20.10

In discussing the relationship of saving to consumption in a monetary economy, Keynes writes

"An act of individual saving means — so to speak — a decision not to have dinner to-day. But it does not necessitate a decision to

have dinner or to buy a pair of boots a week hence or a year hence or to consume any specified thing at any specified date. Thus it depresses the business of preparing to-day's dinner without stimulating the business of making ready for some future act of consumption...If saving consisted not merely in abstaining from present consumption but in placing simultaneously a specific order for future consumption, the effect might indeed be different." — J. M. Keynes, *The General Theory...*, chap. 16.

Can the difficulty Keynes notes ("depresses the business of preparing to-day's consumption without stimulating ... some future act of consumption") occur in an Arrow-Debreu economy in equilibrium? In particular, in an Arrow-Debreu economy with a full set of futures markets, is it true that (paraphrasing Keynes) *saving consists merely in abstaining from present consumption but not in placing simultaneously a specific order for future consumption?* Explain.

Suggested Answer: No. The Arrow-Debreu model is a full employment model. A decision "not to have dinner today" frees up some of the household's budget. Under the non-satiation assumption, the unallocated budget will be spent in the futures market at the market date on some current or future consumption, indeed in Keynes's phrase, "placing simultaneously a specific order for future consumption."

20.11 In an Arrow-Debreu economy with a full set of futures/contingent commodity markets under uncertainty consider the portfolio and consumption allocations of households 1 and 2. There are two periods: date 0 and a future date 1 where there are three conceivable states of the world, A, B, and C. They regard states A, B, and C with the following subjective beliefs (p represents probability):

Household:	State A	State B	State C
1	$p = 1/2$	$p = 1/4$	$p = 1/4$
2	$p = 0.90$	$p = 0.09$	$p = 0.01$

The economy achieves a competitive equilibrium on the contingent commodity markets. Under the First Fundamental Theorem of Welfare Economics, the allocation is Pareto efficient, meaning that the two households equate their MRS's for the contingent commodities. As you would expect, the proportion of 1's portfolio in State C goods is considerably larger than 2's.

In the event, State C occurs. Households 1 and 2 calculate their MRS's of date 0 versus date 1 state C consumption. Their MRS's are very different from one another! This appears to indicate Pareto inefficiency. Is the First Fundamental Theorem of Welfare Economics false? Explain.

Suggested Answer: 1FTWE applies to the ex ante allocation of contingent commodities. Prior to knowing the eventual outcome of uncertainty, there is no attainable reallocation that can improve the desirability of both portfolios or improve one leaving the other with unchanged desirability. 1FTWE does not apply to the realization. Once the eventual state of the world is known, there may appear to be mutually desirable reallocations, but these reallocations will typically be intertemporal (seeking to rearrange past mistakes) so they are not realizable.

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(i) Sell the endowment dated T and T-1 on the futures market for goods deliverable at those dates. That provides purchasing power for consumption purchases at all dates. Then purchase as steady a stream as the household likes — and can afford — at all dates on the markets deliverable for t=0, 1, ..., T-1, T.

(ii) Sell the output on the futures markets deliverable for dates k, k+1, ..., T. That provides purchasing power for inputs at dates 0, 1, purchased on markets for goods deliverable at 0 and 1.

(iii) Predictable variation in tastes, technology, climate, endowment, etc., may account for variable economic conditions without uncertainty. Then equilibrium output may vary correspondingly.

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The decision-making procedure fulfills some but not all of the five cited conditions. It does fulfill the definition of an Arrow social choice function, f since the group ranking procedure fulfills $f : \Pi^{\#H} \rightarrow \Pi$.

1. Transitivity: YES. Transitivity is fulfilled inasumch as the procedure uses the rankings $>$ and $\geq$ which fulfill transitivity. There may be some intransitivity associated with tie-breaking.

2. Non-dictatorship: YES. Any voter may be outvoted.

3. Independence of Irrelevant Alternatives: NO. In determining the choice between two alternatives, their position relative to other possibilities may enter the decision. In the example, consider the choice between **A** and **B**. Their positions in pairwise preferences in the two profiles are the same. Under the Independence condition the two profiles choices between them should be the same. In Profile 1, **B** is chosen, getting the majority of weighted votes. In Profile 2, **A** is chosen, getting the majority of weighted votes. The location of other possibilities enters significantly the choice between **A** and **B**, violating the Independence condition.

4. Pareto Principle: YES. A universal preference is the weighted voting preference.

5. Unrestricted Domain: YES. Any preference profile can be accommodated by the procedure.