

Trade in Services: An Introductory Survey

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Abstract: Recent trade theory literature has devoted considerable attention to trade in services. At issue is whether trade in services can be adequately explained by existing models or whether there are likely to be any new insights to be gained by considering services as distinct from goods. This paper provides a selective survey of the relevant theoretical literature and considers several recent papers that suggest new results can be obtained by modelling goods and services as distinct.

I INTRODUCTION

This paper suggests that in the light of recent research it is wrong to treat goods and services as always theoretically equivalent. In the paper I consider several recent articles that have suggested new results and survey some of the standard theory that is particularly relevant to the debate on trade in services.

Over the years there has been a tendency to model goods and services as if they were equivalent. Indeed, in all branches of economic theory authors frequently refer to the subject of their papers as "goods and services". Several recent developments have led to a reappraisal of this treatment of the two concepts. First, the service sector has grown in importance in modern western economies, accounting, for example, for 69 per cent of GNP in the United States. Secondly, the current round of GATT negotiations is considering several proposals on the liberalisation of trade in services. Thirdly, the fact

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that there has already been considerable liberalisation of trade in goods in the European Community suggests that the service sector may experience the greatest changes with the completion of the internal market in 1992.

There is not unanimous agreement, however, on the need for this reappraisal. This may be due to the belief of some trade theorists that services can be analysed in traditional models in precisely the same way as goods. The question is whether services can simply be treated either as final goods in themselves or as intermediate inputs into the production process. Thus the debate in the literature is centred on whether there is any fundamental difference between goods and services *per se*, whether trade in services can be adequately explained by existing models and if so, which models are most appropriate, and finally, whether there are likely to be any new insights to be gained by considering services as distinct from goods in such models.

Perhaps the least progress has been made on the first of these issues, that is, whether there is a fundamental difference between goods and services. Hill (1977) argues that goods and services have distinct characteristics and that they "belong in different logical categories" (Hill, 1977, p. 318). Among the key characteristics that differentiate services from goods according to Hill are: consumption of a service must take place simultaneously with its production, services cannot be stored, and they cannot be transferred from one economic unit to another. Thus Hill claims that "models of pure exchange economies of a Walrasian type . . . are quite inapplicable and irrelevant" (Hill, 1977, p. 319). While these characteristics are true of some services such as medical care or personal services, there are other services which do not fit this definition. Services such as management or engineering consulting, can be carried out at arm's length by telephone or post. Many other writers have attempted to define services either formally or through a taxonomy of activities they believe to be services.¹ Unfortunately, as Kravis, Heston and Summers (1983) point out, it is generally possible to find an economic activity that is commonly agreed to be a service that does not fit any definition proposed. Similarly, Inman (1985, p. 4) suggests that "like beauty, the definition of a service is often in the eye of the beholder."

In contrast to Hill, Hindley and Smith (1984) can see no reason for concern at the neglect of the distinction between goods and services. They argue that goods are not an homogeneous commodity and that they have many distinct characteristics, yet we would expect the theory of comparative advantage to continue to hold.

Deardorff (1985) argues that debating definitions will inevitably prove

1. See, for example, Baumol (1985), Zweifel (1968), and Bhagwati (1985). Fuchs (1968) presents a taxonomy of services which has been employed by many subsequent writers, such as Levenson (1985).

inconclusive and suggests that the issue can only be resolved by building a model that captures a single characteristic peculiar to a service, a characteristic "that intuition suggests may have a bearing on trade and comparative advantage, . . . and examining its implications" (Deardorff, 1985, p. 65). I would argue that it is this line of research that has proved most successful. The models outlined in this paper do not suggest that a new theory is required to explain *all* trade in services, but rather that some services can alter the models in important ways leading to a reversal or a reinforcement of traditional results.

In the subsequent sections I examine several papers that have identified an important characteristic of services and which derive new results or insights into international trade. I also survey several areas of trade theory that are particularly relevant to trade in services. Section II considers three new papers on what are known as producer services. Section III outlines the theory of factor mobility, an area many economists have suggested is particularly important to the debate. Section IV addresses the issue of whether free trade in services will result in trade in services becoming more important than trade in goods. Section V considers the existing literature on transportation services and some new results from recent papers. Section VI considers a model of education services, while Section VII outlines future possible research that may yield new results.

II COMPARATIVE ADVANTAGE AND TRADE IN PRODUCER SERVICES

This section examines three recent papers on producer services. These are services, such as management or engineering services, which can be provided by residents in one country to enterprises in another. Deardorff (1985) cites the provision of those services by foreign residents as one of the characteristics that may affect the standard results.

In his frequently cited paper, Deardorff employs a Heckscher-Ohlin model where there are two countries, two factors, one good and a service. The service is not tradable and the factors of production are labour and management.

If country A has relatively lower labour costs and services are labour intensive, then managers from country B will have an incentive to combine with labour in A in order to supply services in country A. Deardorff suggests that this result violates the principle of comparative advantage since "the labour-scarce country exports labour intensive services in spite of the fact that these services cost more in country B than in country A in autarky" (Deardorff, 1985, p. 65). There is, however, some possible confusion here, for trade in services is defined by Deardorff as the production of services in A by managers located in country B, rather than as the export of factor (management) services. However, it should be noted that there is no reason to call the non-traded

sector a service at all in his model. Country B would still supply management services if the non-traded sector produced a good rather than a service. Deardorff himself notes that the principle can be rehabilitated if it is reinterpreted to apply to the supply of management services. In this case country B has the comparative advantage since the relative salary of management in B is lower in autarky.

Deardorff claims, however, that such a reinterpretation will lead to problems if the comparative advantage in country A is based upon a technological advantage in the production of services. In this case, although country A has a higher autarky return to management, it will export management services as long as its technological superiority outweighs the relative costliness of its management.

The apparent violation of the principle of comparative advantage arises because the technological advantage is specific to the management factor in country A. This can be seen if we consider Markusen (1983) where both goods are traded and the factor employed intensively in the technologically superior industry enjoys a relatively higher return. If management is used intensively in the technologically superior sector, and both factors are mobile, then managers will migrate to country A until returns are equalised. However, in Deardorff's model the managers from country B do not become technically more proficient when they provide services in country A and their effective return is lower because while the return per manager in country A is higher, the return per effective management unit is lower. Thus, the only way that country B can enjoy the benefits of country A's superior technology is to rent the technically superior management services from A in return for goods. The correct indicator of comparative advantage in this model is not the return to the management service, but rather the return per effective management unit.

This model highlights both the importance of defining the service activity appropriately and the importance of choosing the appropriate indicator of comparative advantage when analysing trade in services.

Melvin (1989) highlights an even more important result that follows from this model. If one country is relatively well-endowed with the mobile or service factor and if the industry producing the tradable good uses this factor intensively, then efficient world output is possible, but the trade pattern will not be as predicted by the Heckscher-Ohlin Theorem. The country that is relatively well-endowed with the immobile factor will be observed to be exporting the good that is intensive in the mobile factor.

Melvin also shows that in a model with factor services the imposition of a tariff may produce results that differ from the traditional predictions. A tariff on the tradable good may result in a fall in its domestic production. The result depends upon which factor is used intensively in the production of the

tradable good. If it is the mobile factor, the traditional fall in world trade due to the imposition of a tariff reduces the exports of the mobile factor, which in turn causes the output of the tradable good to fall.

Markusen (1987) notes that many producer services, such as engineering and management consulting, require a high initial investment in learning. These services, however, can be provided to additional users at a very low cost. Markusen develops a model similar to the one in Ethier (1982) in which the output of a good is modelled as the assembly of components, and in Markusen's model these components are producer services. Since these components are produced with a fixed cost and a constant marginal cost, increasing returns to scale exist. The market structure, therefore, is assumed to take the form of monopolistic competition.

Markusen shows that permitting trade only in goods is an imperfect substitute for trade in services, since the gains from specialisation in services cannot occur. Further, if a country has monopoly power in trade, a tariff on imports of producer services reduces specialisation by servicers and may, therefore, cause production and welfare to decline.

These papers have important implications for traditional trade theory. Trade in services can lead to greater gains from trade, to a violation of the Heckscher-Ohlin Theorem and tariffs can lead to a fall in welfare even for large countries.

III SERVICES AND FACTOR MOVEMENTS

This section surveys the theory of factor movements in international trade. We do this because virtually every paper on this topic cites the fact that factor movements are important to the theory of trade in services. For example, many services require direct contact between the producers and consumers. Thus, medical and dental care, direct education and other personal services require that either the producer or the consumer migrate if the service is to be provided by a non-resident producer. Deardorff (1985) shows that although one might expect factor migration to provide problems for the principle of comparative advantage, this is not the case.

The possibility of factor migration acting as a substitute or as a complement to trade has already received considerable attention in the traditional theoretical literature. Mundell (1957a) showed that in the Heckscher-Ohlin model factor mobility could act as a substitute for trade in goods, since countries can eliminate their differences in endowments by means of factor migration. A similar result is derived by Krugman (1979) who shows that factors may all migrate to one country because of the gains arising from increasing returns to scale. There are other circumstances when factor movement in the presence of scale economies or imperfect competition may be

complementary to trade in goods. Markusen (1983) develops a model where both countries have identical factor endowments but where one country is technically superior in the production of one good, and he shows that factor mobility is complementary to trade in goods. In such a model, factor migration permits a country to become relatively better endowed with the factor employed intensively in its export industry, and the volume of trade consequently increases.

There is also an extensive literature on optimal factor migration policies when a country can discriminate between returns to domestic and foreign factors. Ramaswami (1968) shows that if one factor is immobile, then the country should allow the mobile factor to move until the rents to the home country are maximised. The economic rationale is simply that if any country can choose to either import the scarce resource or export the abundant factor, then the former policy is optimal from the perspective of the domestic economy since this permits factors to be used in the same ratio throughout its economy. If the factors are exported then there is an efficiency loss in the home country, since its mobile factor is being used more intensively in one country than another. If, however, discrimination is not possible then, as Calvo and Wellisz (1983) have shown, it is preferable to export the abundant factor. Kuhn and Wooton (1987), in a model where there is sector specific capital and land, obtain a richer set of possible policy outcomes, including the exportation of both capital and labour if the home country can discriminate.

IV THE CHARACTERISTICS APPROACH AND THE TRADABILITY OF SERVICES

If we relax the international restrictions on trade in services are we likely to observe more trade in services in the future than trade in goods? In this section we examine a paper by Zweifel (1986) that considers this question. It may be recalled that there exists an extensive literature on trade in the presence of non-traded goods which often refers to services as examples of non-traded goods.² But as we have seen already, there are many services that can be traded. Thus, engineering or management consulting can be conducted by post, telephone or computer, while repairs and alterations to goods can be conducted by transferring the product.

Zweifel uses a version of the demand model developed by Lancaster (1966), in which the characteristics of a good, rather than the good itself, form the arguments of an agent's utility function. Both Inman (1985) and Kierzkowski (1987) have suggested that this may be an appropriate model for analysing

2. For a survey see Dornbusch (1980).

trade in services since many services have several characteristics that can yield consumer utility.

The variant of this model envisaged by Zweifel is one in which agents can combine goods linearly in order to obtain a bundle which more closely represents their desired bundle of characteristics. Zweifel suggests that services, however, because of their nature, cannot be combined in this fashion. If a good possessed by a consumer requires some alteration or repair then the set of possible outcomes is restricted by the fact that the identity of the good must be preserved in the service process. Zweifel attaches considerable importance to identity preservation as one of the features of a service (a restriction also noted by Hill), and hence the range of permissible changes are limited to some region of the original characteristics.

The difficulty about the provision of services in these circumstances, according to Zweifel, is that they are almost never consumed in linear combinations. This may be due to the fact that it is difficult to apportion the degree of repair or alteration effected by an individual servicer, the fact that property rights remain with the individual who is being serviced or whose good is being serviced or the fact that servicers cannot simultaneously work on a project and that the efforts of one servicer may impinge on the output of another. For example, it is not possible to linearly combine the expert assessment of two cancer specialists on the need for an operation.

Zweifel suggests that the inability to combine services linearly implies that services are more likely to be traded than goods. Since services cannot be combined to yield the desired characteristics, the need for variety is greater. It follows that, since international trade facilitates greater variety when differentiated products are produced under increasing returns to scale, services are more likely to be traded than goods.

V TRANSPORT SERVICES

Unlike other services, transportation services have received considerable attention in the trade literature, which is not surprising given its importance in world trade. Kierzkowski (1986), for example, argues that the value of transportation services may be as much as 13 per cent of the value of world merchandise trade. This section outlines the existing theory on transport services and reports on several recent papers that yield new results.

Samuelson (1954) and Mundell (1957b) modelled transportation by assuming that a fixed percentage of output is consumed when a good is transported from one location to another. This model is sometimes referred to as an "iceberg" model of transportation costs. This assumption means that the production side of the economy is unaffected, since no resources are absorbed in the production of transportation services. Domestic prices will

be affected, however, and this will alter equilibrium output and consumption. The major drawbacks of the Mundell-Samuelson model is that transport costs are not determined endogenously, and that the model does not suggest which country will supply transport services. Herberg (1970) attempted to relax the fixed cost assumption, but he makes the additional restrictive assumption that each country must carry its own imports.

The principal result of modelling transport in this fashion is that high transport costs may act as a barrier to trade, just as do tariffs. This distortion will also mean that the factor-price-equilisation theorem will not be satisfied even if all the usual necessary conditions are. On the other hand, the presence of transportation costs does not necessarily imply that the price of imports must rise. Iceberg transportation costs have the same effect on offer curves as a tariff, that is, the curve is shifted proportionally downwards towards the importing axis. As a consequence, if the foreign country's offer curve is inelastic, then an effect similar to the Metzler paradox can occur leading to a lower price for imports.

Falvey (1976) and Cassing (1978) incorporated the transport service sector into the traditional Heckscher-Ohlin model. By treating transportation as just another production sector, Falvey is able to allow market conditions to determine which country will supply services. As with any Heckscher-Ohlin model, the result will depend crucially upon the relative factor intensities of the three sectors and the factor endowment of the countries. If the service sector is more capital intensive than both of the goods' sectors then the capital-rich country will produce services. If transportation is more capital intensive than only one of the goods, then we cannot predict *a priori* which country will supply the transport services. Cassing points out that for the purpose of the Metzler paradox it is important to differentiate between the case where tariffs are imposed on fob (point of sale) prices and tariffs imposed on cif (delivery) prices.

Casas (1983), in a comprehensive survey of transport services, suggests that resources from both countries should be employed in international transportation since ports and airports involve the use of domestic resources even if the foreign country supplies the services. The contribution of each country will depend once again upon technology endowments and market conditions.

This restriction can be handled as a special case in Ryan (1987) which develops a mobile factors model where intermediate services are necessary for both domestic and foreign trade. This model shows that free trade can reduce inefficient trading and excess service capacity relative to autarky and thus there are gains from trade due to an "as if" technical improvement in services. If both countries' resources must be employed to service goods then trade may be restricted by the limitations that the transport technology places on

factor payments. Using a similar model with fixed factors, Ryan also shows that free trade in services can lead to a loss of economic rents and a decline in welfare for all agents in the service importing country.

Kierzkowski (1986) suggests that since many services such as shipping and telecommunications are characterised by oligopolistic market structures, it would be more appropriate to use a version of the intra-industry trade model such as those employed by Brander and Krugman (1983) and Brander and Spencer (1984). Kierzkowski develops a duopoly model of international services by assuming that there are two countries each with a well-specified import demand function and each with a shipping company that acts as a Cournot duopolist. Each shipping company chooses the quantity of goods it will carry in each direction and perfect competition is assumed to obtain in the market for goods. Kierzkowski shows that, *ceteris paribus*, an increase in a country's costs will reduce the market share of its shipping company, raise the prices of transportation in both countries and reduce the overall level of services. If both countries' costs were to rise, due to an oil price shock for example, then the total level of services would fall, but the relative market share of each country would remain constant.

These recent papers have given us a set of models that permit a richer set of outcomes than the traditional model. The significance of these new developments is something that can only be established by future empirical testing.

VI EDUCATIONAL SERVICES

Another area of the recent trade theory literature that relates to trade and services is the literature on the formation of human capital. Findley and Kierzkowski (1983) developed a model where there are two goods, x and y , and two factor inputs, skilled and unskilled labour. Unlike the traditional Heckscher-Ohlin model, the endowment of these two factors is not determined exogenously, but rather the quantity of skilled labour is an endogenous variable. They assume that there is a stationary population, in which N agents are born (with a life span of T periods), and N agents die in each period. Individuals have a choice of entering the labour force immediately or of combining their labour input (for n periods), with a fixed educational factor in order to become skilled workers. In a competitive stationary equilibrium the number of skilled workers in an economy will depend upon the quantity of the fixed educational factor and the agents' rate of time preference. Thus in a world with free trade in goods, the country with the higher discount rate or the higher stock of educational capital can be expected to export the skilled-labour-intensive good and import the unskilled-labour-intensive good.

As Kierzkowski (1987) points out, there is no reason to believe that returns to each type of factor will be equalised in this model. Rather the wealth of

each nation will depend crucially upon the endowment of the fixed educational factor. If there were some way of guaranteeing equal access to this factor for all the population in the world, then the discounted income of all agents would be equal. Thus, welfare could be increased if foreign labourers could avail themselves of the fixed educational factor, thereby equalising the return to the educational factor in the two countries. Once again, free trade in services requires that the receivers of the service (students) or the providers of the service (professors) migrate. Alternatively, education can be exported via books or, as in the case of Britain's Open University, by television.

This line of research has considerable potential in explaining the problems cited by Lucas (1988) in reconciling growth theory and the process of economic development.

VII CONCLUSION

As I indicated in the introduction, I do not believe that the debate about the applicability of models of trade in goods to trade in services is one that can be settled in a definitive manner. Like Deardorff I believe that the only way to settle this question is to model what we believe to be the special features of services and investigate the applicability of traditional trade theory. This paper outlines several models which yield results that differ from the standard trade results or that add new insight to our understanding of international trade. The significance of these new developments has yet to be determined and future research must evaluate their empirical relevance.

However, a considerable amount of theoretical research remains to be done since there are many characteristics of services which we have not captured in the existing models. Hindley and Smith (1984), for example, have noted that licensing and regulation are a feature of many service industries and some economic rationale has to be advanced to explain this. Inman (1985) has suggested that this may be because many services are characterised by asymmetric information problems. Thus, it may be more difficult to assess the quality of a foreign service or the reputation of foreign servicer than the quality of a foreign good. This may lead to domestic regulation that impedes trade. A model that can capture this feature of services is highly desirable.

Financial services in particular are characterised by country, project and agent-specific information problems that need to be formally modelled in order to assess the impact of free trade in services with the completion of the internal market in 1992. Trade theory also needs to find a more satisfactory explanation than technical differences to explain why many intermediation services, such as financial and insurance services tend to locate in a single location when barriers to trade are removed. It is possible that initial differences in costs and returns to scale may provide an adequate explanation.

Further, trade in financial services as well as trade in educational services may be relevant in reconciling the problems cited by Lucas (1988) with growth theory and economic development.

Finally, Markusen notes that many producer services exhibit features of increasing returns to scale due either to extensive education requirements or private information. These specialised producers are also a feature of multinational enterprises. Future research on these enterprises needs to evaluate the role of these producer services.

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