Chapter 1, “On the Extent of the Market when Markups are Endogenous”

Most models of monopolistic competition in international trade theory, based on the Dixit-Stiglitz formulation popularized by Krugman, make two assumptions that limit their usefulness for some purposes, including the one here of identifying effects of the size of the market. One is that firms use only a single factor of production, labor. And the second is that elasticity of demand facing each firm is constant – usually due to the large number of firms in zero-profit equilibrium – so that monopolistic markups are constant. As a result, an expansion of the market can occur only with a rise in the endowment of the single factor, and the effects of that expansion occur only through the addition of more firms, all operating identically to what they did before, rather than individually responding to aspects of the larger market. Some authors have dropped one or the other of these assumptions, either adding a second factor of production or allowing demand elasticity to vary with level of sales. But this author drops both assumptions and examines the implications in considerable detail.

For factors of production, Arro includes both capital and labor, with the particular formulation that capital underlies only fixed costs, while labor contributes only to variable costs. For demand elasticities, Arro eschews the linear demand formulation that has been used successfully by Ottaviano and others, and instead assumes that the market is small enough that the number of firms is too small to be approximated as infinite. This last may limit the applicability of these results to small countries.

The results of the model all take the form of propositions in which the effects of an increase in the labor force has a monotonic effect, while the effects of an increase in the capital stock is non-monotonic. That is, typically these increases have effects in the same direction on variables such as scale economies and variety so long as capital is below some threshold level, but they have opposite effects beyond that threshold.

This is a worthwhile piece of analysis, competently done. I’m not sure that any of these results will surprise those who have immersed themselves in this literature, but I expect that they will be glad to see them derived and added to the body of knowledge.

Chapter 2, “Vertical Specialization and the Inequality of Nations”

This chapter uses a model that is similar to the first, in that an intermediate-good sector provides an input to a final-good sector and the former involves differentiated products along Dixit-Stiglitz lines. For reasons that I never fully understood, this chapter also includes a nontraded good that is said to somehow
resolve some ambiguity in the rest of the model. The purpose of the exercise is to show how patterns of specialization depend on relative factor endowments. The answer, which is not surprising given the assumptions made about factor intensities, is that the capital abundant country specializes in components and the labor abundant country in assembly. I gather that, although the result seems intuitively obvious and accords perfectly with the Heckscher-Ohlin prediction, the complexity of the model makes it nontrivial to derive.

The first result in the chapter, Lemma 1, is very odd, as stated. It says that “free trade...requires...” a certain restriction on the parameters of the model. What is meant, I think, is instead that free trade can lead to an equilibrium that duplicates the integrated world economy – and thus yields factor price equalization (FPE) – only if this restriction holds. Thus it is not free trade that requires the restriction, but FPE. If I’m right, and if the author truly meant to consider cases without this restriction, then the appropriate response should have been to examine cases without FPE.

I am less impressed with this chapter than I was with the first. We do, of course, want to know what determines patterns of specialization. But getting the answer only from a particular model that the author has constructed for that purpose does not tell us very much. If this had been a model that was standard in the literature, and/or if it were somehow documented as being empirically more plausible than other models, then these answers would tell us something useful. But I can’t see that either of these is the case. The chapter is therefore not much more than a theoretical exercise that may not be of much interest to others. As far as I can tell, though, it is competently done, and it demonstrates well the author’s facility with economic analysis.

**Chapter 3, “Standardization vs. Specialization in Outsourcing”**

This is a more innovative model than the others, in that it does not so clearly just build on models to be found in the literature. Instead, it models outsourcing and one of several means of obtaining inputs that are specifically tailored to the needs of a final good. The final good is produced to satisfy final demand that is modeled as in Lancaster and in Helpman – that is, consumers have an ideal variety that is distributed around a circle. Producers select a variety to produce along that same circle, and they must produce or purchase an input that matches that. They can produce it themselves, at certain fixed and variable costs; they can purchase it from an intermediate-good producer that produces just that one variety, also at certain fixed and variable costs; or they can purchase it from a “standardized” producer who then modifies it to their specifications, at yet other fixed and variable costs. These costs would seem to be crucial for the outcome, although I didn’t see them being discussed much in the paper, or playing much of a role in the results.

The difference between the in-house and outsourced inputs is fairly clear: the first does not require the paying of a markup over cost. I was less clear, however, on the
difference between the two sources of outsourced inputs. Perhaps I didn't read carefully enough, but I presume that the difference has something to do with market structure. It is clear that both of the outsourcing equilibria must involve some sort of bilateral monopoly, but I didn't see that clearly in what I read.

In summary, this third chapter has the potential to be the most interesting of the three, although I'm not at all sure that it has reached that point yet. I suspect that this is really just a first draft, and that it has not yet benefited from as much feedback as the other chapters. As the third chapter of a dissertation, however, I would view it as satisfactory.

**Conclusion**

To conclude, I find the contributions made by these chapters to be worthwhile and, with more work, potentially publishable. I certainly believe that this draft warrants a dissertation defense and eventual award of a doctorate title.