Comments on Markusen,
"Modeling the Offshoring of White Collar Services: From Comparative Advantage to the New Theories of Trade and FDI"

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As one would expect, Jim Markusen has done an excellent job of putting the phenomenon of offshoring into perspective. He has done this by drawing upon models of international trade and foreign direct investment to tell a series of stories about why offshoring may occur and what effects it will have. These stories take the form of several explicit models, for each of which he explains the structure and reports results. The results reported are only qualitative, but they are based on what were apparently numerous quantitative simulations.

As I read his paper, I found the explanations given very intuitive and helpful. I especially appreciated his emphasis on why scarce factors may be cheap in some countries, in spite of their scarcity, a result of being complementary to another factor that is even scarcer. As he puts it, they have *nothing to do*. Offshoring to take advantage of these services may make the services of the complementary factor available, benefiting both them and the world. I like that story a lot.

When it came to the results of the models, however, I found myself more confused. Each model had its own list of results, and I had to keep flipping pages to compare them. So the main contribution I will make in these comments is to put these

results into one place. In Table 1, I report both the assumptions of Markusen's Models 1-4 and the results, all taken directly from his paper.

Below the table is the notation I use, supplementing Markusen's factors H, U, and K and his goods/fragments Y, X, M, and S with factor prices s for skilled labor, u for unskilled labor, and r for know-how. Most of the assumptions, at the top of the table, are common to all four models, which are distinguished by whether they have 2 or 3 factors and by whether they assume perfect or Cournot competition.

The bottom portion of the table shows the results that Markusen reports for welfare of the two countries and the two or three factors (in the form of their real factor prices) in each country as a result of introducing offshoring/fragmentation. I present simple plus and minus signs, except for those results that depend on country size due to terms of trade effects, in which case an asterisk indicates that these signs hold only if North is a large country relative to South. I all cases my understanding from Markusen's paper is that these qualitative results may not be valid for all possible parameters, even within the assumptions stated here, but that these signs represent the solutions for what he takes to be the most plausible range of parameters.

The message I take from this collection of results is that almost anything can happen. Even within the constraints of the four models' common assumptions, these apparently minor variations of assumed structure of competition (perfect *versus* Cournot) and number of factors (two *versus* three, with – importantly – the third factor complementary to one of the others) permits a mixture of both plus and minus signs in all but two of the main rows in this table. (I ignore the rows for return to know-how, since this factor does not appear in two of the models.) Only for country South as a whole and

for skilled labor within South do the models yield an unambiguous conclusion: these two constituencies gain in all four models. Unskilled labor has mixed results in both countries, as does skilled labor in North and country North as a whole.

This is not intended as a criticism of the models or of Markusen for presenting them. On the contrary, I think we need to know that sensible economic models do not provide a consensus message on some issues, and clearly that is the case for offshoring. As Markusen himself emphasizes, this should not be a surprise, since that has been true if one looks objectively at the literatures on other issues of trade theory, including even the gains from trade liberalization.

In particular, it is indeed possible that the developed world, represented here by the country North, may lose from offshoring, and so especially may skilled labor within the developed world. This is not a new observation, and Markusen acknowledges others who have said it before, but it is at least helpful to have more light shed on the mechanisms by which this may happen, and Markusen's models provide that light.

There is one thing that Markusen does not do with his model that I wish he had, which would be to calculate the effect on welfare of the world as a whole. Admittedly, actual residents of the real world may not care about that, since their own welfare will be better tracked by the separate countries and factors. But a trade economist like myself would like to know the answer to this. I presume that the answer must be that the world as a whole must gain from the introduction of offshoring, since it represents an improvement in the efficiency with which resources are used world wide, and the models here, or at least those with perfect competition, do not seem to have the sorts of market distortions that could render an improvement in efficiency harmful.

But admittedly, the welfare effect on the world as a whole, even if it were reported, would not help us to resolve these ambiguities in effects on countries and factors. And that raises that question of how we might best go about resolving these ambiguities.

On that, I am even more at sea than Markusen's models. Should we use case studies of individual episodes of offshoring for which more detailed information might be available? That would certainly be useful, but it could hardly be complete, since such case studies would probably be confined to single industries and they would miss the important general-equilibrium and terms-of-trade effects that drive models like Markusen's.

Alternatively, one might I imagine econometric studies of offshoring together with national incomes that could provide estimates of the effect of the former on the latter. But surely, if we cannot even reach a consensus on the effects of trade more broadly on economic growth, then this approach does not seem very promising.

Finally, Markusen's own modeling suggests that perhaps we can build more elaborate models, incorporating the features he has here, but more deliberately replicating the data and parameters of the real world. Such computable general equilibrium (CGE) modeling has become commonplace for analysis of trade policy changes, and perhaps it can be applied productively here. But the truth is that such models rest very critically on assumptions made about model and market structure, which the data themselves are seldom able to inform. Seeing how sensitive Markusen's simple models are to such assumptions, I doubt that CGE models applied to this problem could tell us much more than we already know here: that almost anything can happen.

If that is the state of our knowledge about offshoring, what should be our policy advice? Knowing that losses from offshoring are possible, should we recommend that protectionist policies be employed to prevent it? Surely not, since in our ignorance we might as easily be depriving ourselves of benefits as of costs. Should we therefore advocate that offshoring be permitted to proceed unabated, regardless of the cost that it may impose? Perhaps, but if we are honest about our confidence that it will be beneficial, we may not be listened to. Maybe the best approach is not to condemn or to praise offshoring across the board, but to consider each example of offshoring on a case-by-case basis. That makes sense, except that I am not sure what information we should even want to have in order to judge it case-by-case.

In the end, although I very much appreciate the insights that Markusen has given us with his series of models, I find myself knowing even less about the likely effects of offshoring than I did before I read his paper.

	Model			
	H-O with fragmentation	**Missing Input (MI)**	**Multinational (MNC)**	**MI + MNC**
	1	**2**	**3**	**4**
Assumptions				
Final Goods	2 (Y,X)			
Fragments (of X)	2 (M,S)			
Skill intensity ranking	M>X>S>Y			
North abundance	H (&K)			
South abundance	U			
Factors of Production	2 (H,U)	3 (H,U,K)	2 (H,U)	3 (H,U,K)
Competition in X	Perfect	Perfect	Cournot	Cournot
Results				
North - country	–*	–*	+	–*
South - country	+	+	+	+
North – s/w	+		+	–
North - s	–*	–	+	–
North – w	–	+	–	+
North - r		+		+
South –s/w	–*		+	+
South - s	+	+	+	+
South – w		–	+	+
South - r		–		

*If North is large and South is small

Key to notation:

Factors:
  H = Skilled labor
  Y = Unskilled labor
  K = Know-how

Factor prices (real):
  w = Unskilled wage
  s = Skilled wage
  r = Return to know-how

Goods and Fragments:
  Y = Unskilled-labor-intensive final good
  X = Skilled-labor-intensive final good
  M = High-tech manufacturing fragment of X production
  S = Service fragment of X production