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## CASE STUDIES

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“Case Studies” presents a case pertinent to contemporary issues and events in investment management. Insightful and provocative questions are posed at the end of each case to challenge the reader. Each case is an invitation to the critical thinking and pragmatic problem solving that are so fundamental to the practice of investment management.

*Jack L. Treynor, Senior Editor*



### MARGINAL PROPENSITY TO CONSUME

In most countries there are

- (1) households so poor that they consume all of any incremental income; and
- (2) households already so comfortable that they consume very little.

One can think of reasons why different families might have different situations. But there are certain principles that transcend these differences. Who does the saving—hence the job creation—in a society where all the households with the same level of income have the same marginal propensity to consume?

The utility of food to a starving man is greater than it is to someone who has just eaten a ten-course meal. But the same principle applies more broadly: if the utility of consumption declines, so does the marginal propensity to consume, leading to still more saving, still more income, and still lower marginal utility of consumption. We shouldn't be surprised if many middle-class

households haven't approached the point of zero utility. Because the marginal income is invested in producing more income, the result is a society in which a few people do the saving and investing for everyone else.

We have the impression that many academics believe that the key to a country's progress is education. We don't think so. We think that the key to progress is more machines. There are probably still a few textbooks arguing that investing destroys jobs. The assumption, explicit or implicit, is that labor and capital are substitutes. Not in industry. In industry, labor and capital are complements. (Two hands on the steering wheel of a big rig hurtling down the freeway can be very productive. Four hands is not more productive.)

Depending on whether the demand is increasing, adding machines either adds jobs or raises the real wage. Given the benefits, it's a shame that most workers can't afford to invest in the machines—that they are so dependent on the people who can.

Consider a population of households with

- (1) a wide range of incomes from zero on up; and
- (2) the same marginal propensity to consume  $e^{-I}$  at each possible level of income  $I$ .

Then the consumption of household with income  $I$  is

$$\int_{i=0}^I e^{-i} di - e^{-i} \Big|_0^I - (e^{-I} - 1) = 1 - e^{-I}$$

By the time the value of “income” reaches four in our example, the marginal propensity to consume is less than 2 percent—virtually zero. Such households save almost all their marginal income. At this income level, a household is consuming one-quarter of its income—and saving the rest.

To use the table and the two graphs, the reader can choose a unit of measure he feels is realistic. If the reader thinks that a household’s marginal propensity to consume goes to zero at \$400,000, then “1” corresponds to an income of \$100,000. If instead the reader thinks marginal propensity to consume goes to zero at \$100,000, then “1” corresponds to an income of \$25,000. And so on.

The first graph illustrates how the marginal propensity to consume behaves under his model and the second graph the fraction of total income consumed.

**Questions**

Don’t many kinds of consumption have diminishing marginal utility?

Is the bulk of the saving nevertheless confined to high-income households?

When you increase taxes on such households, aren’t you reducing savings rather than consumption?

Can taxes be used to shift consumption from households at the top of the curve to households at the bottom?

Will the voters ever understand:

- (1) The importance of machines for creating the undemanding, repetitive assembly line jobs for society’s marginal workers?
- (2) That because these workers can’t save, they can’t provide their own machines?
- (3) That the key to progress is those people who do most of society’s saving?

Isn’t it unlikely that, even after adjustments for scale differences, households have the same curve?

Shouldn’t economic textbooks nevertheless offer an example, albeit with suitable qualifications?

$I = \text{income}$	$e^I$	Marginal propensity to consume $e^{-I}$	Consumption $1 - e^{-I}$	Fraction of income consumed $1 - e^{-I}/I$
0	1	1	0	
0.1	1.1052	0.9048	0.0952	0.9516
0.2	1.2214	0.8187	0.1813	0.9063
0.3	1.3499	0.7408	0.2592	0.8639
0.4	1.4918	0.6703	0.3297	0.8242
0.5	1.6487	0.6065	0.3935	0.7870
1.0	2.7183	0.3679	0.6321	0.6321
1.5	4.4817	0.2231	0.7769	0.5179
2.0	7.3891	0.1353	0.8647	0.4323
2.5	12.1825	0.0821	0.9179	0.3672
3.0	20.0855	0.0498	0.9502	0.3167
3.5	33.1155	0.0302	0.9698	0.2771
4.0	54.5982	0.0183	0.9817	0.2454

“The End of Class Warfare: an Examination of Income Disparity by (2002)” by Richard Roll and John Talbott, April 20, 2002.