Qeios

Peer Review

Review of: "A Philosophical Theory of Quality Time: The Seneca Model"

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The study titled, "A Philosophical Theory of Quality Time:The Seneca Model" finds as follows (a verbatim replication of the study Abstract):

This paper incorporates Seneca's concept of quality time into the Ramsey model by treating it as a state variable. The resulting framework yields an optimal allocation of time that rises with the utility weight on quality time and falls with its initial stock, impatience, learning costs, and its rate of change. When preferences between quality time and consumption are non-separable, time allocation also increases with consumption. In this case, the Ramsey golden rule no longer holds; optimal consumption, capital, and quality time must be jointly determined---implying that philosophical reflection can shape economic growth, in contrast to Seneca's original skepticism.

I have the following comments.

The model is parameterized by a snafu (weakness) that is native to any and all applications of Neoclassical theory to human choice

It is straightforward to infer that the modeling assumptions coincide with the model outcomes, a snafu that is native to any and all applications of neoclassical theory to the modeling of choice under uncertainty. In this respect, as I will demonstrate in what follows, the formal theory solely spans feasible partial equilibrium outcomes, not general equilibrium outcomes. Since there exist lots of reasonable, as such, feasible partial equilibrium outcomes, but yet the following caveat, namely that feasibility does not, in of itself, imply optimality, there is arrival at a snafu that is native to any and all neoclassical models of choice, namely that all solely span partial (feasible) equilibriums. For supporting evidence that neoclassical mathematics is solely robust to the spanning of partial equilibriums, see Salanti (2020).

The evidence for the claimed snafu

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For concreteness of the foregoing, consider that whereas neoclassical mathematics is robust to the modeling of a process that is expected to continue ad infinitum, such as the pricing of assets (e.g., Merton 1973), simultaneously it is non-robust to a formulation of the natively embedded human choice. To see this, corroborating prior studies, such as Fisher (1925) or Samuelson (1938), in Houthakker (1950, 1961), neoclassical theory is robust to the modeling of choice only whenever human agents are parameterized by non-satiation, that is, by a linear utility function, a condition that is impossible to be satisfied. In this respect, in each of Richardson (2004), Schmidtz (2004), and Ackrill (2023), philosophically any choice which does not span any immediate utility, equivalently any choice that does not satiate, is excluded from the domain of rational choice. Importantly, whereas Machina (1982) motivates a deviation from a linear to a concave utility function, Machina (1989) acknowledges that said recommended deviation is non-robust whenever choice transpires under true uncertainty, namely whenever choice responds to uncertainty that is spanned by, at the very least, two countervailing parameters. Since the model in the study that is under review embeds at the very least two feasibly countervailing parameters, namely uncertainty as to optimal time and the feasibility, to wit, a state of the world is not favorable to an allocation of optimal time to the activity of *contemplation* - the Aristotelian term for *philosophical reflection* - combined, Machina (1982, 1989) assert the non-robustness of neoclassical theory to the workout of such a model.

Additionally, the evidence that choice under uncertainty is only robustly implemented as the formation of *Rational Expectations Equilibriums (REE)* in studies, such as Lucas (1976), Kydland and Prescott (1977), and Obrimah (2022, 2025), predicts the non-robustness of utility functions, which have implementation necessarily as Certainty Equivalent Equilibriums (CEE), to workouts of choice under uncertainty. Evincing the enumerated caveat, whereas Merton (1973) is successful at evincing that the price of risk is intertemporally, as opposed to cross-sectionally, specified, with the model allowing for a positive relation between risk and the price of risk, the model embeds an economically significant non-robustness. The model embeds the enumerated weakness because, consistent with Salanti (2020), whereas Merton (1973) sets out to model uncertainty, the adoption of neoclassical tools is solely robust to the modeling of a *'known distribution'*, as such, the assumption in the study that there exists only one state of the world. However, with the risk-return trade-offs of the assets that emerge in the said state allowed to vary intertemporally, seemingly at the time, the study seemed to embed uncertainty that is sufficiently robust to the study objective. Contrarily, imposing the insight which subsequently emerged, namely that ideally the price of risk is systemic (see, for example, Cochrane 2005), the restriction to one state of the world induces the following weakness, namely that, absent evidence for a structural break, as such, the emergence of some alternate state of the world - a condition acknowledged in Merton (1980) - the price

of risk is non-time varying. Said insight went on to span efforts for the implementation of conditional CAPMs, that is, searches for structural breaks in the evolution of risk-return trade-offs (see, for example, Bollerslev, Engle, and Wooldridge 1988). In summary, the weakness of the Merton (1973) model is evinced by the following profound insight, namely that the inference, to wit, the price of risk is time-varying, is solely implied, not explicitly proved; consequent on the highlighted weakness, all efforts for inferring a time-varying price of risk could only be empirically motivated and did not have any explicit supporting formal theoretical structure.

Contrarily, using a REE structure, consistent with the stylized evidence in the empirical asset pricing literature (the citations in Obrimah 2025, which is published open access), Obrimah (2025) obtains the negative relation that ought to subsist between risk and the price of risk. Additionally, the study furnishes formal theoretical proof that the price of risk decreases systemically with agents′ risk tolerance, such that it is not individual assets′ risk-return trade-offs that alter the price of risk, but rather, consistent with rational expectations, it is time-varying systemic risk that induces the price of risk to be time-varying. The rationale for the exclusion of a positive relation between risk and the price of risk is straightforward, namely that said relation implies the absence of any trade-offs to an increase in risk, an implication which directly spans the following contradiction, namely that risk is null.

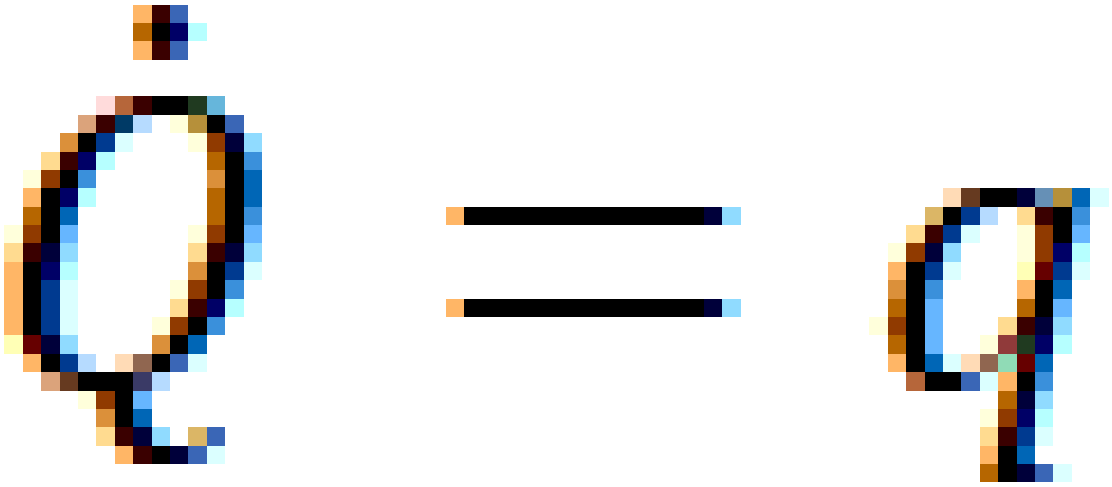
The evidence that the model assumptions coincide with the model outcomes, resulting solely in a feasible partial equilibrium

The model is set up as:

$$\int U(c, Q, q)\, e^{-\theta t} dt$$

subject to each of:

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and

$$\dot{k} = f(k) - c - (n + \delta)k$$

It is straightforward that all of the study inferences are the direct outcomes of the enumerated equations, which are numbered (1), (3), and (4) in the study manuscript. First, since θ enters as a disutility, optimal time decreases with θ. Second, since $k=0$ is feasible only if $f(k)$ grows at a slower rate in relation to, $c+(n+\delta)k$, optimal time decreases with the existing stock of k, because always, the slope of $f(k)$ decreases with k. For concreteness, since k grows at a slower rate with time, rather unequivocally the resources that are available to allocate to contemplation grow at a slower rate with time. As such, quality time decreases with an agent's existing wealth. All other deductions follow from the specific parametric specification of a utility function, U.

But should we be modeling time or maximizing behavior?

Whereas Becker commenced his academic career modeling time, eventually he tatonned to the modeling of maximizing behavior, that is, behavior, as opposed to time. The rationale, which can be linked to Aristotelian ethics, is straightforward, namely since contemplation spans ethics if and only if the outcomes of contemplation then are reflected in the activities of production - Ackrill (1978, 2023),

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Burnyeat (2023), McDowell (2023), and Sorabji (2023) - all useful ethics are evinced by behavior. As such, the modeling of behavior suffices for the modeling of engagement with `quality time'. Imposing the Aristotelian condition, consumption baskets, which are the direct outcome of contemplation that is impounded into production, are a direct outcome of contemplation, that is, quality time. Under the assumption that it takes a strictly convex effort function to a strongly concave consumption quality function - because the higher the existing quality of the consumption basket, the more difficult it is to span improvements - there is arrival at quality time that is increasing in the quality of consumption. Consider, however, that there is arrival at a snafu which has enumeration as follows, namely that in the limit the notion that quality time (QT) increases with consumption fails to be robust. For concreteness, it is unequivocal that there exists some level or quality of consumption, C, satisfying, $C \rightarrow +\infty$, such that, the amount of time required for improving said consumption, Ξ, spans,

$$\frac{\partial QT}{\partial t}\Big|_{t=\Xi} < 0$$

Imposing the enumerated caveat, a premising of quality time on efforts for improving consumption, as opposed to the Aristotelian conception that virtue formation, as such, contemplation ought to be deemed a *'normal good'*, is in relation to the alternative, sub-optimal. In this respect, virtue impacts production, not because consumption is the objective of contemplation, but rather because virtue that does not impact the activities of life is an exercise in contradiction, that is, has constitution as time that is wasted. For evidence that, ideally, the combination of consumption and savings (the liquidity function of savings) choice is predicated on investment choice, and not vice versa, see Obrimah (2025).

Additionally, the superior robustness of an engagement with the modeling of behavior, as opposed to time, is evident as follows, namely since a time period can, for different agents, span either times, t and $t+1$, or alternately, times, t and $t+n$, $n=2,...,T$, $2<T<\infty$, a modeling of choice behavior is inherently more robust than a modeling of time. To further see this, consider the prediction, in the study that is under review,

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that investment in quality time decreases with existing wealth, or equivalently the existing stock of quality time. Imposing the desirability of technical change (Solow 1956), and agents' capacity for applying wealth towards buying time, there is arrival at the following distinct possibility, namely that feasibly quality time increases with either wealth or the existing stock of quality time. Feasibly, as such, quality time is strictly convex in existing wealth. Since the quality of consumption has constitution as wealth, there is arrival, yet again, at the feasibility, which is not robust to general equilibrium, that quality time is increasing in the quality of consumption. Consider, however, that neoclassical tools, which are cardinally, as opposed to ordinally specified, are non-robust to a modeling of the quality of consumption bundles.

But then this study already models time; how then can it be improved?

Suppose time, *t*, can be adopted as a proxy for the positive probability, to wit, a state, *s*, that is conducive to contemplation is succeeded by some alternate state, *v*, that is less conducive to contemplation (ξ), as such, less conducive to quality time. The reality, to wit, typically consumption capacity, ς, satisfies, $\varsigma(s)>\varsigma(v)$, such that the effort, *e,* required for consumption, *C*, satisfies, $e(s,C)<e(v,C)$, resulting in, a priori, $e(s,\xi)>e(v,\xi)$, induces a priori, a diminution to quality time. However, the question arises as to the sorts of incentive compatibility conditions under which, regardless, a rational agent can be induced to engage with either $e(s,\xi) \geq e(v,\xi)$ or $e(s,\xi) \lesssim e(v,\xi)$? Such a question, it seems to me, furnishes a more pragmatic platform for efforts that focus on modeling time, equivalently states of the world. The extent to which neoclassical theory is robust to the modeling of such a structure remains, of course, up in the air. Since, however, the restriction of time, *t+1*, to some specific alternate adverse state, s, eliminates uncertainty as to the state of the world to emerge, such that the sole uncertainty has characterization as the sort of incentive compatibility mechanism that facilitates either, $e(s,\xi) \geq e(v,\xi)$ or $e(s,\xi) \lesssim e(v,\xi)$, feasibly perhaps neoclassical tools are sufficiently robust to a workout of the formal theoretical exposition. In this respect, a newly published study, Obrimah (2026), on the general equilibrium relations that subsist between effort and effort capacity is, perhaps, helpful.

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Declarations

Potential competing interests: No potential competing interests to declare.