

Rational Expectations

The Rational expectations Theory is a concept and modeling technique that is used widely in macroeconomics. The theory posits that individuals base their decisions on 3 primary factors: Their human rationality, the information available to them and their past experiences.

The Rational expectations hypothesis was originally suggested by John (Jack) Muth (1961) to explain how the outcome of a given economic phenomena depends to a certain degree on what agents expect to happen. The concept of Rational expectations asserts that outcomes do not differ systematically (i.e. regularly or predictably) from what people expected them to be. The concept is motivated by the same thinking that Let Abraham Lincoln to assert, "you can fool some of the people all of the time, and all of the people some of the time, but you can not fool all of the people all of the time".

The Rational expectation is often used to explain expected rates of inflation. For example, if inflation rates within an economy were higher than expected in the past, people consider this along with other indicators to assume that inflation may further increase in the future.

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Rational expectations theories were developed in
response to perceived flaws in theories based on
adaptive expectations. Under adaptive expectations,
expectations of the future value of an economic
variable are based on past values. The Rational
expectations hypothesis has been used to support
some strong conclusions about economic policy-
making.

while individuals who use Rational decision-
making use the best available information in the
market to make decisions, adaptive decision makers
use past trend and events to predict future outcomes
----- Adaptive expectations can be used to
predict inflation.

2nd Sem (M)

Random Walk of Consumption Expenditure

Robert Hall introduced his famous random walk model of consumption in 1978. Hall was the first to derive the effects of rational expectations for consumption. His theory states that if Milton Friedman's permanent income hypothesis is correct, which in short says current income should be viewed as the sum of permanent income and transitory income and that consumption depends primarily on permanent income and if consumers have rational expectations, then any changes in consumption should be unpredictable i.e. follow a random walk. Hall's thought were: According to the permanent income hypothesis, consumers deal with shifting income and try to smooth their consumption over time. At any given moment, a consumer selects their consumption based on their current expectations of their life-time income. Throughout their life, consumers modify their consumption because they receive new information that makes them adjust their expectations. For example, a consumer receives an unexpected promotion at work and increases consumption. Whereas a consumer that is unexpectedly fired or demoted will decrease consumption. So, changes in consumption

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② Reflect "surprises" about life-time income. If consumers are optimally using all available information, then they should be surprised only by events that were completely unpredictable. Therefore, consumer's changes in consumption should be unpredictable as well.

Model:-

Consider a two-period case. The Euler equation for this model is

$$E_1 u'(c_2) = \left(\frac{1+\delta}{1+r} \right) u'(c_1) \longrightarrow (1)$$

where δ is the subjective time preference rate, r is the constant interest rate, and E_1 is the conditional expectation at time period 1.

Assuming that the utility function is quadratic and $\delta = r$, equation (1) will yield

$$E_1 c_2 = c_1 \longrightarrow (2)$$

Applying the definition of expectations to equation (2) will give:

$$c_2 = c_1 + \epsilon_2 \longrightarrow (3)$$

where ϵ_2 is the innovation term. Eqⁿ (3) suggests that consumption is a random walk because consumption is a function of only consumption from the previous period plus the innovation term.

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Implications

Robert Hall's Rational expectation approach to consumption creates implications for forecasting and analyzing economic policies. If consumers obey the permanent-income hypothesis and have rational expectations, then only unexpected policy changes influence consumption. These policy changes take effect when they change expectations. Though the policy changes affect consumption only as much as they affect permanent income. Furthermore, only new information about policies can affect permanent income. This model implies that changes in consumption are unpredictable because consumers change their consumption only when they receive news about their life-line resources.

Advantages:

use of the Euler equations to estimate consumption appears to have advantages over traditional models.

First, using Euler equations is simpler than conventional methods. This avoids the need to solve the consumer's optimization problem and is the most appealing element of using Euler equations, to some economists.

Criticisms

Controversy has arisen over using Euler equations to model consumption. When applying the Euler consumption equations one has trouble explaining empirical data. Attempting to use the Euler equations to model consumption in the United States has led some economists to reject the random walk hypothesis. Some argue that this is due to the model's inability to uncover consumer preference variables such as intertemporal elasticity of substitution.

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