International investment in insurance services in the US

Donghui Li*, Fariborz Moshirian

School of Banking and Finance, The University of New South Wales, Sydney NSW 2052, Australia

Abstract

The purpose of this study is to analyze and discuss the determinants of foreign direct investment (FDI) in insurance services in the US. This study demonstrates that solid economic fundamentals in the host countries are the major factors which attract FDI in insurance services, while the uncertainty of the international exchange market increases the investment risk and reduces foreign investors' willingness to invest. The empirical results of this study indicate that national income (NI), the source countries' insurance market size and financial development (FD) of the host countries contribute to the expansion of FDI in insurance services, while the relatively higher wages and higher cost of capital in the host countries discourage FDI in insurance services. The empirical results also suggest that FDI in insurance services complement FDI in banking as well as total trade in insurance services.
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1. Introduction

Foreign direct investment (FDI)[1] has been important for the world economy for decades and often functions as the principal vehicle of international capital movement, via which

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* Corresponding author. Tel.: +61-2-93855873; fax: +61-2-93856730.
E-mail address: donghui@unsw.edu.au (D. Li).

[1] According to WTO (1996), FDI occurs when an investor based in the home country acquires an asset in the host country with the intent to manage that asset. There are three main categories of FDI: (1) equity capital (the value of the MNC's investment in shares of an enterprise in a foreign country). Ten per cent or more of the ordinary shares or voting power of an equity capital stake in an incorporated enterprise, or its equivalent in an

the integration of the global economy, or what is popularly known as "globalization", is promoted (see for instance, Helpman and Krugman, 1989; Ma et al., 2000). This is evidenced by the increased importance of foreign-owned production and distribution facilities in most countries. The annual global total FDI inflows and outflows were around US$ 2421 billion in 2000, compared to US$ 94 billion in 1982 (UNCTAD, 2001). Stocks of FDI have been growing faster and estimates suggest that the sales of foreign affiliates of multinational corporations (MNCs) exceed the value of world trade in goods and services (WTO, 1999). The annual average growth rate of world FDI (24%) for the last decade has far exceeded that of world merchandise imports (8.4%) and world nominal GDP (2.5%). Developed countries accounted for more than 75% of global investment inflows in 2000 because of intense cross-border Merger and Acquisition activity (UNCTAD, 2001). FDI could also increase the efficiency with which the world's scarce resources are used. Particularly, new technology and intangibles such as organizational and management skills, and marketing networks, could be transferred through FDI. Job creation and economic growth could also be achieved through FDI stimulus effects, such as competition, innovation, savings and capital formation. According to OECD Insurance Statistics Yearbook, the share of foreign life insurance companies' in Canada, Germany, Netherlands, Spain, the UK and the US were 31.02, 17.21, 32.08, 15.75, 26.06, and 19.79, respectively, in 1999. The share of foreign non-life insurance companies in Canada, Germany, The Netherlands, Spain, the UK and the US were 22.61, 13.60, 35.81, 25.18, 44.45, and 10.38%, respectively, in 1999. Both the life and non-life foreign market share in Japan were small due to tight Japanese regulation on foreign entries.

There are several categories of FDI in the US,[2] one of which is the FDI in insurance services, as opposed to FDI in manufacturing or banking. On a historical basis, the FDI in insurance services in the US was US$ 80.38 billion in 1998, which was an increase of more than four times, compared to US$ 18.99 billion in 1988.[3] The seven major countries which invest in the insurance industry in the US are Canada, France, Germany, The Netherlands, the UK, Switzerland, and Japan. In 1998, almost 21.30% of FDI in insurance services was from Switzerland, 20.96% from The Netherlands, 17.75% from the UK, 12.01% from Germany, 9.78% from Canada, 6.08% from France, and 1.23% from Japan. Under NAFTA, the US market becomes a base for market penetration into Mexico and Latin America, thus it is expected FDI in insurance services in the US will increase. Moreover, the EU's single insurance market directive brought into effect since July 1994, which allows the European-based insurance companies to operate throughout Europe on the principle of a single license, is expected to encourage European insurance companies to invest more in the US market, as they become stronger and hence more competitive against the US insurance companies.

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unincorporated enterprise, is normally considered as a threshold for the control of assets. Mergers and acquisitions (M&A) and the creation of new facilities fall in this category; (2) reinvested earnings (the MNC's share of affiliate earnings not distributed as dividends or remitted to the MNC); (3) other capital (short or long-term borrowing and lending of funds between the MNC and the affiliate).

[2] According to the US Department of Commerce, FDI in the US is defined as the ownership by a single foreign person (or an associated group of foreign persons) of at least 10% of the voting stock of an incorporated US business enterprise or an equivalent interest in an unincorporated US business enterprise.

[3] From Survey of Current Business, various issues, Department of Commerce, US.

According to Howard (2000), consolidation has been and continues to be the dominant force reshaping the international insurance industry. In 1998, cross-border mergers and acquisitions in the insurance sector topped US$ 37 billion, up from US$ 24 billion in 1997, while total cross-border mergers and acquisitions in every industry totaled US$ 544 billion, up from US$ 351 billion in 1997. These acquisitions are acting to provide better customer service because brokers and underwriters today have more of the financial clout needed to capture the best intellectual capital and to invest in operating infrastructures, technology and product innovation.

In the past, there were extensive empirical studies on FDI in general, manufacturing and banking.[4] The recent literature regarding financial services includes Yamori (1998) and Moshiran (2001). More specifically, Yamori (1998) examines the factors affecting the location choice of Japanese multinational financial institutions. Moshiran (2001) analyzes and models FDI in banking services for the US, the UK and Germany. He finds that bilateral trade, banks' foreign assets, the cost of capital, relative economic growth, exchange rates and FDI in non-finance industries are the major determinants of foreign investment in banking. The only research papers directly examining FDI in insurance services in the US have been written recently by Moshirian (1997, 1999).[5]

The purpose of this paper is to analyze and discuss FDI in insurance services in the US over the period from 1987 to 1998 by building and extending on the previous studies of FDI in insurance services by Moshirian (1997, 1999). More specifically, this study is an extension of the study of FDI in insurance in the US by Moshirian (1997). However, compared with Moshirian's (1997) paper, there are three improvements in this paper. This study focuses on the 1990s (1987–1998), and is more informative for policy-makers and international insurance companies. In other words, this study updates Moshirian's (1997) study, which covers the period from 1982 to 1992. This study includes some new variables that can explain FDI in insurance services more effectively. More specifically, this study takes into account the financial development (FD) of the US to attract FDI, which is consistent with previous papers in either FDI literature (Yamori, 1998) or insurance literature (Outreville, 1996). Moshirian (1997) does not include the financial development of the US as a factor to explain FDI in insurance services. Furthermore, the use of exchange rate movements in this study instead of the level of the exchange rate used by Moshirian (1997), make it easier to interpret the impact of economic uncertainty on FDI. There are different empirical findings between this study and Moshirian's (1997) paper. Financial development in the host country is found to have a positive influence on FDI in insurance services, which verifies the inclusion of financial development as an explanatory variable. In contrast to Moshirian's (1997) positive empirical findings of exchange rate on FDI in insurance services, exchange rate movement are found to have a negative influence on FDI in insurance services in this study. FDI in banking is found to have a negative impact on FDI in insurance services in Moshirian's (1997) study, while it is found to have a positive impact on FDI in insurance services in this study. Total trade in goods is found to stimulate the FDI in insurance services, which is different from the findings in Moshirian (1997) who documents a negative relationship.

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[4] For a review of the earlier literature, please refer to Moshirian (1997, 2001).

[5] In the past, the only close available study, by Hultman and McGee (1989) has examined FDI in 'finance, insurance and real estate'.

The empirical results of this study indicate that national income (NI), the source countries' insurance market size and financial development of the host countries, contribute to the expansion of FDI in insurance services, while the relative higher wages and higher cost of capital in the host countries discourage FDI in insurance services. The empirical results also suggest that FDI in insurance services complement FDI in banking as well as total trade in insurance services.

The remainder of this study is structured as follows: Section 2 presents a model of FDI in insurance services for estimation purpose and briefly explains the rationale behind choosing eight factors in estimating FDI in insurance services; Section 3 describes the sources of data and the methodology; Section 4 reports the empirical findings; and Section 5 concludes.

2. A model of FDI in insurance services

The theoretical model of FDI in insurance services is well documented in Moshirian (1997). However, while this study will use all the variables used in the above study, it will also add financial development as an additional variable to the model of FDI in insurance services. In using certain variables for the FDI model in insurance services, it should be noted that while some of these factors are in common with those factors used to measure FDI in general (or manufacturing or banking sector) FDI models, the proxies utilized here are specifically related to the insurance industry.

Based on the study of Moshirian (1997), a model of FDI in insurance services is presented here with the following eight factors as the main determinants of FDI in insurance services: (1) national income; (2) relative cost of capital; (3) relative wage rate; (4) total trade in insurance services; (5) exchange rate variability; (6) FDI in banking; (7) source counties' insurance market size; and (8) US financial development. Therefore, the proposed model for FDI in insurance services in the US is as follows:

$$IN = f(NI, RR, WG, TI, ER, BK, PR, FD) \qquad (1)$$

where IN is the stock of FDI in insurance services in the US, NI the national income of the US, RR the relative cost of capital between the US and the source countries. This is proxied by the government long-term bond corrected for corporate tax and inflation rates. The source countries' cost of capital is the weighted average of the individual country's cost. The weights are based on the individual country's share of FDI in insurance services in the US, WG the relative wage rate between the US and the source countries. This is the proxy for cost of labor. The foreign wage rate is the weighted average of the individual country's wage rate. The weights given to each country are based on that country's share of FDI in insurance services in the US, TI the total trade in insurance services of the US, ER the exchange rate variability of US dollar, the exchange rate is the real effective exchange rate, BK the stock of FDI in banking in the US, PR the source countries' average insurance premiums, and FD is the financial development in the US.

The following brief explanations are provided for the use of the above factors in measuring the FDI in insurance services.

(1) *National income* (*NI*): In this study, the US income is used as a proxy to measure the demand in insurance services in the US. It is argued that as national income increases, insurance products are more affordable and the need for protection of future potential losses increases. FDI in insurance services plays an increasingly important role in providing insurance products. Thus, it is hypothesized that national income has a positive impact on FDI in insurance services.

(2) *The relative cost of capital between the US and the source countries* (*RR*): It is hypothesized that the larger the difference between the US real long-term cost of capital vis-à-vis the source countries, the less will be the level of FDI in insurance services in the US. According to Barrell and Pain (1996), the factors influencing the decision to acquire fixed assets abroad also have impacts on FDI level. Consequently, the relative higher cost of capital in the US would have negative impact on FDI in insurance services. This is also confirmed by Barrell and Pain (1999) and Ma et al. (2000). Moshirian (1997) has documented that the host country's higher real government bond yield corrected for corporate tax and inflation compared with the source countries would further encourage the insurance companies to invest.[6] The measure for the relative cost of capital is as follows:

$$CC = (1 - Tx)(B - i) \tag{2a}$$

$$RR = \ln\left(\frac{CC_{us}}{CC_{fr}}\right) \tag{2b}$$

where, CC_{us} and CC_{fr} are cost of capital for the US and the source countries, respectively. RR is the relative cost of capital. Tx is the corporate tax rate, B is the long-term government bond yield and i is the actual inflation rate.

(3) *Relative wage rate of the US versus the source countries* (*WG*): It is hypothesized that the higher the wage rate in the US relative to the source countries, the lower the FDI in insurance services in the US will be. The measure for the relative wage rates is as follows:

$$WG = \ln\left(\frac{WG_{us}}{WG_{fr}}\right) \tag{3}$$

where WG_{us} and WG_{fr} are wage rates for the US and the source countries, respectively, WG is the relative wage rates. It is hypothesized that the relative wage rate between the US and source countries has a negative impact on FDI in insurance services in the US.

(4) *Total trade in insurance services* (*TI*): Moshirian (1997) documents a negative relationship by arguing that FDI is a substitute for trade in insurance services. However, in this study, it is argued that trade in insurance services will build on the relationship between the US and its trading partner countries and stimulate FDI in insurance services. Thus,

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[6] As Moshirian (1999) indicated, although Goldberg and Saunders (1981) and Hultman and McGee (1989) used the price-earnings ratio (P/E) for bank stocks in the US as an indicator of a bank's cost of equity, Poterba (1991) pointed out that the use of the unadjusted P/E ratios fails to take into account the extensive cross-holding (ownership by affiliated companies). Due to several theoretical and empirical difficulties in using the P/E ratio as a measure of the cost of equity, this study does not use it as a proxy for cost of capital.

in this study, one would expect to see that trade in insurance services has a positive relationship with FDI in insurance.[7]

(5) *Exchange rate movements* (*ER*): This study uses the absolute change of the real effective exchange rate to proxy the exchange rate movements. According to Cushman (1985, 1988), and Barrell and Pain (1996), exchange rate uncertainty influences the financing of foreign investment and may affect the excess volatility of FDI. Although the moving standard deviation is one effective way to measure exchange rate volatility, many researchers such as Cushman (1985), Froot and Stein (1991), Barrell and Pain (1996) and Yamori (1998) have used the absolute measure of the exchange rate as a way to measure the determinants of the level of FDI abroad. It is hypothesized in this study that exchange rate movements can have either a positive or a negative influence on FDI in insurance services, through the impact on the capital base of foreign affiliates and income generated from FDI. More specifically, increased uncertainty about exchange rates will lead to a lower level of FDI, if the FDI decision making is based on initial costs of establishing foreign branches, however it will increase FDI if foreign investment decision making is based on long term anticipated gains from income generating branches.

(6) *FDI in banking* (*BK*): In this study, it is hypothesized that the availability of bancassurance following the increase in FDI in banking will increase FDI in the insurance sector. Thus FDI in insurance services is positively related to FDI in banking.

(7) *Source countries' insurance market size* (*PR*): Liu et al. (1997) document the positive significant influence of market size on FDI in China. Moshirian (1997) investigates the insurance sector in the source country and concludes that the source countries' insurance market size has a significant positive impact on FDI in insurance services. In this study, it is hypothesized that the larger the source country's insurance sector, the larger is the FDI in insurance services in the US.

(8) *Financial development of the host country* (*FD*): This hypothesis states that the development of the financial market is positively related to FDI in insurance services of the host country. This is because the non-currency assets increase with more complex financial market development and can improve the potential investment opportunity of international insurance companies. However, the previous study of FDI in insurance services by Moshirian (1997) did not use this determinant to investigate FDI in insurance services. Outreville (1996) has found a significant positive impact of financial development on the demand for insurance products. Outreville (1996) and Yamori (1998) have used the extent to which people use financial institutions (log-transformed M2 and the ratio of M2 against GNP) as a measure of banking opportunity. He has also found that this ratio has a significant positive effect on FDI. In this study, we also use the ratio of M2 against GNP as a measure of financial development.

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[7] However, Jeon (1992) argue that there is a negative relationship between imports and inward FDI in the host country because growing imports imply lower tariff/non-tariff trade barriers and therefore lead to a temporary fall in FDI. Trevino and Daniels (1994) have found insignificant influence of trade on FDI. Moshirian's (1997) study document a negative relationship between bilateral trade in goods and FDI in insurance services.

Given the above explanations for the model to be used in estimating FDI in insurance services, the reduced model for FDI in insurance services in the US can be expressed as

$$\text{IN} = \beta_0 + \beta_1\text{NI} + \beta_2\text{RR} + \beta_3\text{WG} + \beta_4\text{TI} + \beta_5\text{ER} + \beta_6\text{BK} + \beta_7\text{PR} + \beta_8\text{FD} \tag{3}$$

with the following expected signs:

$$\beta_1 > 0, \quad \beta_2 < 0, \quad \beta_3 < 0, \quad \beta_4 > 0, \quad \beta_5?, \quad \beta_6 > 0, \quad \beta_7 > 0, \quad \beta_8 > 0$$

The period covered is from 1987:I to 1998:IV. All variables are expressed in nominal values.

3. Data and methodology

Time-series data are used in this study. Quarterly capital inflows in insurance, banking are obtained from the *Bureau of Economic Analysis* (BEA), Department of Commerce, US. While *Survey of Current Business* (by BEA) has published annual data on FDI in insurance services, banking on a historical basis, the stock of FDI in insurance and banking are converted from being on a historical basis to being in market values. As previous researchers such as Bargas and Lowe (1994) from the US Department of Commerce have pointed out, estimates on a historical cost basis largely reflect prices "at the time of investment rather than prices of the current or any other period". In this study, similar to other FDI studies, the book value of FDI has been converted into the market value. Data for trade in insurance services are from *Survey of Current Business*, various issues. Tax rates are from the OECD *Observer*. Real effective exchange rate index and all the other data are from *IMF International Financial Statistics*.

The proposed model is estimated by the following two econometric means:[8] ordinary least squares (OLS) and generalized method of moments (GMM). For Eq. (3), we use the trade variable with one lag, as this might capture the effects of trade on the current level of FDI in insurance services better. This is consistent with the work by Barrell and Pain (1996). Furthermore, we also estimate Eq. (3) not only by using the eight variables but also by using the lag value of the exchange rates as a way of also seeing the lag effects of this variable on the level of FDI in insurance services in the US. This approach is again consistent with the work of Barrell and Pain (1996). The residuals from the OLS are used to test for heteroscedasticity, autocorrelation, and non-normality. Various diagnostic tests for heteroscedasticity are conducted, including a likelihood ratio test for heteroscedasticity

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[8] The first step in estimating Eq. (3) is to establish whether all variables are stationary. For this purpose, the Augmented Dicky–Fuller (ADF) unit root test is employed. The empirical results show that almost half of the variables are non-stationary. This suggests that the transformation by differencing the stock variables is needed to achieve the stationarity of the regression variables (relative wage rates are second-difference stationary, relative cost of capitals and FDI in banking are first-difference stationary, all of the others are stationary). The tests for the stationary variables are available upon request from authors.

between two evenly-split periods, the Breusch–Pagan (BP) heteroscedasticity, and the White heteroscedasticity test. It has been found that there is a heteroscedasticity problem in model (3). Diagnostic tests have also been conducted for the serial correlation. It has been found that there is serial correlation in the data according to both the Ljung–Box Q-test and Breusch/Godfrey LM test (both of these two tests are up to order 5). The Jacque–Bera test indicates the normal distribution of the residuals.[9] Following Newey and West (1987), the next step is to employ GMM to correct for serial correlation and heteroscedasticity.[10] The optimal lag truncation parameter, m, is found to be four for the Parzen and three for the Bartlett. The results for both OLS and GMM are reported in Table 1. Using suitable instrumental variables,[11] GMM can account for any simultaneity between the variables used to obtain consistent estimates for the regression model. The impact of multicollinearity problem inherent in the OLS estimates can be minimized by the GMM estimates, because the condition index of GMM corresponding matrix $(X'Z(Z'\Omega Z)^{-1}Z'X)$ is generalized and smaller in effect compared to the OLS matrix $(X'X)$.

4. Empirical findings

Table 1 reports the regression results for both OLS and GMM, using both the Parzen and the Bartlett kernels. It can be seen that all of the variables are statistically significant with the expected signs. The empirical results in both Parzen and Bartlett models, with lagged values of ER (exchange rate movement) and without lagged values of ER are very similar in the following variables: national income, lagged values of total trade in insurance services $(TI(-1))$, insurance premium (PR), and financial development. The relative cost of capital (RR) is significant at the 5% level for the models with $ER(-1)$ using either the Parzen or the Bartlett kernel. However, RR is only significant in the model without $ER(-1)$ using the Parzen kernel, and not statistically significant in the model without $ER(-1)$ using the Bartlett kernel. The difference in statistical significance may be due to different weights and maximum lag length used in the Parzen and Bartlett kernels in their respective weighting matrices. The relative wage rate (WG) is only marginally significant in the model without $ER(-1)$ with the Parzen kernel and not significant at any conventional levels in the model with $ER(-1)$. This may indicate that relative wage rates may not be an important factor in determining FDI in insurance services.

The positive relationship between national income and FDI in insurance services confirms our hypothesis (1). That is, as national income increases, insurance products are more

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[9] The normality confirms the applicability of GMM, because the non-normal distribution could bias upward the t-statistic.

[10] According to the SHAZAM manual, the automatic bandwidth formula used with the Bartlett kernel is $L = 4(N/100)^{(2/9)}$ and the automatic bandwidth formula used with the Parzen kernel is $L = 4(N/100)^{(4/25)}$, where N is the number of observations. The option NMA $= m$ is employed in the GMM command to account for possible serial correlation. When the number of autocorrelation terms (NMA) is greater than zero, either type of the spectral density kernel (Parzen or Bartlett) insures the positive definiteness of the covariance matrix of the orthogonality conditions.

[11] Two conditions for the suitability of instrumental variables in GMM: (1) no correlation with the error term; and (2) high correlation with the explanatory variable (with simultaneously and/or measurement error).

Table 1
Regression results of FDI in insurance services in the US (1987:I–1998:IV)

Variable	OLS	GMM (Parzen, NMA = 4)	GMM (Bartlett, NMA = 3)	OLS	GMM (Parzen, NMA = 4)	GMM (Bartlett, NMA = 3)
C	−86541.10 (−6.51)***	−86393.20 (−31.41)***	−85635.00 (−18.32)***	−88734.40 (−6.43)***	−88398.30 (−23.20)***	−87692.50 (−23.22)***
NI	3.36 (1.30)	2.89 (3.62)***	2.60 (2.14)**	3.65 (1.38)	3.41 (3.05)***	3.47 (3.30)***
RR	−12191.60 (−1.00)	−10063.20 (−2.20)**	−8532.51 (−1.61)	−11669.10 (−0.94)	−10759.30 (−2.57)**	−10256.60 (−2.47)**
WG	−16071.10 (−0.17)	−23980.70 (−1.71)*	−22034.00 (−0.98)	1214.55 (0.01)	−851.77 (−0.04)	−3938.08 (−0.12)
TI(−1)	8.22 (2.93)***	8.29 (12.44)***	8.39 (8.10)***	8.02 (2.81)***	8.10 (10.37)***	7.97 (9.13)***
ER	−9758.39 (−0.63)	−9187.94 (−2.33)**	−10073.30 (−2.15)**	−9162.98 (−0.58)	−8127.55 (−1.77)*	−8422.41 (−1.82)*
BK	0.18 (0.60)	0.19 (1.91)*	0.19 (1.75)*	0.22 (0.71)	0.19 (2.31)**	0.20 (2.10)**
PR	0.51 (3.58)***	0.54 (9.20)***	0.56 (7.46)***	0.50 (3.50)***	0.52 (6.59)***	0.52 (8.32)***
FD	75190.40 (4.45)***	75448.40 (27.95)***	75114.30 (15.78)***	77163.90 (4.46)***	76946.30 (18.87)***	76230.60 (20.83)***
ER(-1)				−105153.30 (−0.67)	−9939.15 (−3.17)***	−8688.82 (−2.13)**
Adj-R^2	0.97			0.97		
LB-$Q(5)$[a]	46.12***			48.13***		
BG-LM(5)[b]	46.14***			48.85***		
BP[c]	5.61			6.37		
LR[d]	36.98***			43.16***		
Jb[e]	0.86			1.23		
F-test[f]	181.19***			158.53***		
J-test		10.66	9.39		10.47	9.74

OLS, ordinary least squares; GMM, generalized methods of moment.
[a] Ljung–Box Q-statistic for autocorrelation tests up to order five.
[b] Breusch/Godfrey LM tests for autocorrelation up to order five.
[c] Breusch–Pagan heteroscedasticity test.
[d] Likelihood ratio heteroscedasticity test.
[e] Jarque–Bera test of normality.
[f] Statistic for zero slopes test.
* Significance at 10% level.
** Significance at 5% level.
*** Significance at 1% level.

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affordable. Furthermore, the need for protection of future potential losses increases with higher income level. FDI in insurance services acts to provide more insurance products to meet the demands for them. This finding is consistent with previous literature on FDI in financial services, such as Goldberg and Grosse (1994), Moshirian (1997) and Yamori (1998). This is also consistent with previous literature on the demand for insurance, such as Browne and Kim (1993) and Outreville (1996).

The statistically significant negative relationship of relative cost of capital (RR) supports hypothesis (2), which states that a rise in the host country's interest rate relative to the home country's, decreases direct investment as firms switch to invest in foreign currencies in the host country. This is because the relative higher cost of capital in the US increase the acquisition of fixed assets. Consequently, the relative higher cost of capital in the US would have a negative impact on FDI in insurance services. This result is consistent with the findings of earlier studies such as Barrell and Pain (1996) and Ma et al. (2000), but it contradicts the results of Grosse and Trevino (1996), Liu et al. (1997) and Moshirian (1997).

The negative significance of the relative wage rate (WG) verifies that the higher wage rate in the US relative to the source countries impedes FDI into the US. This shows that international insurance companies seek lower labor costs when making investment decisions. This is consistent with Barrell and Pain (1996, 1999).

The significant positive influence of total trade in insurance services (TI) on FDI in insurance indicates that trade in insurance services does stimulate FDI in insurance services. The significance of trade in insurance services shows that FDI in the insurance services sector helps to establish networks and sales support systems, and 'downstream services' are associated with the level of export sales from the source country to the host country. This, in turn, attracts further investment. Moshirian (1997) argues that bilateral trade impedes the FDI in insurance services, which is counter-intuitive, while this study shows that the relationship (FDI in insurance) between the US and its trading partner countries is built on trade in insurance services. In other words, trade in insurance services could boost FDI in insurance services. This is consistent with most of the previous literature, such as Barrell and Pain (1996, 1999), Grosse and Goldberg (1991) and Yamori (1998).

The exchange rate movements (ER) with a negative sign for both the current and the lag values confirms hypothesis (5), which states that the capital base of the foreign affiliates is influenced by the change of the exchange rate. In addition, the income generated from FDI in insurance services, which contributes to a significant proportion of trade in insurance services, is negatively influenced by the exchange rate risk. The exchange rate movements act to impede FDI, because if market participants are risk averse, they will be willing to incur an added cost to avoid the risk associated with the exchange rate uncertainty. So, the flexible exchange rates lead to misalignments of major currencies, which lead, in turn, to adjustment problems in FDI. This is consistent with, among others, Barrell and Pain (1996) and Yamori (1998). This finding also confirms that foreign exchange rate does have an impact on the FDI (Froot and Stein, 1991; Moshirian, 1997).

The significant positive relationship between FDI in banking (BK) and FDI in insurance services confirms hypothesis (6), that is bancassurance activates the banks to provide the insurance services to their customers and banks are more involved with insurance products. The bancassurance is verified to increase FDI in insurance services, while Moshirian (1997)

documents the negative relationship between these two. This is consistent with previous papers on the relationship between FDI in manufacturing or banking, for example, *inter alia*, Grosse and Goldberg (1991) and Yamori (1998).

The positive significance of source countries' insurance market size (PR) confirms hypothesis (7), which states that the source countries' insurance industry, contributes to the expansion of FDI in insurance services. This is not only consistent with the literature on FDI in banking, which states that the source countries' banking industry contributes to FDI in banking in the US, such as Grosse and Goldberg (1991), but is also consistent with the literature on FDI in insurance services, such as Moshirian (1997).

The positiveness of financial development of the US confirms hypothesis (8). That is, a higher level of financial development will increase the FDI in insurance services, because the non-currency assets increase, thus improving the potential investment opportunity of international insurance companies. This is consistent with Outreville (1996) and Yamori (1998).

5. Conclusion

Multinational corporations based on FDI have been regarded as an important complement to local industry and may stimulate development in the host countries. The purpose of this study is to identify the factors that may have an impact on the host country's attractiveness for FDI in insurance services.

The following eight factors have been used to measure the determinants of FDI in insurance services: national income; relative cost of capital; relative wage rate; total trade in insurance services; exchange rate variability; FDI in banking; source counties' insurance market size; and US financial development. The empirical results support the relevance of all these eight variables in determining the flow of FDI in insurance services in the US.

However, as this study updates the only literature on inward FDI in insurance services in the US by Moshirian (1997), it is noteworthy to highlight some of the different empirical findings between this study and that by Moshirian (1997). Financial development in the host country is found to have a positive influence on FDI in insurance services, while Moshirian (1997) does not include financial development in his study. In contrast to Moshirian's (1997) positive empirical findings of exchange rate on FDI in insurance services, exchange rate movements are found to have a negative influence on FDI in insurance services in this study. FDI in banking is found to have a negative impact on FDI in insurance services in Moshirian's (1997) study, while it is found to have a positive impact on FDI in insurance services in this study. Total trade in goods is found to stimulate the FDI in insurance services, which is different from the findings in Moshirian (1997) who documents a negative relationship.

Some policy implications arise from the observed empirical results. It is expected that solid economic fundamentals in the host countries are major factors which attract FDI from abroad, especially in the US and a few European countries. It also has implications for foreign insurance companies, as by analyzing the factors influencing FDI in insurance services in the US, they can choose the optimal timing for investment.

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