regression Equation	DW	Adj. R^2	F-Test N
Algeria Model 1	Saving = 21.73*** - 2.32 Δ children (t-1) - 2.41* log Δ retired + 0.53** Δ saving (t-1) (4.71)　　(-0.60)　　　　　　　　(-1.79)　　　　　　　(2.18)	1.69	0.32	4.25*** 22
Model 2	Log(saving) = 1.26*** + 7.15 Δ log working (t-2) + 0.63** log saving (t-1) (2.97)　　(1.95)　　　　　　　　(5.01)	1.35	0.55	24.75*** 39
Bahrain Model 1	Log saving = 6.27*** - 9.48** Δ Log children (t-2) - 3.47 Log retired*** (t-2) + 0.02** Δ saving(t-) (7.63)　(-2.15)　　　　　　　(-3.57)　　　　　　　　(2.19)	1.95	0.48	6.54*** 19
Model 2	Log saving = 1.041* + 8.138 Δ log working (t-2) +0.682*** log saving(t-1) (1.95)　(0.95)　　　　　　　(4.33)	1.91	0.58	13.60 19
Egypt Model 1	Δsaving = -3.47*** - 32.51*** Δ log children(t-3) -10.35*** Δ retired(t-2) + 0.28*** saving(t-4) (-4.73)　(-2.71)　　　　　　(-7.47)　　　　　　(4.71)	1.60	0.64	22.78*** 38
Model 2	log saving = -1.89 + 0.62** log working(t-1) + 0.75*** log saving(t-1) (-1.54)　(1.95)　　　　　　(7.72)	1.30	0.67	41.82 41

Country	Estimated Regression Equation	DW	Adj. R^2	F-Test N
Iran Model 1	Saving = 159.17** - 3.08** children(t-2) -38.67 Δ retired(t-2) + 3.78 Δ log saving(t-4) (2.50) (-2.12) (-1.40) (0.74)	1.56	0.24	3.33** 23
Model 2	Log saving = -8.24 + 2.47* log working(t-2) + 0.50 log saving(t-2) (-1.57) (1.99) (2.58)	1.50	0.18	3.79** 26
Israel Model 1	log saving = 0.38*** -8.55*** log children(t-1) - 3.07 log retired(t-1)*** + 0.26** Δ saving (t-1) (4.14) (-3.76) (-4.13) (1.96)	2.17	0.34	6.53*** 33
Model 2	Log saving = 1.83*** + 47.76*** Δ log working(t-2) + 0.03** Δ saving (t-3) (16.42) (2.47) (1.57)	1.33	0.34	6.53*** 33
Jordan Model 1	log saving = -12.72 + 6.43** log children (t-1) -9.88*** log retired(t-1) + 0.26 Δ log saving(t-2) (-0.74) (1.38) (-2.87) (1.03)	2.46	0.40	3.31* 11
Model 2	Δ log saving = -0.507 + 0.47 Δ working(t-2)) – 0.53 Δ log saving(t-1)) (-1.52) (1.73) (-2.28))	2.35	0.37	4.31** 12
Kuwait Model 1	Δ saving = -1.46 - 3.69*** Δ children -18. 39 Δ retired - 0.35 Δ saving(t-1) (-0.70) (-4.02) (-0.77) (-3.27)	1.35	0.57	17.45*** 37
Model 2	Δ saving = -1.62 + 3.82*** Δ working - 0.35 Δ saving(t-2) (-0.69) (5.68) (0.17)	2.16	0.48	17.40*** 37

Country	Estimated Regression Equation	DW	Adj. R^2	F-Test N
Libya Model 1	log saving= -6.42** + 2.63*** log children (t-1) -7.69*** Δ log retired (t-2) + 0.49** Δ log saving(t-1) (-2.17) (3.33) (-3.69) (2.19)	1.37	0.74	26.86*** 28
Model 2	log saving = -6.83 + 1.72 log working(t-3) +1.001*** log saving(t-1)) (-0.87) (0.92) (6.48)	1.91	0.78	51.77*** 29
Morocco Model 1	log saving= 7.16 -1.18*** log children(t-1) -4.64*** Δ log(retired(t-1) + 0.02** Δ saving(t-1) (8.94) (-5.53) (-5.89) (2.15)	1.73	0.68	28.48*** 40
Model 2	log saving= -1.37 +0.56* log working (t-2) + 0.02** Δ saving(t-1) (-1.16) (1.76) (7.63)	2.17	0.71	48.69*** 40
Oman Model 1	log saving = 41.01*** -9.79 ***log children(t-2) +19.25** Δ log retired(t-2) + 0.00 Δ saving(t-2) (3.52) (-3.19) (2.73) (0.86)	1.42	0.49	8.84*** 25
Model 2	log saving = -7.73 + 2.15 log working(t-2) + 0.77*** saving(t-1) (-0.51) (0.55) (5.62)	2.48	0.66	25.89*** 26
Saudi Arabia Model 1	Δ log saving = 5.50 - 1.46 log children(t-3) +1.81 Δ log retired(t-1) +0.38*** Δ log saving(t-1) (0.63) (-0.63) (0.59) (2.47)	1.88	0.16	3.39** 39
Model 2	Δ log saving = -0.005 + 0.37 Δ log working(t-3) + 0.43*** Δ log saving(t-1) (-0.18) (0.07) (2.86)	1.90	0.14	4.11** 38

Country	Estimated Regression Equation	DW	Adj. R^2	F-Test N
Syria Model 1	log saving = 1.74*** -0.44*** Δ children(t-2) + 0.62 Δ retired(t-2) + 0.31** log saving(t-1) (4.80)　(-4.09)　　　　　　　　(1.21)　　　　　　(2.17)	2.05	0.53	15.78** 39
Model 2	log saving = 1.58*** + 0.35*** Δ working(t-2) + 0.37*** log saving(t-1) (4.32)　　(3.50)　　　　　　(2.56)	2.06	0.50	20.*** 39
Tunisia Model 1	log saving = 1.97** -0.031 log children -2.12* Δ log retired(t-2) + 0.422*** log saving(t-1) (2.51)　(-0.16)　　　　(-1.80)　　　　　　(2.86)	2.06	0.34	7.46*** 38
Model 2	log saving = 1.90*** -0.12**Δ working(t-2) + 0.41*** log saving(t-1) (3.97)　(-2.01)　　　　　(2.83)	2.05	0.35	11.25*** 38
U.A. E Model 1	log saving = 0.86 + 0.02 Δ children(t-1) - 0.92* Δ retired + 0.76*** log saving(t-1) (1.55)　(0.68)　　　　(-2.05)　　　(5.38)	2.02	0.87	43.56*** 20
Model 2	log saving = 0.06 + 0.02 Δ working (t-2) + 0.96*** log saving(t-1) (0.14)　(0.54)　　　　　(8.25)	2.00	0.83	45.77*** 19

Note: Numbers in parenthesis below the coefficient estimates are t-statistics.

*P<.05; **p<.01; ***p<.001 indicates the significance of

Figure 1. Trends in Private Saving Rates and Population Groupings in Selected Emerging Markets (1960-2001)
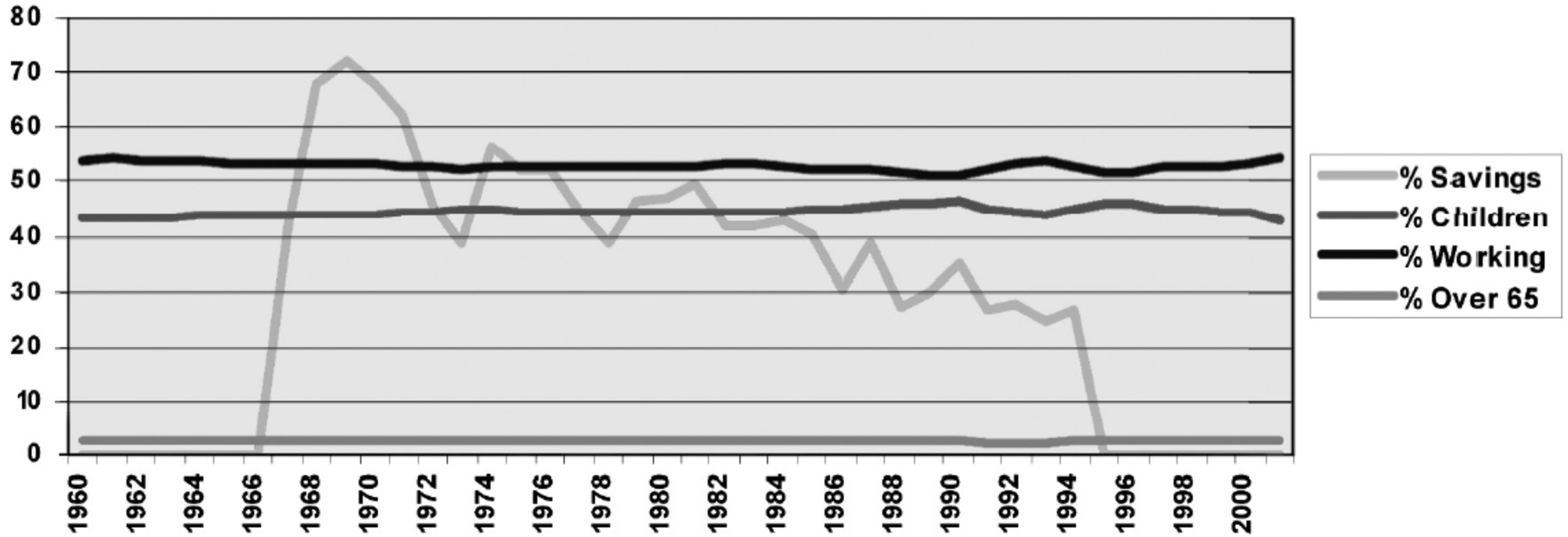
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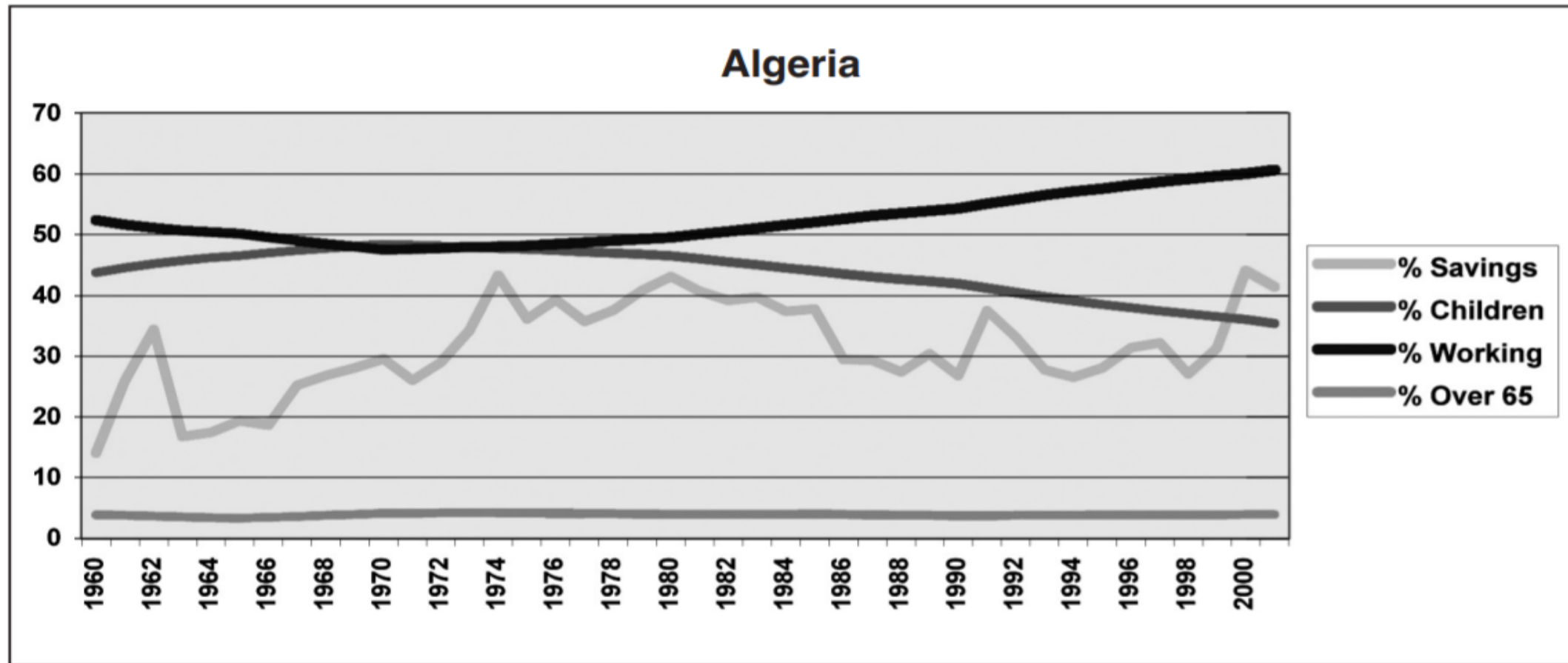
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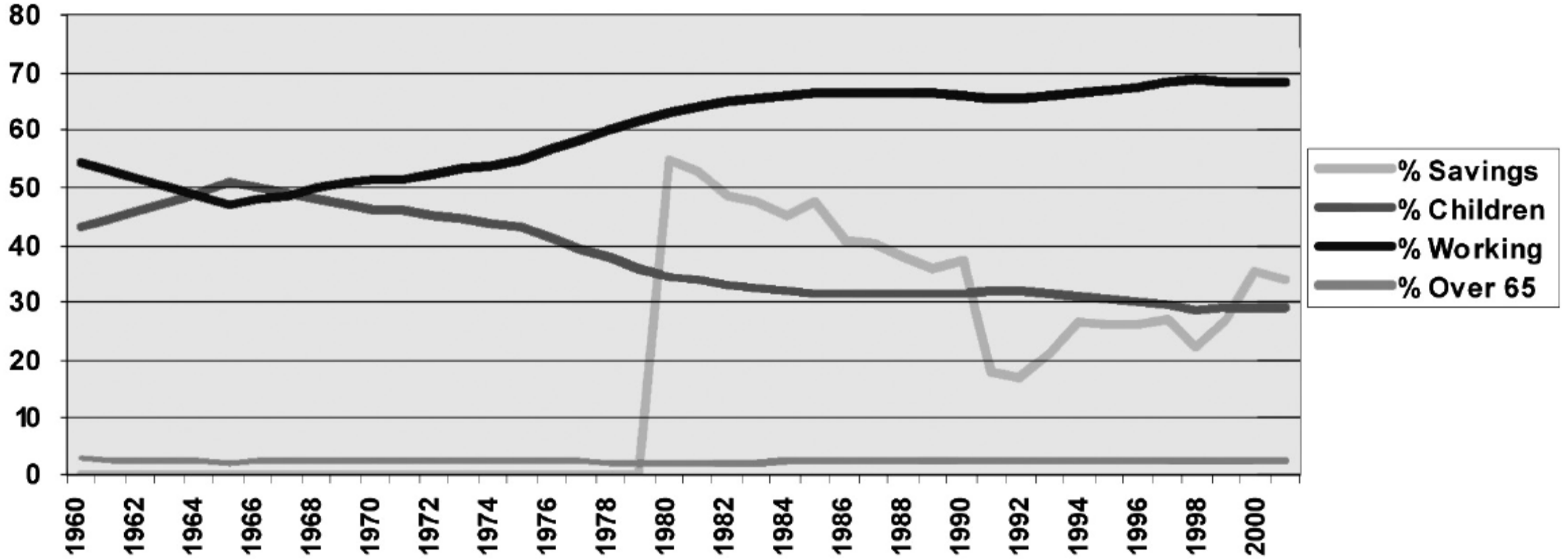
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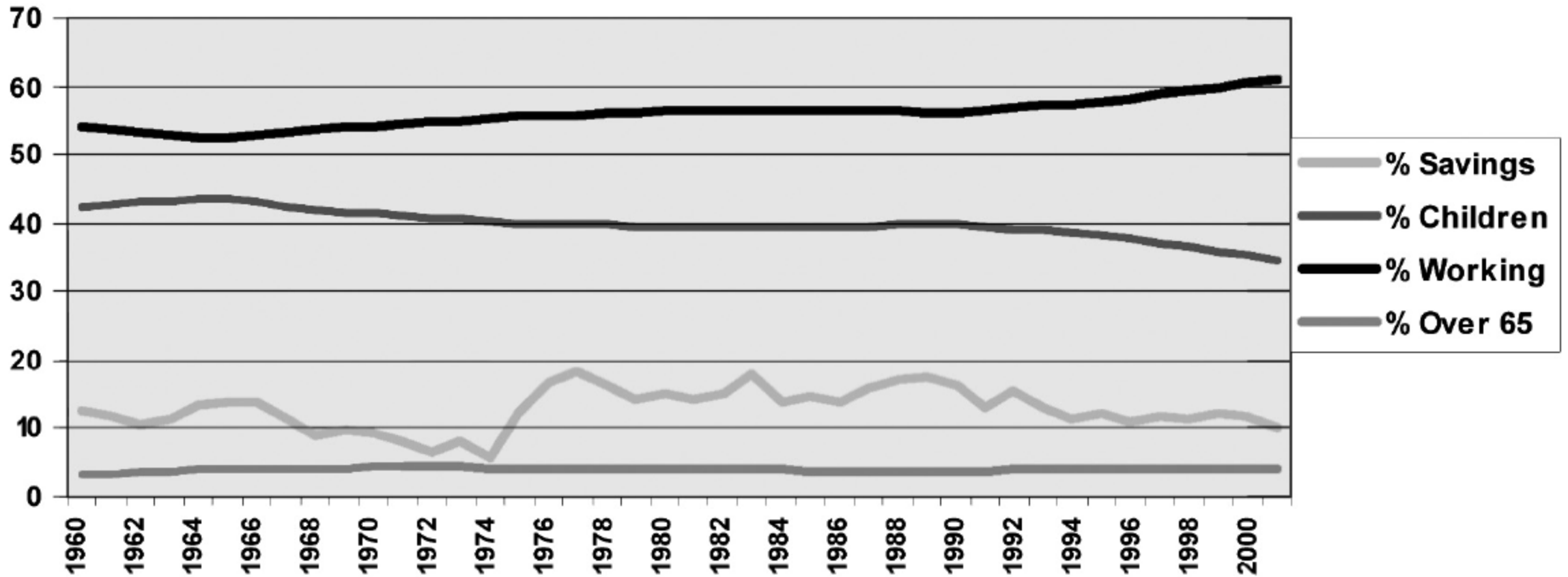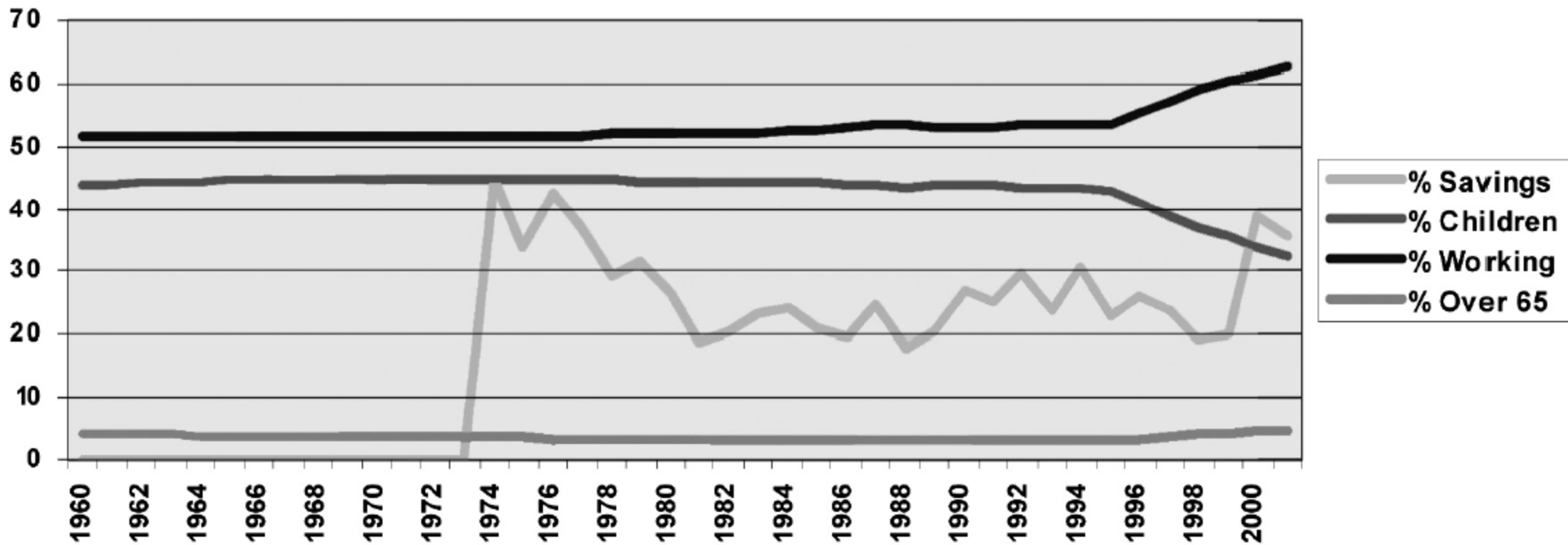
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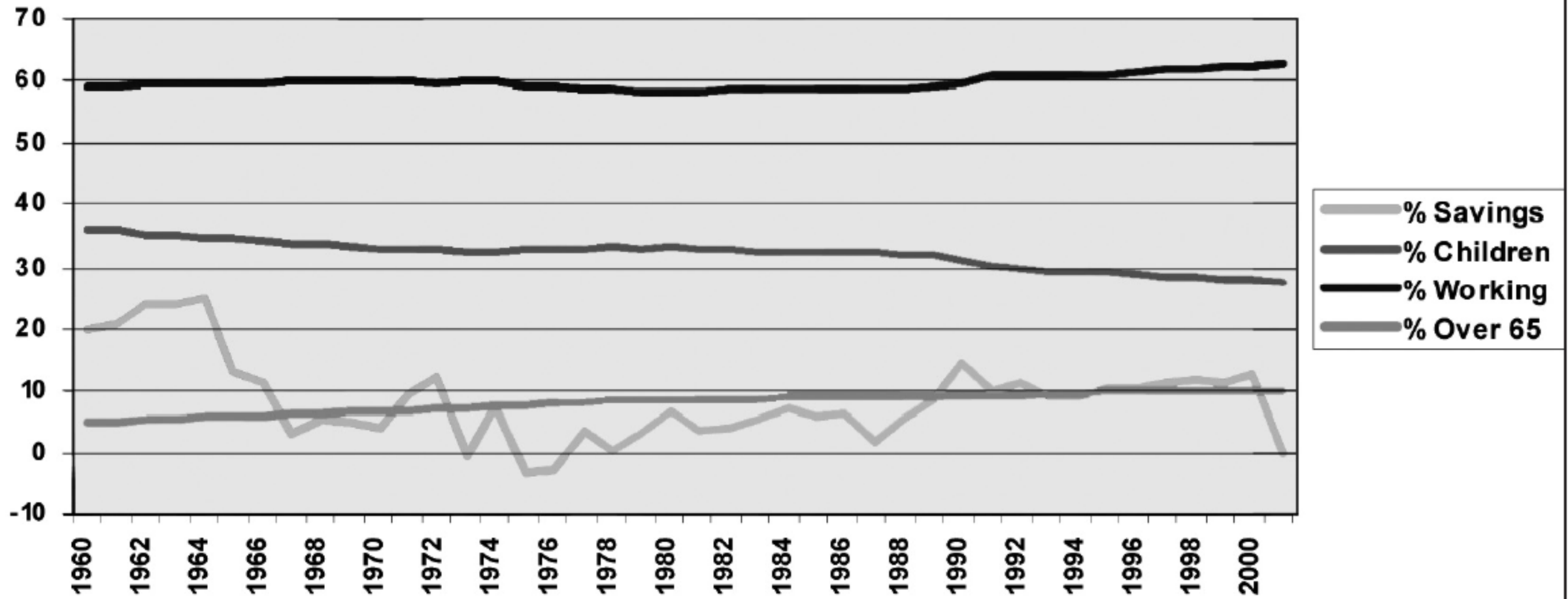
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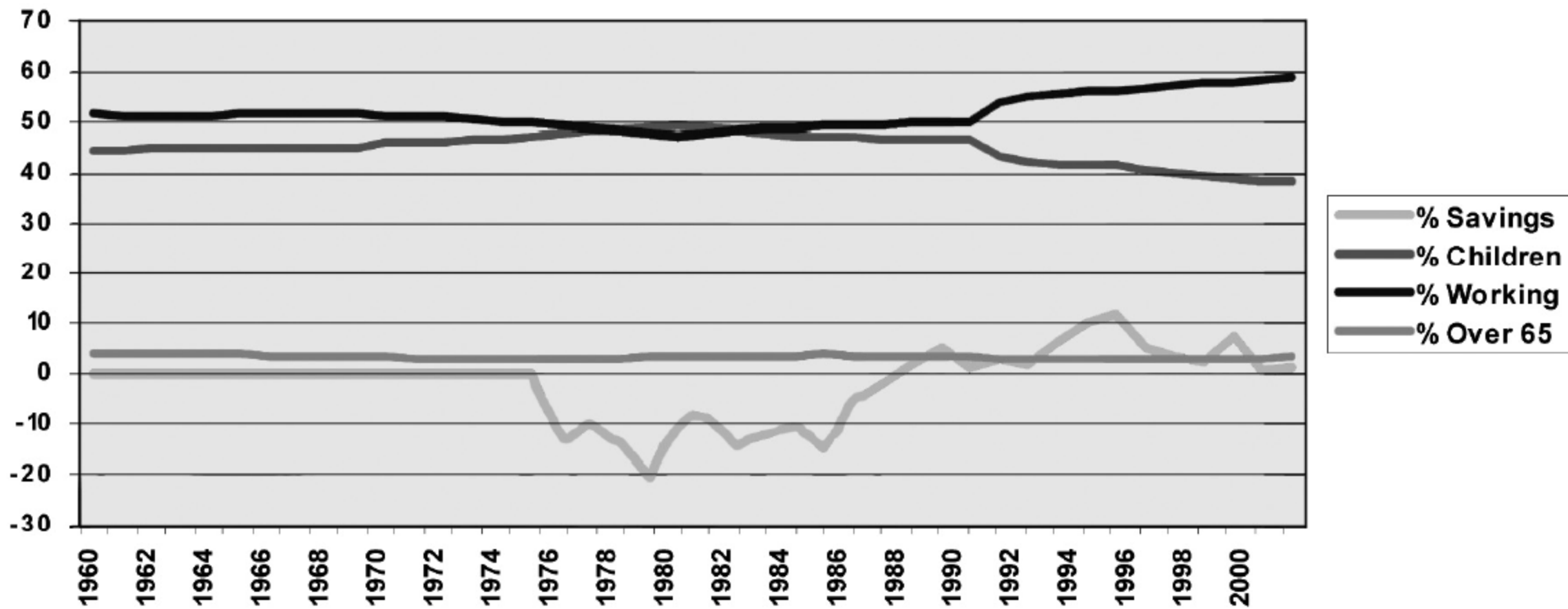
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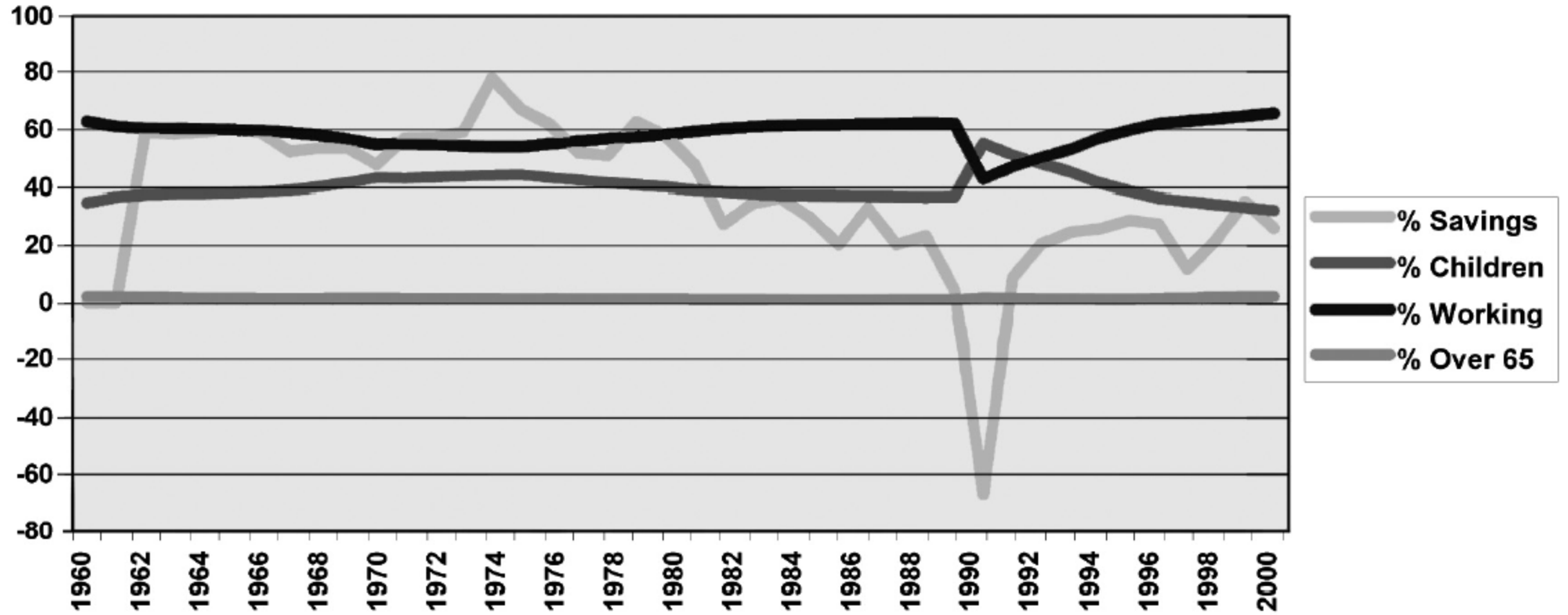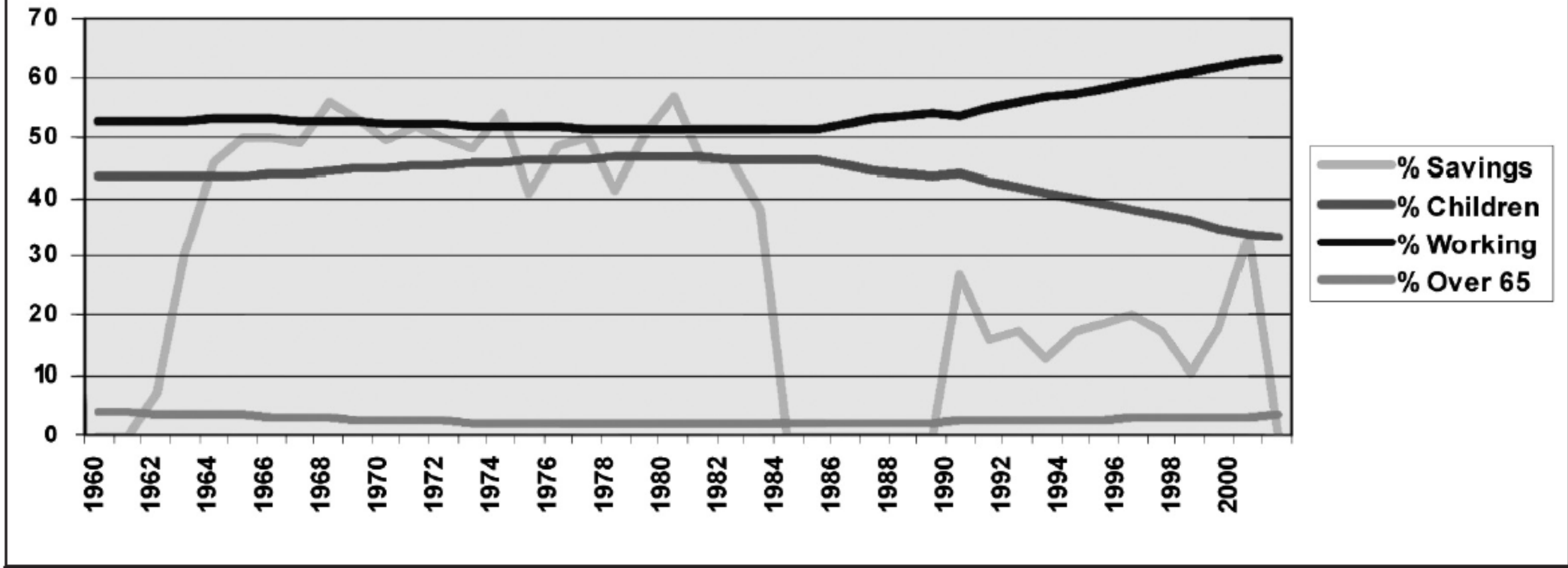
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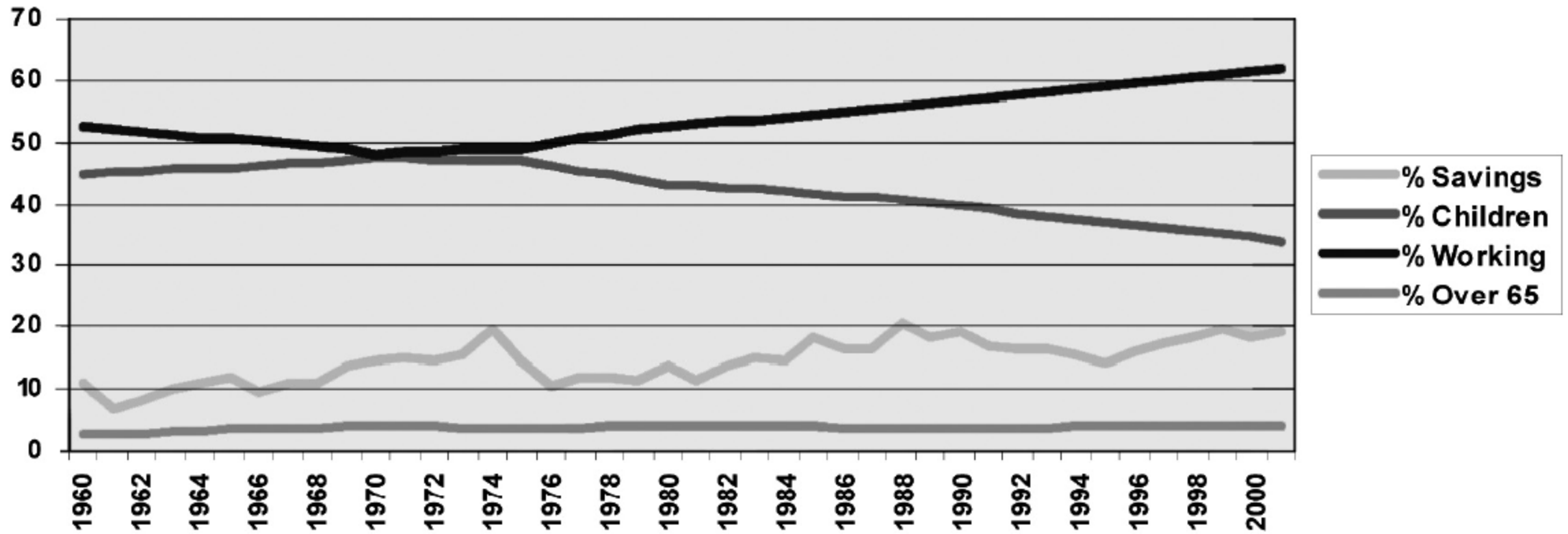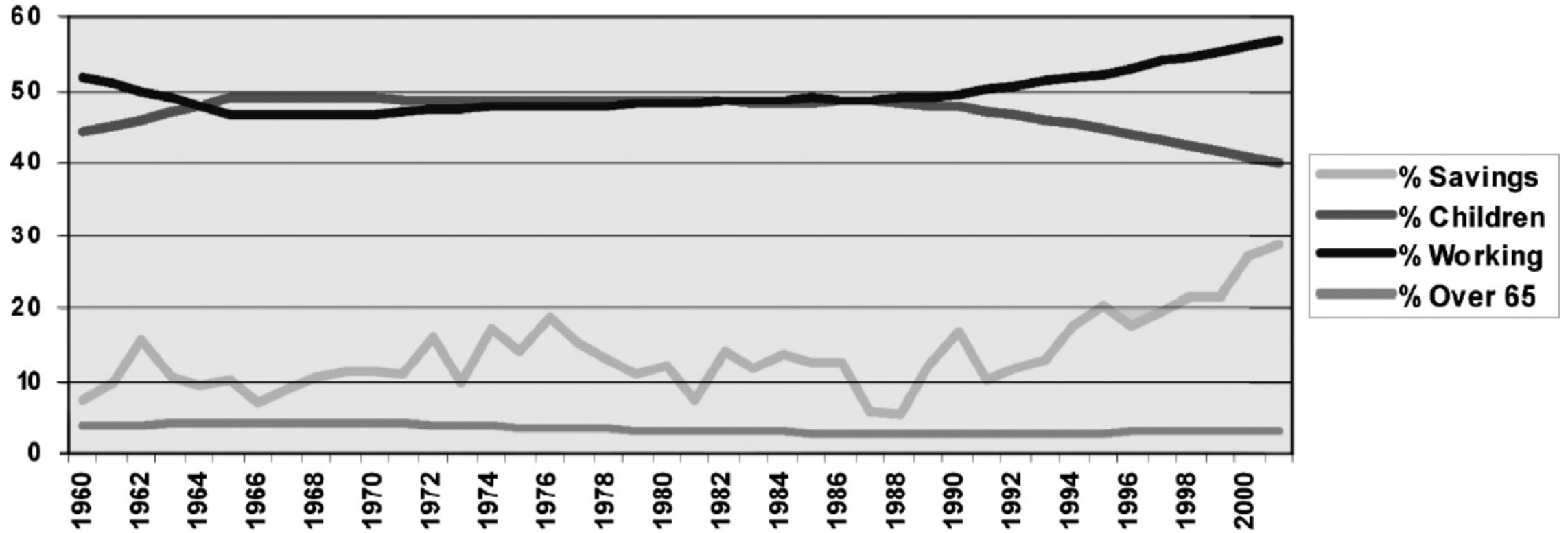
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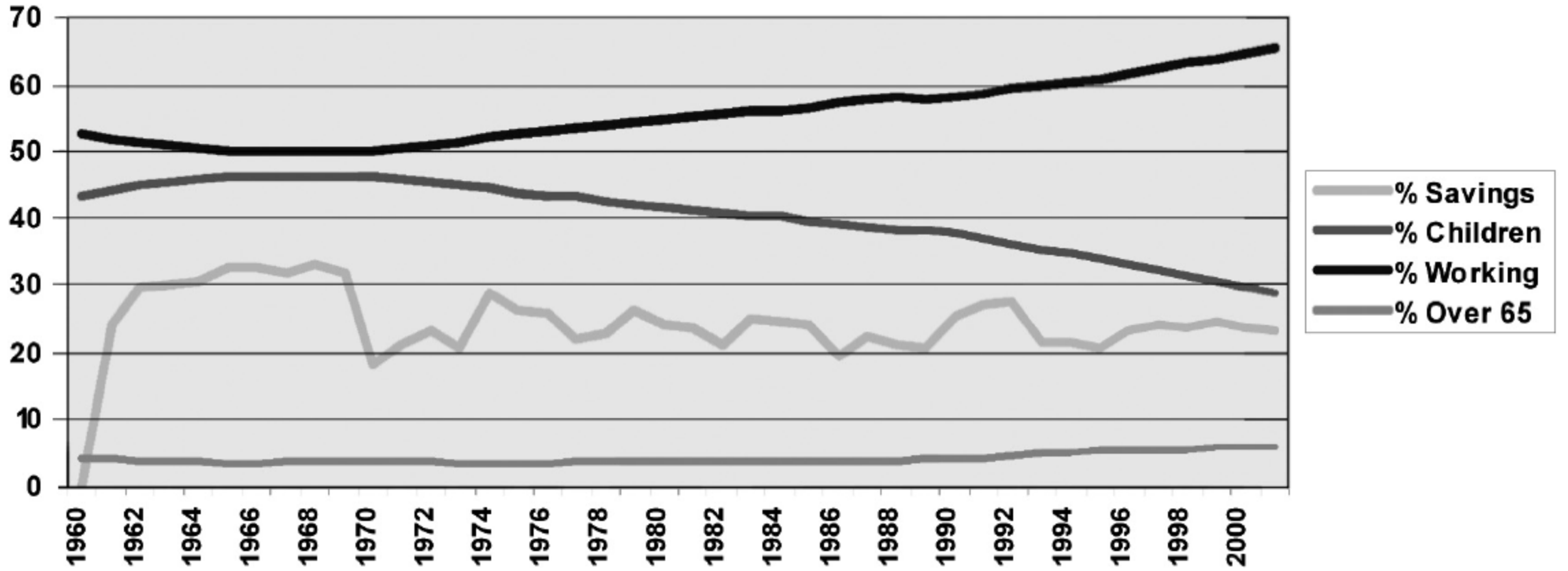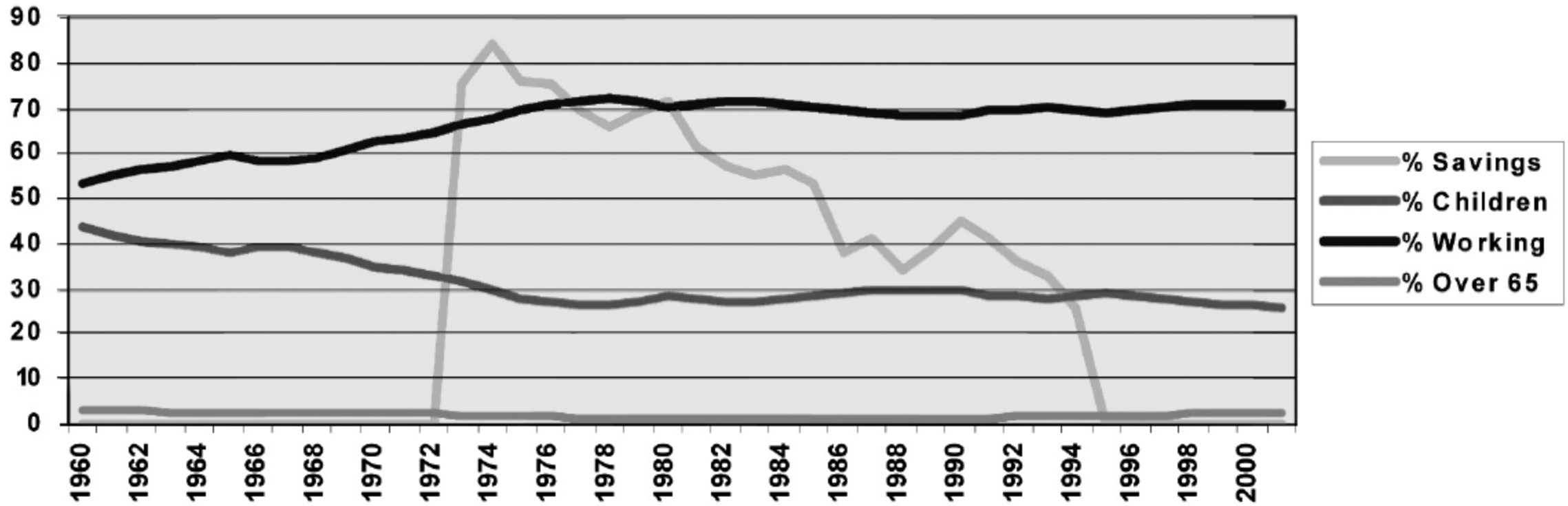
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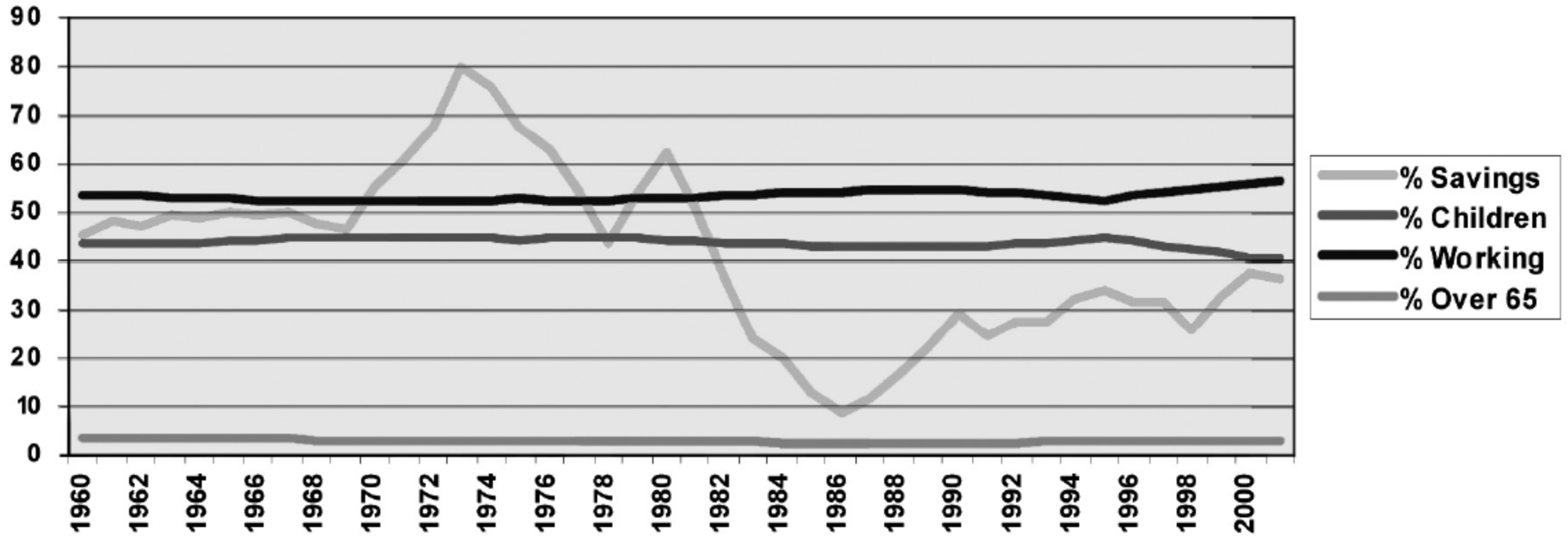
Syria

Tunisia

United Arab Emerates

Conclusion

› This paper empirically investigates the impact of demography structure on national savings in fourteen emerging markets in the Middle East and North African region. Our results, deduced from annual data over the period 1960-2001, are consistent with the implications of the life cycle hypothesis, particularly for the working and young population groups.

› In particular, we find evidence for a significantly positive relationship between the percent of working group of the population and the private saving ratio in the majority of the countries studied. The results suggest that the larger the working ratio in the population, the higher the national saving ratio will be. Also consistent with the life cycle hypothesis, our empirical analysis reveals that the children proportion in the population is noticeably falling in most of these countries over the estimation period.

Conclusion (Continued)

› Our findings on the impact of the elderly population group on national savings are somewhat ambiguous. Prior research suggests that as the population ages into retirement, private saving rates should decline. However, our empirical results do not support such a contention uniformly across all countries.

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Thank You

Questions?