

American Economic Association

The "Life Cycle" Hypothesis of Saving: A Correction

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Source: *The American Economic Review*, Vol. 54, No. 2, Part 1 (Mar., 1964), pp. 111-113

Published by: American Economic Association

Stable URL: <http://www.jstor.org/stable/1810904>

Accessed: 20/01/2009 05:35

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real capital gains.) Again the capital-gain coefficient cannot be distinguished from that of net worth or from zero. When the variable "time" is included in the function, initial net worth is still a significant variable, implying that net worth is not merely a proxy for some growth item.

I would, therefore, conclude that the omission of capital gains as an explicit variable in the Ando-Modigliani study does not greatly affect the empirical results; in fact the results would tend to justify their treatment of such gains as a part of wealth. Capital gains appear to encourage more consumption in the current period. They will certainly do so in future periods when such gains are part of future net worth, which has a significant effect upon consumption. However, even with the inclusion of this variable, the statistical results of both studies are about the same for the variables of income and initial net worth.

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The "Life Cycle" Hypothesis of Saving: A Correction

In the March, 1963 issue of this *Review*, we presented an aggregate theory of consumer behavior based on considerations of households' life cycle of income and of consumption needs, as well as some empirical tests.¹ At that time, we were unaware of the existence of revised data on net worth of consumers prepared by Goldsmith and Lipsey.² We also had some numerical errors in adjusting the old, now obsolete, data by Goldsmith to fit our framework. We have prepared new estimates of the basic parameters, using the revised data by Goldsmith and Lipsey, and they are reported in Table A.

¹ Albert Ando and Franco Modigliani, "The 'Life Cycle' Hypothesis of Saving: Aggregate Implications and Tests," *Am. Econ. Rev.*, March 1963, 53, 55-84.

² The new data were kindly provided for us by Dr. Lipsey of the National Bureau of Economic Research. They have since been published in Raymond W. Goldsmith, Robert T. Lipsey, and Morris Mendelson, *Studies in the National Balance Sheet of the United States*, Princeton, 1963.

TABLE A*
ESTIMATES OF THE COEFFICIENTS OF THE CONSUMPTION FUNCTION

Rows	Hypothesis Tested	Mode of Regression ^a	Coefficients and Their Standard Errors of Estimates ^b						$\alpha_1 + \alpha_2$	Standard Deviation of Dependent Variable	Standard Error of Estimate	R ²	Durbin-Watson Statistic
			Constant	Y (α_1)	XY (α_{12})	Y(L/E) (α_2)	A (α_3)	XA (α_{32})					
(1)	I	A	5.33 (1.46)	.767 (.047)	—	—	.047 (.010)	—	.767	88.289	2.352	.999	1.29
(2)	II	A	4.69 (1.51)	.633 (.112)	—	.163 (.124)	.040 (.012)	—	.796	88.289	2.314	.999	1.17
(3)	I	A	—	.640 (.039)	—	—	.077 (.008)	—	.640	88.289	2.860	.999	.89
(4)	I	A	—	.787 (.086)	—	—	.058 (.013)	-.010 (.005)	.787	88.289	2.756	.999	1.17
(5)	II	A	—	.430 (.108)	—	.287 (.139)	.058 (.012)	—	.717	88.289	2.690	.999	.85
(6)	I	B	—	.550 (.116)	—	—	.079 (.021)	—	.550	8.292	2.335	.921	2.00
(7)	I	B	—	.577 (.170)	-.030 (.138)	—	.079 (.022)	—	.577 ^d	8.292	2.385	.918	2.03
(8)	I	B	—	.550 (.119)	—	—	.082 (.031)	-.004 (.025)	.550	8.292	2.385	.918	2.02
(9)	II	B	—	.444 (.124)	—	.274 (.147)	.051 (.025)	—	.718	8.292	2.215	.929	1.82
(10)	II	B	—	.411 (.127)	—	.353 (.163)	.068 (.029)	-.028 (.026)	.764	8.292	2.211	.929	1.96
(11)	I	C	—	.634 (.020)	—	—	.080 (.003)	—	.634	.092	.018	.962	.99
(12)	I	C	—	.644 (.056)	-.004 (.018)	—	.078 (.008)	—	.644 ^d	.092	.019	.958	1.02
(13)	I	C	—	.654 (.054)	—	—	.077 (.008)	-.001 (.004)	.654	.092	.019	.958	1.04
(14)	II	C	—	.639 (.081)	-.003 (.019)	.007 (.070)	.077 (.009)	—	.646 ^d	.092	.019	.958	1.02
(15)	II	C	—	.649 (.079)	—	.006 (.070)	.076 (.009)	-.001 (.004)	.655	.092	.019	.958	1.04

* Footnotes refer to those accompanying Table 2 in the original article.

Table A is identical in construction to our original Table 2. Comparison of the two tables indicates that our revised results are not appreciably different from the original ones, though they appear to be somewhat more satisfactory in a number of respects as noted below:

1. There is no longer any evidence of a significant downward shift in the coefficient of labor income from the prewar to the postwar period. In every instance the estimated shift is of negligible magnitude and is but a small fraction of its standard error. In the case of the coefficient of net worth, where a shift could be due to differences in the method of estimating net worth, the hypothesis of a downward movement cannot be rejected outright but the evidence is much less convincing than before.

2. In the case of hypothesis I, the various methods of estimation yield values of the parameters which are both appreciably closer to each other and more in line with a priori expectations. In particular, the constrained regression (3), the first difference method (6), and the ratio estimates (11), which are supposed to bracket the true value, yield an estimate of α_1 in the immediate neighborhood of .6 with a range of .09 (instead of around .5 with a range of .12), and an estimate of α_3 ranging between .072 and .08 (instead of between .072 and .105).

3. The revised data provide somewhat stronger support for hypothesis II than did the original ones, as the coefficient of $Y(L/E)$ is in every instance both numerically larger and statistically more significant (though the outcome is reversed for the coefficient of L/E in the ratio estimates). We also note that the estimate of $\alpha_1 + \alpha_2$ remains in the neighborhood of .7 but the range of the estimates from the above-mentioned three methods is reduced from .10 to .07. Finally the coefficient of net worth moves closer to the estimates obtained for hypothesis I and to a priori expectations, averaging now just over .06 with a range of .016, instead of .05 with a range of .03. Thus the new estimates of the parameters for both hypotheses I and II seem to be considerably more reliable, a conclusion reinforced by the substantial improvement in the Watson Durbin Statistic.

On the whole, in the light of these results, we see no reason to change any of the conclusions we stated in our original paper.³

ALBERT ANDO AND
FRANCO MODIGLIANI*

*We should like however to take this opportunity to clarify one passage in our paper which might give rise to misunderstandings. In footnote 30, for the purpose of examining certain long-run implications of the life cycle hypothesis, we made use of the equation:

$$S_t = A_t - A_{t-1}.$$

In general, of course, saving, S , which we define as current income minus current consumption, need not coincide with the change in the value of assets, on account of capital gains (or losses). In writing the above equation we abstracted from capital gains, which we feel is justified for purposes of long-run analysis, although we should have made this assumption explicit.

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