An Empirical Examination of Service Foreign Direct Investment

Marc von der Ruhr
Department of Economics
Wylie Hall 105
Indiana University
Bloomington, IN 47405
(812) 855-5896
mvonderr@indiana.edu

Abstract

This paper employs panel data to empirically examine the FDI of four U.S. service industries (wholesale trade, business services, banking, and financial services) into 25 host countries from 1976 to 1995. The regressions are designed to test leading microeconomic theories of service FDI, and to provide empirical evidence to motivate further theoretical work. The results of our regressions for business services and wholesale trade services indicate that U.S. business service firms not only follow U.S. multinationals to a foreign market in order to accommodate an existing client, but also in an effort to penetrate the foreign market. Wholesale trade services do not follow other U.S. FDI abroad. Instead, they locate wherever the local market demands U.S. exports.

The results of our regressions for banking and financial firms suggest that financial services are motivated by different factors than non-financial services. This contrast between the determinants of FDI in financial and non-financial service industries has not been explored in the literature, and motivates additional work.

1. Introduction

Foreign Direct Investment (FDI), or cross-border expenditure to acquire control of a productive asset, has grown substantially over the last two decades. A great deal of empirical and theoretical work has been done investigating the determinants of manufacturing FDI. Yet, remarkably little work has been done investigating service FDI.

The lack of research devoted to service FDI is surprising given the increasingly large role which services play in the economy. For instance, by the mid-1980s the production of services had grown significantly, accounting for one half of GNP in developed market economies. Moreover, the increasing role of services has spilled over into international trade and foreign direct investment. We see that the share of service FDI in total FDI has grown even faster than the share of services in total GNP, and GATS as well as the Uruguay Round of GATT reflect the increasing importance of services through their focus on liberalizing trade in services.

The data clearly indicates, however, that the vast majority of trade in services is done by affiliates of parent companies selling their services in a foreign market rather than parent companies exporting the service to the foreign market. It would seem, therefore, that a better understanding of service FDI is called for in light of the significant impact services have on economies today, and the significant controversies which surround the liberalization of trade in services.

In this paper, we employ panel data to empirically examine the FDI of four U.S. service industries (wholesale trade, business services, banking, and financial services) into 25 host countries from 1976 to 1995. Our regressions are designed to test microeconomic theories of

service FDI, and to provide empirical evidence to motivate further theoretical work.

Our results indicate that U.S. business service firms follow U.S. multinationals into a foreign market not only to accommodate an existing client, but also as a stepping stone into the foreign market. We find that a significant U.S. business presence in a foreign market allows U.S. business services to more successfully penetrate the local market than when there is no significant home business presence. The same does not seem to hold for wholesale trading firms. Wholesale trading firms seem to locate their foreign operations wherever U.S. exports are demanded, and seem to be less concerned with penetrating the local market.

The results our regressions generate for banking and financial firms suggest that financial services are motivated by different factors than non-financial services. This contrast between the determinants of FDI in financial and non-financial service industries has not been explored in the literature, and motivates additional work.

The rest of the paper is organized as follows. Section 2 provides a brief review of the literature of FDI. Section 3 discusses our empirical study, and Section 4 concludes.

2. Literature Review

2.1 Manufacturing FDI

The development of theories to explain FDI are linked by their focus on firms' efforts to reduce transactions costs. Early models focus on explicit costs which may be reduced by FDI, and more recent models build upon earlier work by considering the effect of implicit costs which arise as a consequence of incomplete contracting.

The standard analytical framework for considering how a firm organizes its activities is to examine its transaction costs. Generally, a firm must engage in at least two transactions in order to produce and market a good or service. First, the firm must secure inputs to produce a good or service; and second, the firm must make a good or service available to potential consumers. Each of these transactions can be accomplished in a market and involves the cost of coordinating the inputs and the costs of searching for purchasers of the good. Alternatively, if the firm believes the market costs of these transactions are too high, it may internalize the transactions in an effort to reduce the costs.

Early theories of FDI argue that FDI is a form of internalization used to reduce transaction costs when the firm faces relatively high explicit costs. For instance, they suggest FDI as a means to reduce the transaction cost of securing inputs when inputs are non-existent or prohibitively expensive in the home country, or when a foreign supplier may stop providing them in the future. Similarly, they suggest FDI as a means to reduce transaction costs in the output market when gaining access the foreign market would otherwise involve prohibitive tariffs or transport costs, or when production costs would be reduced because the good needs to be adapted to local needs. Under such circumstances, the cost reducing nature of FDI is clearly motivated.

Subsequent models of FDI add more detail by comparing the various tradeoffs firms face between FDI and other means of serving a market. Horstmann and Markusen (1987), and Brainard (1993) propose similar models of FDI versus exporting based on multistage production in which one stage experiences increasing returns to scale, and another stage experiences scale economies; and transport costs are associated with exporting. The models endogenize the FDI

decision and suggest that a multinational equilibrium occurs when transport costs are relatively high compared to the plant level scale economies, or when the increasing returns at the corporate level are relatively high compared to those at the plant level.

Recent models of FDI focus on the implicit costs (such as monitoring agents and controlling transactions) associated with incomplete contracting which arise due to uncertainty, bounded rationality, and opportunism in order to endogenize the FDI decision. The additional costs arising from incomplete contracting are important factors which influence how a firm organizes its transactions. For example, the difficulty of generating incentive-compatible contracts with foreign sales agents as a means by which to serve a foreign market will have a significant influence on the FDI decision. Ethier (1986) models the formation of multinational corporations (MNCs) in a general equilibrium model in which he endogenizes the internalization decision. His model hinges on the role of information and uncertainty about quality. Uncertainty about quality implies that the firm must reveal its competitive advantage to receive its full value in the foreign market. This may lead an agent who deals with the firm at arm's length to behave opportunistically. Ethier's model illustrates how an implicit cost of contracting, rather than an explicit cost, leads to FDI.

Horstmann and Markusen (1987) model the FDI vs. licensing decision in another manner which leads to the endogenous formation of an MNC. They suggest that because a firm cannot control a licensee or agent's actions, it may have to transfer some of the rents it earns from having a competitive advantage to the licensee in order for the licensee to maintain the firm's reputation. If this transfer is relatively high compared to the costs of FDI, the firm will choose FDI over licensing. Horstmann and Markusen (1996) also explore the exogenous differences which will

lead a firm to either engage in FDI or use a sales agent. The firm may benefit from the sales agent when FDI is expensive, an investment mistake is costly, or the agency agreement is easily terminated. However, FDI is attractive when the market will provide large revenues, supplying customers with good product information is important, or when agency costs are high.

The models by Ethier, and Horstmann and Markusen are similar in that they deal with firms which have a competitive advantage; thereby placing them in an imperfectly competitive market. That is, the firms own some proprietary asset (via R&D, for example) which they do not wish to have made public. The ownership advantage, combined with the desire to enter a foreign market, force the firms to incur additional costs in the form of contracting costs in order to minimize the share of rents they surrender to a third party (a licensee, for instance). If these implicit costs become too large, FDI is motivated as a way to serve the foreign market.

Dunning (1993) summarizes the different motives for foreign direct investment in a single cohesive theory of FDI via his ownership, location, internalization (OLI) framework. According to Dunning's model, for a firm to enter a foreign market via FDI rather than other potential options (such as direct exporting or licensing) the firm must have three unique advantages: (1) an ownership advantage, (2) an internalization advantage, and (3) a location advantage. We have already identified the ownership advantage as a firm's unique asset which confers market power. The internalization advantage refers to the firm's inability to realize the full value of its ownership advantage through market transactions. Finally, the location advantage may refer to either the firm locating a production process in a foreign country in order to take advantage of that country's comaparative advantage in the production process (e.g., locate labor intensive production in a low wage country), or to the firm choosing to locate close to the consumer in

order to realize the value of its ownership advantage.

2.2 Service FDI

As we mentioned earlier, the majority of research in FDI has focused on manufacturing FDI. Service FDI has unique characteristics which deserve attention in examining their contributions to FDI flows. The first difference is the traditional defining characteristic of a typical service. That is, a service is produced and consumed at the same time. The textbook example is a haircut. A barber cannot produce a haircut today for someone to consume tomorrow. However, we must acknowledge that some services may be produced and consumed at different times. For example, some services, such as an audit or a marketing report are embodied in a physical product which can be produced at one time and consumed later. This in turn suggests that such services may be traded. The question then remains, what motivates a service to engage in FDI rather than to export or license? The answer is similar to the general reason any firm may engage in FDI: to avoid potential exploitation by an opportunistic customer or competitor abroad. That is, FDI may be the optimal method for a service provider to keep its ownership advantage. Naturally, it is reasonable to ask what type of ownership advantage exists for a service firm. We can easily argue that manufacturers have an advantage through R&D that yields an ownership advantage. What corresponding asset may a service firm have?

A key ownership advantage for a service firm is its reputation for quality. Service quality is often difficult to determine without the purchase of the service. However, when many consumers have a similar experience with a service, the service provider earns a reputation. A good reputation is therefore an important asset for a firm. Maintaining a reputation also establishes a contracting problem for services similar to the type of problem manufacturers

encounter when serving a foreign market at arm's length. It is difficult for a service provider to license or use a sales agent and make to sure that the foreign agent works to maintain the reputation of the service company. The service provider may attempt to export its service, but the unique characteristics of services (for example, the high frequency of contact required by the client) often rule out such an option.[1]

Evidence suggests that FDI is the leading method by which service companies access a foreign market (Sassen 1991). In the case of professional services, foreign sales account for a large share of the revenues of the leading firms. For instance, we may consider the affiliate sales to affiliate sales plus export sales ratio to illustrate how important FDI sales are to services (Dunning 1993). For accounting this ratio is 92 percent, and for advertising it is 85 percent. It can be argued that we see such high ratios because services have relatively high transaction costs due to their unique nature. For example, (1) services are more idiosyncratic, (2) quality varies more with services, and (3) is harder to assess, (4) the information needed to produce services, once generated, is usually cheap to replicate. All these factors motivate FDI as the best method of providing a service in a foreign market.

These trends in service FDI have elicited hypotheses about the causes for the increase in service FDI. Clegg (1992) focuses on the reputation a service firm desires to maintain, suggesting that it is more efficient for a firm to own its own production facilities in order to maintain its reputation than to allow a sales agent to represent the firm.

Davis, Hanlon and Kay (1993) consider a demand driven context. They argue that clients are likely to pick familiar accountants when entering a foreign market rather than risk using an unfamiliar local provider. They therefore suggest that service firms engage in FDI in order to

accommodate existing clients which engage in FDI.

A United Nations Centre on Transnational Corporations (UNCTC 1993) study suggests that following the client is important in early stages of service FDI , but that market seeking motivations become increasingly important after the service becomes established abroad. The study suggests that as the service provider ventures abroad, it also acquires new abilities abroad, thereby making it more competitive relative to local service providers.

We propose, as a motive for FDI, that non-financial service firms follow existing clients, not only to maintain a relationship with that client at home, but also to gain entry into a foreign market. The service firm therefore uses its relationship with an existing client that engages in FDI as a stepping stone to establish itself in the foreign market.

3. Empirical work

3.1 Past work

Relative to the amount of empirical work done on manufacturing FDI, very little work has been done on service FDI. The UNCTC (1989, 1990) has done studies which examine anecdotal evidence of service FDI by gathering data on changes in the number of affiliates or stock of FDI in different service sectors in various countries at different points in time. However compelling these studies are, they do not benefit from a pool of data that is well suited to more rigorous econometric investigations of FDI. The lack of consistently gathered data has been, and continues to be, a serious obstacle to econometric studies of FDI.

The UNCTC (1993) study is one study that does pool cross section and time series data to study service FDI. It examines what factors cause the number of affiliates of service firms to

increase or not to increase over two time periods: between 1976 and 1980, and between 1980 and 1986. The explanatory factors it considers are host GDP, home business presence in the host market, the cultural distance between the home and host country, host country openness to FDI, relative competitiveness between firms in the home and host country, industry concentration in the host country, the tradability of the service, and the growth in affiliate size. The home countries considered are the U.S., western Europe, and Japan. The host countries are divided into two groups: developed countries (the U.S., Canada, Japan, western Europe, and Australia and New Zealand), and developing countries (Latin America, Asia, and Africa). The services examined include business services (accounting, advertising), trade services (retailing), and financial services (insurance, securities).

The study examines how the above listed factors affect the decision to increase the number of affiliates in developed and developing countries between 1976 and 1980, and between 1980 and 1986. Further, for each time period and host region, the study considers two separate regressions: one which includes all of the explanatory variables listed, and another which omits host GDP. Both specifications are considered due to the suspicion of multicollinearity between host GDP and home business presence. The results for the different service industries, models, and host regions vary. We include the regression results of the UNCTC study and briefly comment on their interpretation in Appendix 1.

Though the U.N. study is quite ambitious, it is deficient in certain respects. First, the variables are in nominal terms. Second, the regression techniques pool the data but do not exploit the panel nature of the data, thereby failing to recognize the potential of heteroskedasticity resulting form the diverse group of host countries included. Third, the specification of

explanatory variables outlined to explain FDI is not consistently applied to all of the regressions, thereby introducing the potential of omitted variable bias in the estimates. Indeed, we see that the results within a service industry, host region, and time period vary widely, depending upon which variables are omitted. Moreover, some of the UNCTC's findings are often counterintuitive, and offer no alternative economic interpretation. These deficiencies lead us to interpret the results of the UNCTC study cautiously, but also suggest methodological points which could be improved upon in order to generate more trustworthy results. Namely, the variables used can be cast in real terms, we may employ panel regressions to account for the combination of cross sectional and time series data, and we may consistently apply a theoretically called for specification to each of the service industries.

Finally, the UNCTC study has one additional limiting feature. The study's use of a binary dependent variable (1 if the number of affiliates increased, and 0 otherwise) indicating whether the number of affiliates increased between 1976 and 1980, and between 1980 and 1986, to make inferences about FDI presents a number of problems. First, it only gives 2 data points for each service industry in each host country, which is less than ideal for drawing inferences. Second, FDI may increase without an increase in the number of affiliates. That is, we may see an increase in FDI without and increase in the number of affiliates. Therefore, the dependent variable does not capture all increases in FDI. Finally, the use of the binary independent variable divides FDI into two categories, when there really ought to be three. It accounts for when the number of affiliates increases or stays the same, but does not explicitly account for when the number of affiliates decreases; i.e., it does not reflect capital outflows.

3.2 Our study

Our empirical work attempts to improve upon the UNCTC study by examining annual data on the stock of U.S. service FDI in 25 host regions from 1976 to 1995 for services, wholesale trade, banking, and financial services. We argue that by using annual data on the stock of FDI in each host country rather than a binary choice dependent variable indicating whether the number of affiliates increased or not, our results are more reliable than those of the U.N. study. Using the stock of FDI as the dependent variable also allows for a greater frequency in the dependent variable (rather than 2 data points covering a span of 10 years, we have as many as 18 data point over 20 years), and more accurately reflects both inflows and outflows of FDI than the binary dependent variable.

We gather data on the stock of services[2], wholesale trade, banking, and financial FDI in various host countries (see Table 1 for a list of the host regions) between 1976 and 1995.

Table 1

Countries Included as Host Regions to U.S. FDI

Canada
Belgium and Luxembourg
Denmark and Ireland
France
Germany
Italy
Netherlands
United Kingdom
Norway
Spain
Sweden
Switzerland
Japan
India
Indonesia
Philippines
Australia, New Zealand, and South Africa
Argentina
Brazil
Chile
Colombia
Mexico
Panama
Peru
Venezuela

The explanatory variables we use are similar to those used in the U.N. study. We explain the stock of service FDI as a function of: the home business presence already existing in the host country, the host country's GDP, the host country's GDP per capita, the host country's restrictions to FDI, the cultural similarity between the home and host country, and the host country's political stability (or lack thereof).[3]

Each of these variables allows us to test a hypothesis regarding what determines service FDI. U.S. business presence (measured by past manufacturing FDI) tests whether services follow domestic clients abroad. Host GDP and GDP per capita test whether, after accounting for U.S. presence in the foreign market, the foreign market itself attracts U.S. FDI.[4] This variable is vital for our study. Since we propose that U.S. service firms follow existing customers abroad in an effort to penetrate the foreign market, a significant positive coefficient on both the variable representing U.S. business presence (past manufacturing FDI) and on host GDP per capita provide support for our argument. The index of investment restrictions tests whether the investment restrictions countries impose influence the amount of foreign investment. The cultural similarity variable tests whether U.S. firms are more or less likely to invest in countries culturally similar to the U.S. Finally, the measure of country stability tests whether politically corrupt countries discourage FDI because of the possibility of capital expropriation.

The data is drawn from the Survey of Current Business (SCB), The Department of Commerce Annual Reports on the Operations of U.S. Parent Companies and Their Foreign Affiliates, International Financial Statistics (IFS), the World Development Index (WDI), and Transparency International's Corruption Index. The SCB and Annual Report provide all of our FDI data. Though these data sources suffer from missing data (some data is suppressed to avoid

disclosure of individual companies), we still benefit by using the same sources for all of our FDI data. We rely on the IFS and the WDI for other data on exchange rates, price indices, GDP and GDP per capita. Finally, the transparency index provides the corruption index to measure a country's political stability or riskiness.

We construct the variables as follows. The Survey of Current Business (SCB) publishes the stock of service and manufacturing FDI in current U.S. dollars. We use the U.S. GDP price deflator to deflate these amounts to 1990 U.S. dollars. Host income is measured by GDP and GDP per capita in 1990 U.S. dollars by the WDI atlas method, which smooths exchange rate fluctuations, in order to allow better comparisons of GDP per capita over time. Investment restrictions to FDI is a subjective measure we construct from discussions of countries' direct investment regulations published in the IMF's "Annual Reports on Exchange Arrangements and Restrictions." We establish a general criteria by which we judge the FDI restrictions of each country in terms of whether FDI has to be reviewed and accepted or just reported, whether there are limits of initial investments, and whether there are restrictions on repatriation of the capital investment or profits.[5] Lower values are associated with fewer restrictions and higher values are associated with more restrictions. Cultural similarity is measured by how the host country compares to the U.S. in four cultural aspects (language, religion, ethnicity, and political system). Each country is given an integer value reflecting how many similarities it has with the U.S. based on these criteria. Again, higher values indicate more similarities. Finally, country risk is taken directly from the tables published by Transparency International. This index attaches a higher value to scrupulous countries and lower values to corrupt countries. The construction of each independent variable and its expected sign are summarized in Table 2.

Table 2

Determinants of Service FDI

Independent Variable	Measured By	Expected Sign
Home Business Presence	FDI stock in manufacturing at (t-1)	+
Host GDP	RGDP	+
Host GDP per Capita	RGDP/Population	+
Host Restrictions to FDI	Subjectively created index	-
Cultural Similarity	Subjectively created index	+
Country Stability	Transparency International	+

Our regressions log both the dependent and independent variables. The log-log regressions allow us to interpret the coefficients as elasticities, which in turn allow us to make judgements of relative impacts of independent variables.

We use panel regressions to allow us to test whether there exist fixed effects due to the different cross sections or time periods. Therefore the regressions which account for cross section (or group) and time (period) effects include dummy variables for each cross section and time period in addition to the explanatory variables listed in Table 2. Whether the group or time dummy variables are jointly significant is tested for using a standard restricted vs. unrestricted F-test. We may also test whether any structural differences found are to be considered systematic (to be represented through dummy variables) and therefore estimated by a fixed effects model (FEM), or random (to be represented through the error term) and estimated by a random effects model (REM). The FEM considers the structural differences which exist between the host countries we examine, and reflects these differences by allowing the intercept for each cross section and time period to differ. The FEM for data with 25 cross sections and 18 time periods may therefore be represented as:

$$Y_{i,t} = \hat{\beta} X_{i,t} + \hat{\Gamma}_1 CS1 + \hat{\Gamma}_2 CS2 + \ldots + \hat{\Gamma}_{25} CS25 + \hat{\tau}_1 T1 + \hat{\tau}_2 T2 + \ldots + \hat{\tau}_{18} T18 + \varepsilon_{i,t}$$

where CS refers to a cross section, T refers to the time period, and $G_{i,t}$ is the usual error term.

The REM, on the other hand, reflects the differences of the host countries as a random variable which takes a different value for each cross section and time period. Its results therefore provide a global intercept which is the mean value of the random effect, and allows the specific cross section or time period components to be reflected in the error term. The REM may therefore be

represented as:

$$Y_{i,t} = \hat{\alpha} + \hat{\beta}X_{i,t} + \varepsilon_{i,t} + u_i + w_t$$

where $G_{i,t}$ is the usual error term, u_i is the cross section specific error, and w_t is the time specific error.

We run separate regressions to examine each service industry considered. The general specification used is given by the following expression.

$FDI_{i,t}$ = f(Manufacturing $FDI_{i,t-1}$, $GDP_{i,t}$, GDP per $capita_{i,t}$, FDI $restrictions_{i,t}$, Cultural $Distance_{i,j}$, Country $Stability_{i,t}$)

where i refers to the host country, t refers to the year, and j refers to the U.S.. The results always suggest the use of a FEM or OLS model. Please refer to Table 3 for the results for services.

Table 3

Regression Results for Services

Variable	Coefficient
Past Manufacturing FDI	0.5868 ***
	(0.0770)
Host GDP	0.2400**
	(0.1059)
Host GDP per Capita	0.1898 *
	(0.1046)
Host Restrictions to FDI	-0.1235
	(0.1681)
Cultural Similarity	1.3773***
	(0.4030)
Country Risk	-0.1408
	(0.2222)
Constant	-9.2232***
	(2.5257)
n	202
Adjusted R-sqrd	0.68
Number of cross-sections	22
T-max	9

T-min	1
F-statistic	F (6 , 195)=72.56

standard errors in parentheses
* => significant at 10%
** => significant at 5%
*** => significant at 1%
The cross section and time period dummy variables are not jointly significant.

The coefficients of the explanatory variables suggest interesting results. Qualitatively, we see that the coefficients which are statistically significant have the correct sign. The evidence suggests that services FDI is explained by past manufacturing FDI, host country income, income per capita, and cultural similarity. Quantitatively, the results suggest that a 1 percent increase (decrease) in past U.S. manufacturing FDI calls for a .58 percent increase (decrease) in this year's stock of U.S. service FDI; that a 1 percent increase (decrease) in the GDP of the host country calls for a .24 percent increase (decrease) in the stock of U.S. service FDI; that a 1 percent increase (decrease) in the GDP per capita of the host country calls for a .19 percent increase (decrease) in the stock of U.S. service FDI; and that a 1 percent increase (decrease) in the cultural similarity of a host country to the U.S. calls for a 1.37 percent increase (decrease) in the stock of service FDI.

The significance of both the past U.S. manufacturing FDI and the host GDP and GDP per capita variables suggest that service firms not only follow clients abroad, but also penetrate the local market and gain local clients. This is an interesting result which deserves particular mention because it is not common to any of the other service industries which we examine in this study, and because it suggests a means by which business services attempt to penetrate a local market to gain local clients.

We argue that business services are able to use existing relationships with U.S. manufacturers which engage in FDI as a means by which to help penetrate the local market. In an effort to test our theory with additional empirical rigor, we create an interaction term which allows the coefficient on local market size (GDP per capita) to change if a significant level of U.S. manufacturing FDI already exists in the foreign market at the beginning of our sample period. We

expect to find a positive and significant coefficient associated with this interaction term, implying that the local market has an even larger influence on business services FDI when U.S. manufacturers are already established in the foreign market. The results are provided in Table 4, below.

Table 4

Regression Results for Services
(including an interaction between U.S. business presence and local market size)

Variable	Coefficient
Past Manufacturing FDI	0.3974 ***
	(0.0767)
Host GDP	0.4279***
	(0.1015)
Host GDP per Capita	0.1800**
	(0.0958)
Host Restrictions to FDI	0.0963
	(0.1579)
Cultural Similarity	1.4959***
	(0.3694)
Country Stability	-0.3591*
	(0.2108)
Interaction Term (slope dummy)	0.1106***
	(0.0178)
Constant	-12.5403***
	(2.3721)
n	202

Adjusted R-sqrd	0.73
Number of cross-sections	22
T-max	9
T-min	1
F-statistic	F (7 , 194)=79.79

standard errors in parentheses
* => significant at 10%
** => significant at 5%
*** => significant at 1%
The cross section and time period dummy variables are not jointly significant.

We see that the results do suggest that the local market has a larger influence on business services FDI when a significant amount of U.S. manufacturing FDI is already located in the foreign market. We interpret this to indicate that a U.S. business service provider is better able to gain new clients in the foreign market if it provides its services to a U.S. client in the foreign market than if there are no U.S. clients in the foreign market. We suggest as a reasoning for this result that the local customer (and the U.S. service provider) benefit from an information externality generated by the interaction of a U.S. manufacturer and a U.S. service provider in the foreign market. The interaction between the U.S. manufacturer, who is informed of the U.S. service provider's ability to provide a high quality service, and the U.S. service provider reveals the high quality of the service provided by the U.S. service provider to the pool of potential customers in the foreign market.

The coefficient associated with the country stability variable represents a result which is counterintuitive. The coefficient is negative and significant at a 9 percent level of significance. We expect it to be positive, suggesting the more stable the country (or less politically corrupt), the more likely it is to experience service FDI. Instead, we see that the more corrupt the country, the more likely the country will be to experience business service FDI. This result is admittedly difficult to justify.

We next turn our attention to U.S. FDI in wholesale trade. We organize the data in a similar fashion in these regressions. We also include real exports from the U.S. to each host country as an explanatory variable. We argue that exports are a relevant variable in explaining wholesale trade FDI in that the more that U.S. firms export their goods to a foreign country, the more likely they are to establish their own distribution network, or service network to provide

consumers with follow up services.

The results for wholesale trade FDI are significantly different than the results for services FDI. The first difference is that the data set for wholesale trade is much more complete than it is for services. The regression results are given in Table 5.

Table 5

Regression Results for Wholesale Trade

Variable	Coefficient
Past Manufacturing FDI	-0.1320*
	(0.0768)
Host GDP	0.1232**
	(0.0654)
Host GDP per Capita	0.7973***
	(0.1534)
Host Restrictions to FDI	-0.0922
	(0.1298)
Cultural Similarity	-0.1871 (0.6301)
Country Stability	-0.0251 (0.1418)
Real Exports	0.2974*** (0.1243)
n	336
Adjusted R-sqrd	0.94
Number of cross-sections	25
T-max	18
T-min	3
F-statistic	F(29, 306)=184.39

standard errors in parentheses

* => significant at 10%

** => significant at 5%

*** => significant at 1%

The cross section dummy variables are jointly significant.

The second significant difference between the results for services and for wholesale trade is that for the wholesale trade specifications, the group dummy variables are jointly significant. This suggests that there are structural differences between the host countries in the wholesale trade industry's decision to establish operations abroad.

Examination of the results in Table 4 suggests a third significant difference between wholesale trade FDI and services FDI: home business presence is negative and significant at a 9 percent level of significance. We do, however, find that local market size and real exports to the local market are significant. Qualitatively, we see that the significant coefficients have the anticipated signs with the exception of home business presence. Quantitatively, a 1 percent increase (decrease) in past U.S. manufacturing FDI calls for a .13 percent decrease (increase) in this year's stock of U.S. wholesale trade FDI this year; a 1 percent increase (decrease) in host GDP calls for a .12 percent increase (decrease) in this year's U.S. wholesale trade FDI; a 1 percent increase (decrease) in host GDP per capita calls for a .80 percent increase (decrease) in this year's U.S. wholesale trade FDI; and a 1 percent increase (decrease) in real exports to the host country calls for a .30 percent increase (decrease) in this year's stock of U.S. wholesale trade FDI.

The coefficients associated with local market size and U.S. exports to the local market seem quite reasonable. In this respect, our results confirm our a priori beliefs: an economy which demands our exports will also attract U.S. wholesale trade services to distribute the goods and provide follow-up services. At initial glance, the coefficient associated with home business presence seems counterintuitive. It may, however, not be so counterintuitive. When we consider

the y the wholesale trading firm will be done by the manufacturer. For instance, the manufacturer will have spare parts for follow-up services available at its production facility and no longer rely upon a wholesale distributor to fulfill this function. Under such circumstances, we can argue that the more manufacturing FDI that locates aborad, the less wholesale trade services will locate aborad. In this light, the result does not seem to be counterintuitive.

Comparisons of our empirical results examining service and wholesale trade FDI suggest some interesting implications. In particular, the fact that service FDI is positively influenced by both U.S. business presence and host market size, unlike wholesale trade FDI allows us to draw some policy implications. We must ask ourselves how services, and in particular business services, can compete with local firms which have established reputations. We argue that our empirical results suggest that service firms follow an existing client abroad in order to penetrate the local market, and are then able to gain local customers. This contrasts with wholesale trading firms which seem to locate where U.S. exports are demanded, and may or may not gain local customers. Hence, we see that policies which serve as barriers to manufacturing FDI may also serve as barriers to service FDI regardless of whether such a result was intended or not. We also see that manufacturing FDI serves as a partial substitute for wholesale trade FDI.

We turn our attention now to the results we generate by applying the model to banking services and financial services. Again, we follow the same procedure in these regressions, so the same concepts tested above apply to the banking and finance regressions. Table 6 provides the results for banking.

Table 6

Regression Results for Banking

Variable	Coefficient
Past Manufacturing FDI	-0.1954*
	(0.1198)
Host GDP	0.6214***
	(0.0957)
Host GDP per Capita	-0.5340**
	(0.2704)
Host Restrictions to Bank FDI	0.2554
	(0.2052)
Cultural Similarity	-2.0475 (1.4431)
Country Stability	0.0007
	(0.2162)
Real Exports	0.0985
	(0.1894)
n	239
Adjusted R-sqrd	0.88
Number of cross-sections	19
T-max	14
T-min	1
F-statistic	F (2 7 , 2 11)=65.79

Standard errors in parentheses

* => significant at 10%

** => significant at 5%

*** => significant at 1%

The cross section dummy variables are jointly significant.

The results suggest some standard interpretations. Namely, host country GDP has a positive and significant effect on banking FDI. There are, however, three counterintuitive results. The most surprising result is that the coefficients of host GDP per capita and home business presence are negative and significant. Further, given how highly regulated banking is, the results do not support the commonly accepted theory that host country openness to FDI has a significant effect on banking FDI. These results suggest that the existing model is poorly specified when applied to banking. Our conclusion is reinforced when we consider financial services. Table 7 provides the results for financial services.

Table 7

Regression Results for Financial Services

Variable	Coefficient
Past Manufacturing FDI	0.1689
	(0.1361)
Host GDP	1.1706***
	(0.1196)
Host GDP per Capita	0.5348**
	(0.2410)
Host Restrictions to FDI	0.4752**
	(0.2399)
Cultural Similarity	1.3956 (1.0367)
Country Stability	-0.1534
	(0.2293)
n	293
Adjusted R-sqrd	0.90
Number of cross-sections	22
T-max	17
T-min	1
F-statistic	F(28, 264)=97.33

Standard errors in parentheses

* => significant at 10%

** => significant at 5%

*** => significant at 1%

The cross section dummy variables are jointly significant.

Again, these results are surprising in that the coefficient on home business presence is insignificant, and the coefficient on host country restrictions to FDI is positive and significant. We do, however, see that local market size is associated with its expected sign.

The results in tables 6 and 7 suggest that the specification needed to examine FDI in financial services is different than that used to examine non-financial services, in particular for banking. Though past empirical work has applied the same model to estimate both financial and non-financial FDI, our results provide evidence that financial services are determined by a different set of factors than non-financial services. We therefore offer these results as a motivation for additional empirical and theoretical work to study the determinants and mode of entry for financial services.

4. Conclusion

In this chapter, we examine factors which are argued to influence FDI in service industries. We attempt to improve upon past empirical work by using higher frequency data and improved econometric techniques to infer which variables determine FDI in service industries. Our results suggest that business services are determined by home business presence and host income. This suggests that service firms engage in FDI by following an existing client abroad, thereby penetrating the foreign market and gaining local customers. We also find evidence that wholesale trade services do not follow the same mode of market entry. Wholesale trade services seem to be able to establish operations in economies which import relatively high amounts of U.S. goods. This contrast suggests that different factors may have different influences on a specific service industry's FDI decision, and its mode of entry into a foreign market. Moreover,

they carry clear policy implications for governments which are attempting to either encourage or discourage FDI by identifying different factors which affect different industries' FDI decisions. These differences warrant additional theoretical work to build a coherent theory of service FDI.

Our counterintuitive results for financial FDI also suggest that the model employed to examine non-financial FDI is not appropriate for financial FDI. Again, we believe that our results motivate additional empirical and theoretical work to understand what factors influence U.S. financial service firms to engage in FDI, and how they penetrate the foreign market.

Appendix 1

Results from the UNCTC Report

The results are provided in tabular form for business services (Table 1 and Table 2), trade services (Table 3 and Table 4), and financial services (Table 5 and Table 6). The first table for each service industry provides the results for developed countries and the second table provides the results for developing countries. Each table provides the results for 'Model 1' (which includes all of the UNCTC's proposed variables) and 'Model 2' (which includes all of the proposed variables except host GDP).

The results vary widely within each industry, depending upon the specification chosen. The results often show coefficients which are insignificant or significant with the incorrect sign. The unexpected results we see in the tables may arise as a consequence of the econometric techniques used in the study. We see that the explanatory variables argued to explain FDI in the study are not consistently used in all the regressions; thereby potentially introducing an omitted variable bias. Further, the techniques used do not recognize the panel nature of the data, which in turn implies that the regressions do not account for potential heteroskedasticity between the different cross sections in the sample.

The results of the study are listed in the following tables. A brief interpretation of each set of results is given after each table.

Table A.1: Business Services FDI in Developed Countries

	1976- 1980		1980- 1986	
Variable	Model 1	Model 2	Model 1	Model 2
GDP	0.0020*** (0.0007)		0.0004 (0.0003)	
FDI		0.0474** (0.0220)		0.0114 (0.0084)
CD	-1.3277** (0.5398)	-0.3390 (0.3340)	-0.2539 (0.2435)	
OPEN		2.2879*** (0.7357)		0.5530 (0.4422)
ICI	0.7226 (0.4992)	0.4265 (0.5247)	0.5323 (0.4319)	0.2799 (0.4372)
OLIGOP	7.3462*** (2.8540)		4.1635*** (1.2958)	
CONCENT				7.1580* (3.7443)

TRADE				
GROWTH	-0.0020	-0.0036	0.0074	0.0066
	(0.0084)	(0.0079)	(0.0070)	(0.0063)
Constant	-4.9841***	-6.9148***	-3.4888***	-4.4175***
	(1.7024)	(2.1815)	(1.0678)	(1.3870)
Chi-square	36.58	29.02	38.28	28.12
df	5	5	5	5
p-value	0.0001	0.0001	0.0001	0.0001
Predicted	89.5	84.2	83.2	78.2
n	78	78	111	11

Standard errors in parentheses
* => significant at 10%
** => significant at 5%
*** => significant at 1%

The results for model 1 suggest that host GDP, cultural distance, and oligopolistic reaction explain FDI in period 1; and that oligopolistic reaction explains FDI in the second time period. Model 2 suggests that home business presence and host country openness explain FDI in the first period, and that industry concentration explains FDI in the second period.

Table A.2: Business Services FDI in Developing Countries

Variable	1976- 1980		1980- 1986	
	Model 1	Model 2	Model 1	Model 2
GDP	0. 0020*** (0.0007)		0. 0044** (0.0018)	
FDI		0.0415 (0.0261)		0.0291 (0.0211)
CD	-1.3277* * (0.5398)		2. 2761*** (0.8796)	
OPEN				
ICI	0.7226 (0.4992)	0.5900 (0.5232)		1. 3084** (0.5438)
OLIGOP	7. 3462*** (2.8541)		4. 1324*** (1.2522)	
CONCEN T				12.8974 *** (3.9588)
TRADE				

GROWTH	-0.0020	20.3027*	1.1834*	1.0309**
	(0.0084)	(11.045)	(0.6493)	(0.5172)
Constant	-4.9841***	-4.2077***	-12.161***	-5.2081***
	(1.7024)	(1.4125)	(3.6715)	(1.3607)
Chi-square	36.58	10.61	35.20	26.96
df	5	3	4	4
p-value	0.0001	0.014	0.0001	0.0001
Predicted	89.5	80.8	86.4	84.6
n	51	51	72	7

Standard errors in parentheses
* => significant at 10%
** => significant at 5%
*** => significant at 1%

Model 1's results for developing countries are similar to those for developed countries in the first time period. In both cases, host GDP, cultural distance, and oligopolistic competition explain FDI. The second time period shows different results, however. The coefficient on cultural distance is significant with the wrong sign, and firm growth is significant with the correct sign. Model 2 attributes FDI to firm growth in the first period, and to relative competitiveness, industry concentration, and firm growth in the second period.

Table A.3: Trade Services FDI in Developed Countries

	1976- 1980		1980- 1986	
Variable	Model 1	Model 2	Model 1	Model 2
GDP	0.0004 (0.0003)		-0.0001 (0.0001)	
FDI		0. 0390** (0.0161)		0.0039 (0.0046)
CD			0.0041 (0.2372)	
OPEN	0.8064* (0.4408)	0. 8735** (0.3417)	0. 8724** (0.3439)	1. 1171** (0.4952)
ICI	-0.1740 (0.4518)	-0.2184 (0.4760)	0.3095 (0.4856)	-0.7718 (0.4952)
OLIGOP	6. 1406*** (2.3680)		2. 7963*** (0.8798)	
CONCENT	-8.4115 (7.9858)	11.4977 *** (2.8178)		
TRADE				-15.904** *

				(7.0421)
GROWTH	-0.0005	-0.0001	-0.0014	0.0011
	(0.0034)	(0.0034)	(0.0024)	(0.0011)
Constant	-4.5945***	-6.7027***	-4.5626***	9.3033*
	(1.0086)	(1.3699)	(1.0008)	(5.4431)
Chi-square	59.53	44.59	61.8	46.37
df	6	5	6	5
p-value	0.0001	0.0001	0.0001	0.0001
Predicted	83.9	77.7	81.7	74.6
n	189	189	189	189

Standard errors in parentheses
* => significant at 10%
** => significant at 5%
*** => significant at 1%

The results for model 1 suggest that host country openness to FDI and oligopolistic reaction explain FDI in both time periods. Model 2 suggest that home business presence, host country openness, and industry concentration explain FDI in the first period, and that host country openness and tradability explain FDI in the second period.

Table A.4: Trade Services FDI in Developing Countries

	1976- 1980		1980- 1986	
Variable	Model 1	Model 2	Model 1	Model 2
GDP	0.0012 (0.0012)		0.0012 (0.0011)	
FDI		0.0256 (0.0241)		0.0424* (0.0217)
CD		-0.5035 (0.5924)	-0.9616 (0.6071)	
OPEN				
ICI	-0.7780 (0.5728)	-0.6635 (0.5772)	0.8229 (0.5452)	1.0212* (0.5411)
OLIGOP	5. 2715*** (1.0646)		4. 8707*** (1.1859)	
CONCENT		15.3704 *** (3.2097)		13.2068 *** (2.9894)
TRADE				
GROWTH	-9.2267* * (4.5976)	-8.8007* * (4.4781)	-1.6159 (3.1245)	

Constant	-2.7285***	-4.2864***	-2.2300	-2.1783
	(0.9481)	(1.1489)	(1.9893)	(2.0010)
Chi-square	44.31	38.11	60.68	44.28
df	4	4	5	4
p-value	0.0001	0.0001	0.0001	0.0001
Predicted	85.3	82.4	85.8	82.1
n	135	135	135	135

Standard errors in parentheses
* => significant at 10%
** => significant at 5%
*** => significant at 1%

For developing countries, model 1 implies that oligopolistic competition and firm growth explain FDI in the first period, and oligopolistic competition does in the second period. Model 2 suggests the explanatory variables in the first period are industry concentration and firm growth; and in the second period are home business presence, relative competitiveness, and industry concentration.

Table A.5: Financial Services FDI in Developed Countries

	1976- 1980		1980- 1986	
Variable	Model 1	Model 2	Model 1	Model 2
GDP	0.0004		.0003**	

	(0.0004)		(0.0001 5)	
FDI		0.0168 (0.0112)		0.0043 (0.0048)
CD	-0.3836 (0.2546)	-0.0644 (0.2011)	-0.2025 (0.1676)	0.0522 (0.1391)
OPEN		1. 1741*** (0.3664)		1. 1160** (0.2098)
ICI	-2.1831* (1.2323)	-2.7517** (1.8555)	-0.9131** (1.4318)	-.8149 (0.5073)
OLIGOP	3.5539* (1.9170)		2. 9361*** (0.8521)	
CONCENT	-2.5577 (1.8174)		-1.5699 (1.3008)	
TRADE				-16.014** (7.0517)
GROWTH	0.0057* (0.0030)	0. 0065** (0.0031)	0.0011 (0.0012)	0.9011 (0.0012)

Constant	-1.7277***	-3.5599***	-1.4813***	9.3239
	(0.8745)	(0.8966)	(0.6906)	(5.4452)
Chi-square	32.81	24.29	60.06	46.51
df	6	5	6	6
p-value	0.0001	0.0002	0.0001	0.0001
Predicted	67.6	72.2	77.1	75.1
n	194	194	271	271

Standard errors in parentheses
* => significant at 10%
** => significant at 5%
*** => significant at 1%

Model 1 suggests that competitiveness, oligopolistic competition, and firm growth explain FDI in the first period, and that host GDP, competitiveness, and oligopolistic competition do so in the second period. Model 2 suggests that openness, competitiveness, and firm growth explain FDI in the first period, and that openness, and tradability do so in the second period.

Table A.6: Financial Services FDI in Developing Countries

	1976-1980		1980-1986	
Variable	Model 1	Model 2	Model 1	Model 2
GDP	0.0026*		0.0014	
	(0.0015)		(0.0012)	

FDI		0. 0647*** (0.0189)		0.0574*** (0.0135)
CD	-0.1084 (0.6521)	-0.9913 (0.6434)	0.3150 (0.3739)	0.5602 (0.3709)
OPEN				
ICI				
OLIGOP	2.2233 (1.8974)		5. 1909*** (1.4993)	
CONCENT		0.0953 (1.9708)	-1.2603 (1.7625)	
TRADE				-13.215 (11.123)
GROWTH	-3.9172 (4.7531)	-4.3784 (5.0794)	0.9441 (1.6109)	1.2522 (1.5378)
Constant	-2.2081 (2.3876)	0.4504 (2.3012)	-4.5283** (1.6043)	9.6471 (8.7303)

Chi-square	13.52	15.23	37.02	22.55
df	5	4	5	5
p-value	0.019	0.0042	0.0001	0.0004
Predicted	73.1	74.6	76	71.9
n	132	132	192	192

Standard errors in parentheses
* => significant at 10%
** => significant at 5%
*** => significant at 1%

Model 1 suggests only host GDP in the first period, and oligopolistic competition in the second period. Model 2 suggests only home business presence to explain FDI in both periods.

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[1] UNCTC, 1990 p.23

[2] Though we are primarily interested in business services, the Survey of Current Business (SCB) includes business service FDI under the more general 'services' classification, which also includes engineering, health, hotels, motion picture, and other services. Business services do, however, account for the majority of the FDI in the services category.

[3] We do not include an index of tradability or industry concentration variable, as the U.N. study did. The UNCTC (1990) study suggests that they are not relevant. The tradability measure is considered to be irrelevant since the frequent contact between the service and its customer minimizes the role of exporting the service. The industry concentration variable is also argued against. For our purposes, the data to construct an industry concentration index does not exist.

[4] We include both GDP and GDP per capita to differentiate large countries with high per capita income from small countries with high per capita income (e.g. Luxembourg).

[5] The restrictions examined were not specific to service industries. Instead, they applied to all FDI. Data is not available for service industries alone.