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Property and Casualty Insurance Services Foreign Market Liberalization Effects on U.S. Labor

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Abstract

We assess the U.S. labor effects of liberalization in certain foreign property and casualty insurance markets. First, we estimate the effects of barriers and regulations on U.S. exports and sales. We then simulate the effects of liberalization in certain insurance markets with a partial equilibrium model of trade and foreign direct investment. Our findings suggest that liberalization would cause U.S. labor employment by insurance companies to increase by about 0.72 percent, about 3,544 employees. Sensitivity analysis suggests that the U.S. labor effect may range between 0.62 percent and 1.01 percent.

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1. Introduction

In this paper we assess, within certain property and casualty insurance markets, both the size of the barriers and the effect on U.S. labor employment of lowering these barriers. First, we estimate the effect of regulatory barriers on U.S. sales of both cross border and foreign affiliate sales using a gravity model based specification. Then we construct a partial equilibrium model to simulate the liberalization of barriers and regulations and examine the effects of lowered foreign trade barriers on the U.S., particularly with respect to domestic labor employment. We obtain results for the size of trade barriers that are consistent with the literature on services generally, as well as with the limited prior research on the insurance industry. To our knowledge, there is no work that specifically deals with employment effects of the insurance industry's expansion abroad.

The research on the liberalization of trade in services is a rapidly growing area of study. Researchers are grappling with two overarching sets of questions. The first is the question of what to model: trade in services differs from trade in goods in significant ways and there is a lack of consensus in how to handle these differences. What are the critical details to be modeled for services? Which of the perceived idiosyncrasies of a services sector are critical to describe the sector's behavior? The computable general equilibrium (CGE) approach has been the workhorse model for computing the effects of trade liberalization in goods. This approach has many advantages, including capturing in an explicit way many interrelationships between goods within an economy. Treatment of products in the economy allows for sector-specific details. However many argue that there is a great deal of heterogeneity among services, each with different effects on other industries. Transportation costs – and therefore transportation services – have large implications for trade, and assuming that all services have a similar impact on trade would likely overstate their effect. Therefore many researchers approach services on a sectoral basis, which models each sector separately.

The second major question in services research is how to accurately estimate the effect of reductions in services trade barriers on the performance of services. A variety of econometric methods such as the gravity equations have been used to estimate the tariff equivalent size of barriers, as well as a considerable number of less formal techniques. There are, in addition, several issues that are peculiar to services. For example, Konan and Maskus (2006) note that with services, barriers can be organized into two types of effects: "cost inefficiencies" (e.g. red tape or wasteful cost levels); or rents, which arise from the existence of monopolies or oligopolies that are especially prevalent in services sectors (e.g. financial services, telecommunications, and port services). The complexity of these barriers implies that services barriers must be modeled differently than goods barriers.

Both the estimation of services barriers and the modeling of their effects are still very much open for debate. Aside from the theoretical issues, research in services faces the additional problem of a significant lack of detailed data due both to the relative lack of attention services has received in the past as well as the relative difficulty of capturing and calculating data on services.

Dihel and Shepherd (2007) is one of the few papers on the insurance industry's service barriers; it estimates the aggregate *ad valorem* tariff equivalents (as a percent of price) for the insurance industry of several middle income countries. Their estimates range from 18 percent to 113 percent. The findings of Konan and Maskus (2006) for Tunisia are consistent with these findings for developing countries. For the insurance industry, they estimate tariff barrier equivalents for insurance service to be approximately 50 percent for both cross border and for foreign affiliate sales. Warren and Findlay (2000) obtain trade restrictiveness indices for the insurance industry as well. Their relative ranking of countries' openness maps closely to our own. However, a full comparison with other research is not possible as they do not provide *ad valorem* tariff equivalent estimates.

The literature very consistently predicts large effects on welfare from services trade liberalization. Moreover, welfare effects of liberalizing services trade tend to be significantly higher than welfare effects derived from reductions in barriers on goods. Hoekman (2006) surveys the literature and finds that services liberalization is estimate to have as much as 12 times the effect on

income that is seen in goods liberalization. Konan and Maskus (2006) estimate that goods trade liberalization in Tunisia would increase welfare by 1.5 percent whereas services liberalization would increase welfare by 6.7 percent.

2. Trade and investment barriers to insurance services

In this section we present an insurance industry trade policy score, and use it to construct an estimate of the size of trade barriers for both cross border sales as well as foreign affiliate sales. The trade policy score (TPS) was compiled at U.S. ITC. The score was customized to measure policies that have a significant effect on the insurance industry. Details follow in the next section. The TPS is used to obtain an estimate of the policy barriers facing the insurance industry.

2.1 Trade Policy Score

The trade policy scores were compiled by U.S. ITC (2008) from industry interviews with local representatives of the insurance industry and government regulators of the target countries in addition to published reports. Each of the ten policies investigated was scored as 0, 0.5, or 1. These policies were then aggregated into an index with equal weighting for each.

The ten policy criteria under consideration can be divided into two types: market access and national treatment. These follow the WTO identification of "behind the border" and "at the border" issues. Market access policies are those policies that may prevent or impede the entry of a firm into an industry, regardless of its country of origin. The principle of national treatment requires laws to treat foreign firms in the same way as they treat domestic firms.

The first market access policy (henceforth MA1) is the ability of companies to offer Marine, Aviation and Transport (MAT) insurance services in a country. Most cross border sales are of this insurance line. The second, MA2, is a related policy where – conditional on being permitted to sell MAT insurance – a country may require registration by the firm wishing to do business. The next policy, MA3, governs the ability of a firm to establish a presence in the legal form of its choosing; this

primarily affects foreign affiliate sales. MA4 in the questionnaires sent out was a two part question regarding both the limitations on foreign ownership of an entity as well as the staged elimination of such limitations (if any such elimination was planned). Again this is primarily anticipated to affect foreign affiliate sales. For MA5, a country was considered fully liberalized in this policy if all "compulsory" lines[1] could be offered by any insurance companies, and in particular whether there was discriminatory treatment between domestic and foreign firms. MA6 assesses the existence of monopolies. This is a problem of services industries in particular as many are controlled by one or a few large and protected corporations. The existence of an insurance monopoly earns a score of 1. MA7 refers to potential restrictions on the nationality of employees (i.e. how many are permitted to be foreign nationals) or on requirements for representation on the board of directors. MA8, the ability of a firm to choose its representative, refers to the degree of restrictions on the ability to obtain worker permits (whether for short business trips or as an expatriate).

There are three policies that refer to national treatment: NT1, the equal access to government procurement contracts; NT2, the equal treatment with respect to financial regulation. The third, MA5, is both a market access and a national treatment policy, as described above; for a perfect score, both must be liberalized.

Another issue is whether the policies are expected to have differing effects on cross border sales and sales through foreign affiliates. The GATS (General Agreement on Trade in Services) recognizes four types of modes of services delivery[2] which can be grouped into two forms: cross border sales and foreign direct investment.[3] Most of the policies are directly relevant to foreign affiliate sales; a liberalization of the policies is expected to have a positive effect on sales. MA3,

[1] Compulsory lines are the lines of insurance that are required by the government. The prime example in the United States is auto insurance.
[2] Mode 1: Cross border delivery without movement of people; Mode 2: cross border delivery of sales by movement of people from the producer side; Mode 3: establishment of local commercial presence; Mode 4: cross border delivery of sales by movement of consumers.
[3] Cross border sales: modes 1, 2, and 4; foreign direct investment: mode 3.

MA4, MA6, MA8 and NT2 are particularly important to the establishment of a local presence. Cross border sales are expected to be directly affected by MA1 and MA2 in particular.

Other policy measures are expected to affect foreign affiliate sales indirectly. Marine, aviation and transport insurance lines are sold both cross border and via foreign affiliates, so that we may expect to see a substitution effect across channels. That is, tighter restrictions on cross border sales (MA1 and MA2) might in fact positively affect foreign affiliate sales; by the same token, tighter restrictions on the establishment of a local presence may positively affect the amount of insurance sold on a cross border basis.

2.2 Estimation of trade and investment barriers to insurance services

The gravity model has been used extensively to examine a variety of questions in the trade literature, including the effect of trade barriers. The estimation equation is based on the so called gravity model, which has a long and much discussed tradition (see Frankel 1998, among others). These studies have primarily examined the trade in goods although there are some studies that also look at services. For foreign affiliate sales abroad (mode 3), the estimated equation is:

$$\ln\left(\frac{\text{SALES}}{\text{GDP}}\right) = \alpha_0 + \beta_1 \ln(\text{FDI}) + \beta_2 \ln(\text{GDP}) + \beta_3 \ln(\text{UNEMP}) + \beta_4 (\text{TPS\_HALF}) + \beta_5 \ln(\text{DISTCAP}) + \beta_6 (\text{COMLANG\_OFF}) + \beta_7 (\text{TERLABOR}) + \beta_8 \text{YEAR} + \varepsilon$$

For cross border sales (modes 1, 2, and 4), the estimated equation is:

$$\ln\left(\frac{\text{EXPORTS}}{\text{GDP}}\right) = \gamma_0 + \delta_1 \ln(\text{GDP}) + \delta_2 \ln(\text{DISTCAP}) + \delta_3 \ln(\text{UNEMP}) + \delta_4 (\text{TPS\_HALF}) + \delta_5 (\text{COMLANG\_OFF}) + \delta_6 \text{YEAR} + \upsilon$$

Where SALES are bilateral sales of foreign affiliates of U.S. firms,

GDP is the gross domestic product of the target country (constant 2000 USD),

EXPORTS are bilateral flows from the United States to the target country,

FDI is foreign direct investment flows from the United States to the target country,

UNEMP is the unemployment rate,

TPS_HALF is a dummy variable for the trade policy score (TPS); TPS_HALF is zero for TPS<0.5 and 1 for TPS>=0.5,

DISTCAP is the log distance from the US capital to the foreign capital,

COMLANG_OFF is a dummy variable that takes the value 1 if English is an official language of the importing country (zero otherwise),

TERLABOR is the tertiary education rate of the workers in the importing country, and

ε and υ are error terms.

Estimation results are shown in Table 1. It bears noting that the distance variable is significant in both equations although it is not obvious that it would matter for a non-physical commodity. An explanation for this may be due to the fact that countries in closer proximity tend to have more cross-migration, and therefore be more familiar with one another's languages and ways of doing business.

We compute the effect on foreign affiliate sales of a decrease in trade barriers, from the (high) average level of the RoW2 countries to the lower average level of the RoW1 countries. This counterfactual exercise increases foreign affiliate sales by 51.4 percent.

A similar experiment for exports yields similar results. Exports are substantially smaller for the insurance sector and are estimated to increase somewhat more, by 62.5 percent.

The countries that are considered to have "high" trade barriers (TPS greater than or equal to 0.5) are Argentina, Bangladesh, Barbados, Brazil, China, India, Indonesia, Italy, Korea, Malaysia, Mexico, Pakistan, Peru, Poland, Russia, Saudi Arabia, South Africa, Sri Lanka, Thailand, Venezuela, and Vietnam.

The countries with low trade barriers are Australia, Austria, Belgium, Bolivia, Bulgaria, Canada, Chile, Columbia, Croatia, Czech, Republic, Denmark, Ecuador, Egypt, Finland, France, Germany, Guatemala, Hong Kong, Hungary, Iceland, Ireland, Japan, Jordan, Latvia, Lithuania, Luxembourg, Netherlands, New Zealand, Norway, Panama, Philippines, Portugal, Romania, Singapore, Slovenia, Spain, Sweden, Switzerland, Tunisia, Turkey, and the United Kingdom.

4. Partial equilibrium model

The effects of liberalizing the estimated restrictions on U.S. insurance business are simulated with a model of international trade and foreign direct investment in property and casualty insurance. The analysis is focused on premiums and it does not consider claims or financial investments by insurance companies.

In this model, there is demand for cross-border traded insurance services and for non-traded insurance services. Insurance companies employ labor and capital, and they use other inputs to supply insurance services. Insurance companies are modeled as operating under conditions of constant returns to scale and perfect competition which implies that there are no pure profits, that is revenue from sales is exhausted by factor payments. In a particular economy, labor is employed by home and foreign insurance companies.

4.1 Supply, foreign direct investment, and factor markets

There are three regions in the model. The United States; a rest-of-the-world region, RoW1, representing relatively open insurance markets; and a second rest-of-the-world region, RoW2, which represents the restricted insurance markets.

In each model region there is demand for two distinct insurance products: (i) a traded insurance product, TRD_INS, which competes with the product supplied by the home company; and (ii) a non-traded insurance product, FDI_INS, which is supplied by home and foreign companies operating in the region.

Figure 1 sketches the input-output relationships in the model for the United States and the RoW2 region.[4] In each region, there are five insurance companies. The upper part of figure 1 shows that a U.S. company supplies the traded insurance product, TRD_INS_{US}; a U.S. company provides the non-traded insurance product, $FDI\_INS_{US, US}$; a U.S. company provides "headquarter services" for

[4] The specification of input-output relationships in the RoW1 region is equivalent to that for the United States and the RoW2 region.

U.S. insurance companies world-wide, H_{US}; and two foreign-owned companies provide non-traded insurance products, $FDI\_INS_{RoW1, US}$, and $FDI\_INS_{RoW2, US}$.

Input-output relationships are modeled with nested CES (constant elasticity of substitution) production functions.[5] All companies employ labor and capital and optimal demands for these two factors are derived from a CES production function with elasticity $\sigma = 1.26$. Value added, i.e., the aggregate of labor and capital, and other inputs are employed in fixed proportions to output, i.e., the relevant CES substitution elasticity is zero.

The three companies supplying the non-traded insurance product also employ "headquarter services". The U.S. company employs headquarter services produced in the United States, H_{US}, while the two foreign companies employ headquarter services produced in their home economies, H_{RoW1} and H_{RoW2}.

All five insurance companies operating in the U.S. market employ U.S. labor, L_{US}. The three U.S. companies employ U.S. capital, K_{US}; while the two foreign companies employ capital sourced from their home regions, K_{RoW1} and $K_{RoW2,}$ in the form of foreign direct investment (FDI).

The lower part of figure 2 shows the modeling of input-output relationships in the RoW2 region. The U.S. company operating in the RoW2, $FDI\_INS_{US, RoW2}$, employs capital, K_{US}, and headquarter services, H_{US}, from the United States, and labor, L_{RoW2}, from the RoW2 region.

The prices of the insurance products as well as the prices of the headquarter services are endogenous in this model. It is also assumed that returns to capital and labor wages are endogenous and that it is relatively easy for the insurance industry to expand by attracting additional labor and capital from the rest of the economy. In particular, it is assumed that regional supplies of capital and labor are slightly increasing functions of capital rentals and labor wages. In all regions, the own-price elasticity for capital, ε_K, is 10 while the own-price elasticity for labor, ε_L, is 15.

[5] A CES production function is characterized by a constant percentage change in factor (e.g., labor and capital) proportions due to a percentage change in the marginal rate of technical substitution (Arrow *et al.,* 1961).

4.2 Demand and trade

For each region, demands are specified for two composite[6] insurance products. Each demand is only a function of its own price, e.g., demand for the traded product is not influenced by changes in the price of the non-traded product.[7]

Figure 2 sketches the demand relationships in the model for the RoW2 region.[8] It is assumed that demanders differentiate the domestic product from foreign products, whether they are imported (as in the case of traded insurance) or produced by a foreign company (as in the case of the non-traded insurance).[9] The substitution possibilities among the three varieties of each insurance product are modeled with CES functions. The CES elasticities are assigned the value of 2 for both insurance products.[10]

The simulation of liberalization in the RoW2 is specified as a removal of *ad valorem* tariffs and sales taxes which would induce an expansion of imports from the United States and the RoW1; and an expansion of sales by U.S. and RoW1 companies in the RoW2.

The partial equilibrium model is implemented using the GEMPACK suit of software (Harrison and Pearson, 2002).

4.3 Data for the partial equilibrium model

Table 2 shows the data used in the partial equilibrium model. Most of the data have been obtained from BEA and OECD sources and they are for 2006. Because of uncertainties regarding the statistics for headquarter services, in the next section, we examine the sensitivity of simulated effects to these statistics.

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[6] That is the aggregate of domestic and foreign varieties of insurance products.
[7] Own price elasticities are from the GTAP framework (Hertel, 1997 and Dimaranan and McDougall, 2005). They are -0.810, -0.705, and -0.500 for the United States, RoW1, and RoW2, respectively.
[8] Demands for insurance products in the United States and in the RoW1 regions are modeled in an equivalent way.
[9] This is the Armington assumption of product differentiation by country of origin which is often employed in applied models of international trade (Armington, 1969).
[10] The value for the Armington elasticities of substitution is from the GTAP framework (Hertel, 1997 and Dimaranan and McDougall, 2005).

5. Simulated U.S. labor effects of liberalization in RoW2

The model was run to simulate the liberalization of restrictions in the RoW2 region. The simulated liberalization facilitated not only the expansion of U.S. exports and sales but also the expansion of exports and sales of all other foreign companies to RoW2. In particular, the model simulated the reduction of certain *ad valorem* tariff and tax equivalents which would induce U.S. exports and sales of insurance to expand by the amounts estimated in Section 2, i.e., 62 percent and 51 percent, respectively. Because in Section 2 we did not estimate equivalent effects for RoW1 exports and sales in RoW2, the simulation reduced the tariffs and taxes applied by RoW2 to RoW1 insurance by the same percentages as for the tariffs and taxes applied to U.S. insurance.

Table 3 reports the simulated effects of liberalization and their sensitivity to parameters and data. Column (1) reports effects from the simulation with base data and parameter values. Columns (2) to (6) report effects from simulations with different parameter values and data.

U.S. insurance exports and sales in restricted markets are small relative to overall U.S. insurance sales. Thus a significant expansion in U.S. exports to RoW2 (62 percent) and in U.S. sales in RoW2 (51 percent) would translate to a relatively small expansion in overall U.S. insurance sales. Column (1) in table 3 shows that gross sales of U.S. insurance companies would increase by 2.17 percent. In particular, U.S. sales of the traded insurance product would expand by 9.44 percent while global sales of U.S. non-traded insurance product would expand by 1.70 percent. Capital employed by U.S. companies in the United States, RoW1, and RoW2 would expand by 2.16 percent.

U.S. labor employment expands because insurance companies in the United States expand and thus they demand more labor. At the same, the production of insurance services in the United States becomes more labor intensive, thus causing a further expansion in demand for labor. The

combined effect of these two factors is that U.S. labor employed by insurance companies in the United States would increase by 0.72 percent, or about 3,544 employees.[11]

5.1 Sensitivity analysis

Table 3 reports results from sensitivity analysis for two parameters. Columns (2)-(3) report results for different values for the elasticity of supply for capital services, ε_K (see figure 2). Columns (4)-(5) report results for different values for the CES elasticity of substitution between capital and labor, σ (see figure 1).

Under a higher capital supply elasticity, ε_K=30, the price of capital does not rise as much as under ε_K=10 (the base value for ε_K) and thus there is a weaker incentive for insurance companies in the United States to substitute away from capital. Thus U.S. labor employment expands by 0.67 percent (column 3). When the capital supply elasticity is extremely small (ε_K=1, column 2), the price of capital increases by more than in the base case, and so demand for U.S. labor expands by 1.01 percent (column 2), or about 4,971 employees.

Under a higher capital-labor elasticity of substitution, σ=2.40, it is easier for insurance companies in the United States to substitute away from capital than under σ=1.26 (the base value for σ). Thus U.S. labor employment expands by 0.82 percent (column 5). When the substitution elasticity is smaller than in the base case, it is more difficult for insurance companies in the United States to substitute away from the more expensive capital, and so demand for U.S. labor expands by 0.65 percent (column 4).

Column (6) in table 3 reports results from sensitivity analysis regarding the data. In particular, the data were revised so that "headquarter services" are no longer an input in the production of insurance services. As is shown in column (6), the simulated U.S. effects of liberalization in RoW2 are not sensitive to headquarter services. As expected, the output effect for U.S. traded services

[11] The Bureau of Labor Statistics estimated that direct property and casualty insurers employed about 492.2 thousand employees in the United States during October 2008 (Bureau of Labor Statistics, 2009). An increase of 0.72 percent translates to a gain of about 3,544 employees.

(which does not use headquarter services) is the same as in the simulation with the base data; the output effect for U.S. non-traded services is larger than in the simulation with the base data; and the U.S. labor effect is smaller than in the simulation with the base data. U.S. labor employed in the insurance industry expands by 0.64 percent, or about 3,052 employees.

6. Summary and conclusions

We assessed the U.S. labor effects of liberalization in certain foreign property and casualty insurance markets. First, we estimated the effects of barriers and regulations on U.S. exports and sales. We found that barriers and restrictions on U.S. insurance sales are depressing U.S. exports to those markets by 62 percent; they are also depressing sales by U.S. companies operating in those foreign markets by 51 percent.

We then simulated the effects of liberalization in those markets with a partial equilibrium model of trade and foreign direct investment. Our findings suggest that foreign market liberalization would cause U.S. labor employment by insurance companies to increase by about 0.72 percent or about 3,544 employees. We conducted sensitivity analysis and we found that our estimate of the U.S. labor effect may range between an increase of 0.64 percent (or about 3,052 employees) and an increase of 1.01 percent (or about 4,971 employees).

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Table 1: Results of estimating trade and investment barriers

	Equation			
Variable	Ln(Sales/GDP)		Ln(Exports/GDP)	
FDI	0.0079***	(0.0017)		
LN(GDP)	0.2755***	(0.0585)	-0.3065***	(0.0765)
LN(UNEMP)	-0.6318***	(0.1515)	-0.5086***	(0.1351)
TPS_HALF	-0.4150**	(0.1883)	-0.4853***	(0.1723)
LN(DISTCAP)	-0.9881***	(0.2209)	-0.7217***	(0.1381)
COMLANG_OFF	1.8284***	(0.2183)	1.2161***	(0.1906)
TERLABOR	-0.0111	(0.0091)		
YEAR	0.0981**	(0.0376)	0.3649***	(0.0561)
Number of obs.	192		142	
R^2	0.4698		0.5216	

Notes: Standard errors are in parentheses. Values market (***), (**) and (*) are significant at the 1%, 5%, and 10% level respectively.

Sources: WDI Online; BEA for bilateral sales and export data; CEPII for distance variables, and the USITC for the trade policy score (TPS).

Table 2. Data for the partial equilibrium model, million U.S. dollars

Input costs and sales for companies operating in the United States

	Companies				
Inputs	1 traded	2 USA	3 ROW1	4 ROW2	5 H
1 Labor	16,510.5	221,130.0	28,503.0	0.6	23,613.0
2 USA_K	33,021.0	368,550.0	0.0	0.0	47,226.0
3 ROW1_K	0.0	0.0	47,505.0	0.0	0.0
4 ROW2_K	0.0	0.0	0.0	1.0	0.0
5 USA_H	0.0	73,710.0	0.0	0.0	0.0
6 ROW1_H	0.0	0.0	9,501.0	0.0	0.0
7 ROW2_H	0.0	0.0	0.0	0.2	0.0
8 Other Inputs	5,503.5	73,710.0	9,501.0	0.2	7,871.0
Costs=Sales	55,035.0	737,100.0	95,010.0	2.0	78,710.0

Bilateral trade in traded insurance

	Importer		
Exporter	1 USA	2 ROW1	3 ROW2
1 USA		13,354.0	9,898.0
2 ROW1	34,189.0		8,000.0
3 ROW2	31,091.0	31,091.0	

Input costs and sales for companies operating in ROW1

	Companies				
Inputs	1 traded	2 USA	3 ROW1	4 ROW2	5 H
1 Labor	22,856.7	6,620.4	146,244.6	45,579.6	18,312.7
2 USA_K	0.0	11,034.0	0.0	0.0	0.0
3 ROW1_K	45,713.4	0.0	243,741.0	0.0	36,625.4
4 ROW2_K	0.0	0.0	0.0	75,966.0	0.0
5 USA_H	0.0	2,206.8	0.0	0.0	0.0
6 ROW1_H	0.0	0.0	48,748.2	0.0	0.0
7 ROW2_H	0.0	0.0	0.0	15,193.2	0.0
8 Other Inputs	7,618.9	2,206.8	48,748.2	15,193.2	6,104.2
Costs=Sales	76,189.0	22,068.0	487,482.0	151,932.0	61,042.4

Demands for insurance products

	Region		
Product	USA	ROW1	ROW2
Traded	97,063.0	78,445.0	51,898.0
Non-traded	832,112.0	661,482.0	543,346.0

Input costs and sales for companies operating in ROW2

	Companies				
Inputs	1 traded	2 USA	3 ROW1	4 ROW2	5 H
1 Labor	28,854.6	8,379.6	8,379.6	146,244.6	19,182.5
2 USA_K	0.0	13,966.0	0.0	0.0	0.0
3 ROW1_K	0.0	0.0	13,966.0	0.0	0.0
4 ROW2_K	57,709.2	0.0	0.0	243,741.0	38,365.0
5 USA_H	0.0	2,793.2	0.0	0.0	0.0
6 ROW1_H	0.0	0.0	2,793.2	0.0	0.0
7 ROW2_H	0.0	0.0	0.0	48,748.2	0.0
8 Other Inputs	9,618.2	2,793.2	2,793.2	48,748.2	6,394.2
Costs=Sales	96,182.0	27,932.0	27,932.0	487,482.0	63,941.6

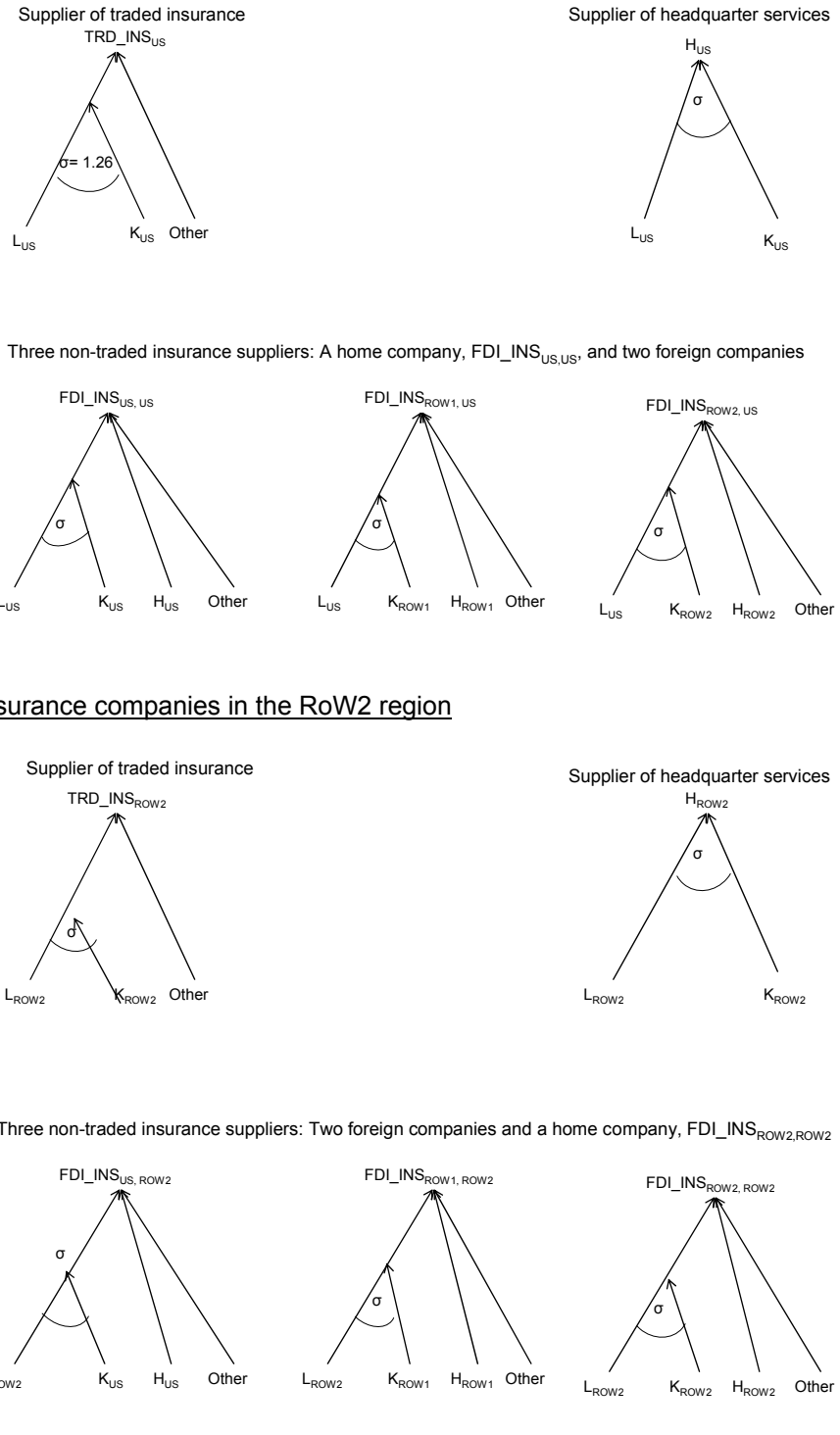
Sources: Bureau of Economic Analysis, U.S. Department of Commerce and Organization for Economic Cooperation and Development.

Table 3. Selected simulated effects of liberalizing the RoW2 insurance market and sensitivity to parameters and data, percent change in volume

	Base parameters and data	Sensitivity analysis				
		Capital supply elasticity		Capital-labor CES substitution elasticity		Alternative data: No headquarter services
		ε_K=1	ε_K=30	σ=0.60	σ=2.40	
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Exports of U.S. traded ins. to RoW2	62.00	62.00	62.00	62.00	62.00	62.00
Sales of U.S. non-traded ins. in RoW2	51.00	51.00	51.00	51.00	51.00	51.00
Sales of U.S. traded insurance	9.44	8.50	9.58	9.44	9.45	9.44
Global sales of U.S. non-traded ins.	1.70	1.25	1.77	1.70	1.70	1.71
Gross sales of all U.S. ins. companies, i.e., including headquarter services	2.17	1.69	2.23	2.17	2.17	2.22
Capital employed by U.S. ins. companies	2.16	1.22	2.29	2.20	2.10	2.23
Labor markets effects:						
United States	0.72	1.01	0.67	0.65	0.82	0.64
RoW1	0.70	0.84	0.68	0.66	0.75	0.58
RoW2	0.22	-0.08	0.27	0.33	0.07	0.52

Figure 1. Input-output relationships for insurance companies in two regions of the model

A. Insurance companies in the United States



B. Insurance companies in the RoW2 region

Figure 2. Demands for traded and non-trade insurance in the RoW2 region