Review of: "A Dynamic Model for an Optimal Consumption Tax Rate"

Romar Correa

A Dynamic Model for an Optimal Consumption Tax Rate

Comments by Romar Correa

I congratulate Muhammad Ashfaq Ahmad and Nasreen Nawaz on their precision and rigour. At the same time, they have opened a hornet's nest of conceptual issues and I will try to clear the air. My impression is that taxation in the paper is a red herring and the role of the middleman in basic microeconomics is central. All the same, I must compliment the authors on their able survey of the taxation literature.

In class, the path to equilibrium, the return to equilibrium following a disturbance, and the movement from one equilibrium point to another are hand waved away on a white board, allowing for any institutional mechanisms to operate. Adjustments are equilibrium processes. The distinction between factory price, wholesale and retail prices and so on are recognised and factored in. All that is required is the logic of a demand curve and a supply curve and movements in either or both holding true. Sometimes the intervening accounts are of interest in their own right. Inventory holding models, which also drive our authors, are an independent line of research. Buffer stock operations in perishables (while this category is mentioned, the authors do not follow through the distinction with durables) like agricultural commodities is a valuable topic of study. The business of warehousing, cold storage, is essential to agrarian markets. It is a massive fixed cost and would need to be considered along with variable costs even in an elementary model. It serves to dampen fluctuations in prices. However, the direction of price (a fall) following a bumper harvest or a rise in price following a drought is not in question. Milton Friedman wrote the seminal article on long and variable lags in the monetary transmission process. While aware of the months for the results of change of a few basis points in the repo rate to wind itself through the economy, legions of teachers blithely move the money supply curve this way and that and discuss the characteristics of the new equilibrium. Once more, the message is the tendency of interest rates to rise following a contractionary policy stance and output to fall, and vice versa.

The middleman in the paper is an abstraction in an abstract textbook model. They are not called for. For instance, in spelling out the familiar general equilibrium setup in the opening lines of section **2. The Model**, what is the necessity or sufficiency of a middleman (It looks like three agents appear, not four.)? The two lines in the middle of the paragraph are wrong and I draw attention to them because confusion about price taking is repeated. "Middleman's role is instrumental … equilibrium is achieved." Everybody is a price taker in a competitive model and the middleman is no more than an equilibrating force in the paper. In the third paragraph, an iterative process to a new equilibrium is traced but the

phenomenon is a market process and does not require the persona of a middleman 'setting' converging prices.

The second paragraph introduces the tag 'rates' to demand and supply. In all cases in the paper they are levels and 'rates' should be dropped in a rewrite.

In Figure 1, I do not see how "linearization does not seem to be a good approximation in the movement from point a to c."

What is the role played by inventories in section **2.1 Middleman**? If the left-hand side of Figure 2 (incomplete in any case) is deleted and the good old scissors on the right-hand is retained, what of value is lost?

Section **2.1.1. Short-Run Problem** is cumbersome and unnecessary. It is the derivation of the marginal revenue equals marginal cost result. Equation (2) is the equilibrium condition. A change in any parameters of the problem like the price brought about by a positive supply shock would be incorporated in the equation. Equation (3) is off.

I did not understand the background of the dynamic constraint in section **2.1.2. Dynamic Problem**. The definition of e following equation (1) included "the middleman's purchase price from the producer" which is $alphap$. When p is the price charged the consumer by the middleman and $alphap$ is the price charged the producer by the middleman, the formal implications are awkward and could be serious. In a general equilibrium format, we would have p (consumer price) = $alphap$ (producer price) + $(1 - alpha)p$ (middleman price). The three programs must be solved simultaneously. If $0 < alpha < 1$, one extremity must stand for no middleman, the other extremity for a producer-middleman. I am not sure which is which. In making a case for a middleman, alpha could be the choice parameter of a producer. When $alpha$ tends to 0, is the objective function of the producer threatened by negative territory? More thought must be given to the distinction between demand price and supply price, the derivation of first-order conditions (What is parametric? What is the choice variable?). With **2.2. Producer**, a familiar capital accumulation problem is riddled with mysteries. Shouldn't the second cost variable in the maximand be $K(t)$? (Why the heavy notation for the rate of interest?!) I am not familiar with a problem of the kind having two control variables especially when labour does not figure in the state equation.

The state equation in section **2.3 Consumer** must connect with the previous section. The usual $R(t)$ must be the same as the less-familiar letter for the rate of return in equation (12). I wondered, once again to connect with the state evolution equation of the producer, whether the more familiar symbol for savings $S(t)$ would not be more appropriate than $a(t)$ for assets. (The quantity of labour hours $L(t)$ should be attached to $w(t)$ in the state equation).

Taxation pops up suddenly towards the end of the paper.

As a concluding comment, I note that the style of doing 'verbal comparative statics' backed by an unfamiliar mode of calculations after working through optimization conditions is unattractive and unconvincing.

To summarise, the authors would have to rethink all parts of their research enterprise. If the study of taxation is their lofty goal, they will have to approach it frontally. Government expenditure is mentioned once. Along with taxation, the government budget constraint will need to be introduced. If they are inspired by the middleman, or intermediation more generally, suitable examples will have to sought to motivate the algebra and calculus.