

The Economic Significance of Insurance Markets in Developing Countries

J. François Outreville

Abstract

The importance of the relationship between financial development and economic growth is recognized in the economic literature. Recent evidence suggests that the developing countries have a supply-leading causality pattern of development. Property-Liability insurance like other financial services has grown in quantitative importance as part of the general development of financial institutions. This article investigates empirically the relationship between property-liability insurance premiums and economic and financial development. A model is specified for property-liability insurance demand and it is tested with a cross-section of 55 developing countries.

Introduction

Even though insurance is of primordial importance in domestic economies and internationally, the role of insurance in the development process is difficult to assess. While insurance, like other financial services, has grown in quantitative importance as part of the general development of financial institutions, it also has become qualitatively more important due to the increase of risks and uncertainties in most societies. However, the share of total insurance premiums generated in developing countries remains at a low figure even though these countries contain more than 75 percent of the world's population and account for almost 20 percent of the world's economic activity.¹

Indeed, so important is insurance in the trade and development matrix that, at its first session in 1964, the United Nations Conference on Trade and Development (UNCTAD) formally acknowledged that "a sound national

J. François Outreville is an Economic Affairs Officer with the Special Programme on Insurance at the United Nations Conference on Trade and Development. Prior to assuming this position in 1986, he was Associate Professor of Finance and Director of the Chair of Insurance at Laval University in Canada.

The author gratefully acknowledges the helpful suggestions of the Editor and of two anonymous referees. The views expressed in this document do not necessarily reflect those of the UNCTAD secretariat.

¹ UNCTAD (1984). See also Skipper (1987).

insurance and reinsurance market is an essential characteristic of economic growth".² The importance of the relationship between financial development and economic growth has been well recognized and emphasized in the field of economic development. Recent writings on this subject seem to accept the hypothesis that financial development is crucial for successful economic growth (Jung, 1986 and Dee, 1986). To the author's knowledge no work has been done to examine the relationship between financial development and insurance development. The case of developing countries is important as many governments have taken it upon themselves to establish new financial institutions under what has been termed a "supply-leading approach" to financial development.³

The governments of many developing countries historically held the view that the financial systems they had inherited could not serve their countries' development needs adequately; accordingly, during the past 30 years, they directed considerable efforts to changing the structure of these financial systems and controlling their operations in order to channel savings to such investments which were considered a priority in their development programs. Many developing countries have considered locally incorporated insurance institutions an essential element of their economic and political independence. Today, most developing countries have dominant domestic insurance industries. However, the demand for insurance services remains low in a large number of developing countries.

The main objective of this article is to investigate empirically the relationship between insurance premiums written in these countries and financial development. The research is based on a recent United Nations survey of insurance and reinsurance operations in developing countries.⁴ Attention is limited to property-liability insurance. The problem of measuring the economic significance of insurance markets in developing countries is presented in the next section. Then, an empirical analysis of property-liability insurance demand is conducted.

Measuring the Economic Significance of Insurance Markets

The economic significance of a domestic insurance industry is usually evaluated by means of the ratio of gross domestic premiums written to gross domestic product (GDP). Although this measure does not give a complete picture of the insurance output because of the considerable variation in premiums rates between different countries, it has the advantage of not being influenced by currency factors. It is worth noting that the average value of this

² *Proceedings of the United Nations Conference on Trade and Development*, First session, Vol. I, Final Act and Report, p. 55, annex A.IV.23.

³ Recent evidence in the literature suggests that the less developed countries have a supply-leading causality pattern more frequently than a demand-following pattern. In this sense, what Patrick (1966) emphasized about the usefulness and the importance of financial development in LDC's is borne out empirically.

⁴ See UNCTAD (1987).

ratio for the United States, Canada, and Western European countries was 4.5 percent in 1984⁵ while it is usually less than 2 percent for developing countries.

The insurance data on developing countries used in this study was published recently in a statistical survey by the UNCTAD secretariat. This publication refers to the calendar year 1983 but some data are reported for 1984. The information was compiled by UNCTAD with the help of a questionnaire sent to governments and supervisory offices. Although this survey included data for 65 developing countries, the data base for this study has been limited to 55 countries for which information is available on annual gross and net domestic premiums, annual gross and net claims incurred, and the share of the major lines of insurance relative to total insurance business.

The average value of the ratio of gross premiums to GDP for the sample is 1.11 percent. This approach can be said to correspond to the "transfer of risk" function of the insurance sector. The service is being provided to the community at large and is treated by analogy to other service sectors as a final product.

Following Beenstock, Dickinson, and Khajuria (1988), insurance development is assumed to be correlated with GDP. The relationship between property-liability premiums per capita and GDP per capita is hypothesized to be a non-linear relationship and is estimated by ordinary least squares. The results are very similar to those that Beenstock, Dickinson, and Khajuria estimated with a cross-section of 45 developed and developing countries in 1981. In the current sample, per capita GDP varies from approximately US \$130 to US \$6000, but contrary to Beenstock, Dickinson, and Khajuria, there is no apparent breaks or discontinuities in the data as is the case when comparing developing and developed countries. However, the results are similar in the sense that the income elasticity is also equal to 1.34 as shown below:

$$\text{Log } Q = -6.998 + 1.344 \log \text{GDP} \quad R^2 = 0.83 \quad F = 259.1 \\ (-12.48) (16.09)$$

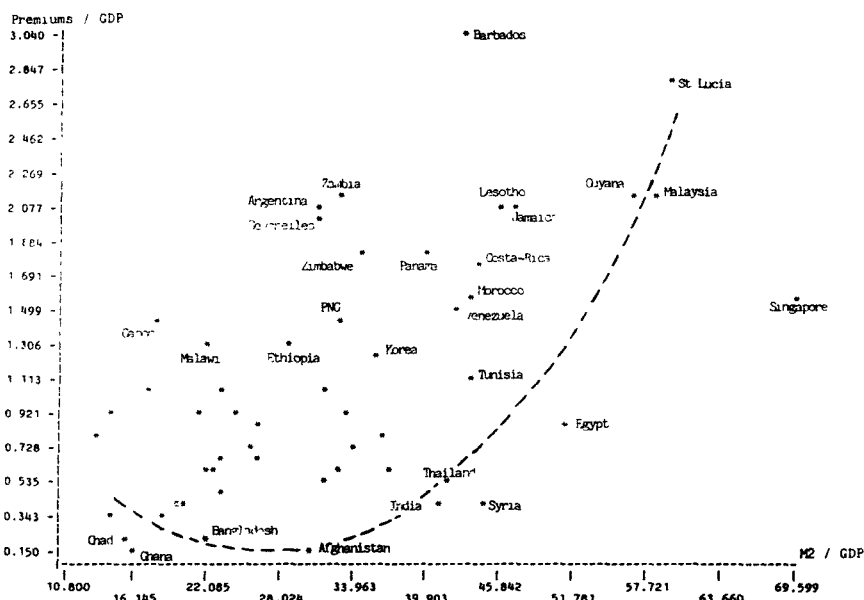
(t-values in parenthesis)

Because the service offered by the insurer is that of an intermediary, the insurance industry contributes to the formation of national income by creating value-added on the basis of premiums less liabilities incurred. This value-added is apportioned for the payment of salaries and commissions, dividends and indirect taxes. The balance represents the gross profit (or loss) of the insurance operation. The influence of the insurance industry on economic activity should be analyzed from two viewpoints: its role in providing indemnification and its role as an institutional investor.

To measure the contribution of insurers to the financing of the national economy, it will suffice to compare the increase in technical reserves and provisions (or assets) of the insurance sector with the economy's financial

⁵Sigma (1986), Swiss Reinsurance Company, no. 4.

Figure 1
Relationship Between Insurance Development and Financial Development



An Empirical Analysis of Property-Liability Insurance Demand

The Model.

Patrick (1966) identified two possible patterns in the causal relationship between financial development and economic growth. In the first, called "demand-following," the lack of financial growth is a manifestation of the lack of demand for financial services. As the real side of the economy develops, its demand for various new financial services materialize. In the second, the "supply-leading" approach, the expansion of the financial system precedes the demand for its services. It is not the intention in this study to investigate this causality link (this would require a different data set and a methodology of pooling cross-sectional and time-series data), but to verify that a positive relationship exists also between insurance development and financial development.

In developing the demand function the following theoretical propositions are assumed: (1) insurance demand is an increasing function of income; (2) the real quantity of insurance demanded is a decreasing function of its real price; (3) there exists a positive relationship between financial development and the individual's ability and/or willingness to buy insurance.

$$\log D = D \left[\begin{matrix} (+) & & (-) & & (+) \\ \log \text{GDP} & , & \log \text{PI} & , & \text{FD} \end{matrix} \right]$$

where D is the demand for property-liability insurance per capita in \$US measured by total gross domestic premiums,

GDP is gross domestic product per capita in \$US,

PI is the price of insurance defined by the inverse of the loss ratio which indicates the cost per dollar of losses required to administer the insurance mechanism,⁷

FD is a measure of financial development.

As explained in the previous section, the average value of the ratio M2/GDP, over the period 1980–1983, is taken as the most appropriate measure of financial development. Other measures are also tested in this study.

Empirical Results.

The equation is estimated on a cross-section basis with 55 countries (see appendix). Differences across countries are unlikely to be due to random factors, but rather are due to structural and social differences among countries. A major shortcoming of cross-sectional analysis, particularly when carried out on the basis of simple correlation techniques, is the possibility that the observed relations may be biased by variables determined endogenously. This is the case if the price of insurance is a jointly determined variable along with demand and supply forces. The equation is also estimated using an instrumental variable estimation where the measures of financial development and dummies to account for the supply structure of the market are used as instruments (see appendix). The demand for insurance is insufficient in most developing countries but it also mainly exists for low expense coverages, such as automobile insurance, and for high risk coverages, such as insurance on aircraft and target risks. This leaves the insurers with an unbalanced portfolio of risks and an inadequate premium structure.⁸ A variable to account for the share of automobile insurance in the global portfolio is also added to the instruments. Due to the lack of homogeneity in the data, it is not possible to add the share of other lines of business in the portfolio.

The results are presented in table 1. The sign for income in the demand equation is positive and significant. The income elasticity is greater than unity. The price elasticity is negative as expected although it is not significant. Insurance demand depends significantly on financial development of the country. As expected when the ratio M2/GDP increases, the demand for insurance increases significantly.

Measurement of financial development seems controversial because countries differ in their institutional environment and have different financial structures according to their development stage. As an alternative measure,

⁷ See, for example, Frech and Samprone (1980) and Doherty (1981).

⁸ See UNCTAD (1982).

Table 1
Estimates of the Demand Equation

Equation	OLS	OLS	OLS	Inst. Variables
Intercept	-6.885 (-12.70)	-5.778 (-7.82)	-6.943 (-12.55)	-7.364 (-10.08)
Log GDP	1.240 (14.65)	1.253 (14.13)	1.342 (16.82)	1.254 (13.24)
Log PI	-0.061 (-0.34)	-0.120 (-0.65)	-0.070 (-0.38)	-0.555 (-0.97)
M2/GDP	0.019 (3.09)			0.020 (2.85)
M1/M2		-0.010 (-2.41)		
FD*			0.018 (2.85)	
R ²	0.857	0.848	0.851	
SSR	15.68	16.73	16.37	19.31
SE	0.55	0.57	0.56	0.61

(t-values in parenthesis)

M1/M2 is the ratio of currency and demand deposit (M1) to the broader definition of money (M2).

The average value of this ratio over the period 1980 through 1983 is taken as a proxy for the complexity of the financial assets supplied by financial institutions.⁹ A decrease in this ratio will accompany an increased demand for insurance as a more sophisticated demand for financial services materializes. This is confirmed by the results.

Another alternative approach is to regress the measure of financial development on the GDP and the average inflation rate over the same period, and use residuals of the estimation procedure as an adjusted measure of financial development FD*.¹⁰ The results are very similar and confirm the positive and significant relationship between the demand for insurance and the level of financial development.

An analysis by regions (table 2) shows similar results. It is worth noting that the income elasticity for African countries is not significantly different from the income elasticity of the full sample, whereas it is significantly lower for the Latin American and Caribbean countries.

Individual country experiences are too heterogeneous to accord neatly with any very simple generalization. Countries experiencing a very high inflation

⁹ See Jung (1986).

¹⁰ This approach was suggested by one referee.

Table 2
Estimates of the Demand Equation by Regions

Equation	Latin America and Caribbean		Africa	
	(20 countries)		(24 countries)	
Intercept	-6.880 (-5.47)	-3.518 (-1.80)	-6.238 (-7.42)	-3.684 (-4.31)
Log GDP	1.171 (7.72)	1.007 (4.14)	1.183 (8.55)	1.143 (11.53)
Log PI	-1.174 (-0.52)	-0.583 (-1.11)	-0.067 (-0.32)	-0.218 (-1.29)
M2/GDP	0.037 (6.08)		0.013 (1.20)	
M1/M2		-0.015 (-2.10)		-0.026 (-4.36)
R ²	0.88	0.68	0.82	0.90
SSR	1.61	4.17	6.27	3.44
SE	0.32	0.51	0.56	0.41

rate (P) may follow a different pattern of development. More fundamentally, the demand for insurance may differ according to country-specific variables including human capital endowment and the agricultural status of the country. The level of education for each country can be proxied by the percentage of the labor force with higher education relative to the population (EDUC) as proposed by Baldwin (1971). Higher education should lead to higher awareness and higher insurance demand. This is not verified in our tests since the coefficient for this variable has the wrong sign (see table 3). One explanation might be that the level of education does not interfere at the earlier stage of development but does later.

The agricultural status of a country can be proxied by the percentage of the agricultural labor force (AGRIC). Because the marketing of insurance among a rural population is difficult in most developing countries, an agricultural economy may explain a lower demand for insurance. This again is not verified by the tests. It is quite difficult to explain specially if one relates it to the generally accepted idea, at least in international governmental meetings, that there is an urgent need for developing countries to increase the insurance awareness of rural populations.

Finally, because many countries have enacted a State monopolistic insurance market, a dummy variable to account for the impact of the market structure on the demand for insurance is tested. The coefficient associated with the dummy variable for a monopolistic market (MONOPOL) is found to be negative but not significantly different from zero.

It follows clearly from these results that the level of the gross domestic product and the level of financial development are the only factors explaining

Table 3
Estimates of the Demand Equation with Country-Specific Variables

Equation		
Intercept	-7.777 (-8.25)	-7.706 (-8.56)
Log GDP	1.369 (11.93)	1.367 (12.12)
Log PI	-0.066 (-0.37)	—
P	0.013 (0.54)	—
M2/GDP	0.020 (2.99)	0.019 (3.02)
MONOPOL	-0.008 (-0.43)	-0.018 (-0.98)
EDUC	-0.019 (-1.83)	-0.018 (-1.80)
AGRIC	0.003 (0.58)	0.002 (0.46)
R ²	0.87	0.87
SSR	14.31	14.44
SE	0.55	0.54

the level of development of property-liability insurance demand in developing countries.

Discussion and Conclusion

Preceding sections present the situation in developing countries with regard to insurance development. It has been said that the economic importance of the insurance sector is still low when considering the share of total premiums generated in developing countries. One way to infer vigor is through economic growth and financial development as shown by the results of this empirical investigation. But at the same time, the external debt situation of the developing countries is likely to slow the pace of growth. This has also to be considered with regards to the results that show a significant lower income elasticity for Latin American and Caribbean countries.

The empirical results clearly indicate the importance of financial development and if it is true that the developing countries have a supply-leading causality pattern to development, then more attention should be paid to supply forces in insurance markets. More research needs to be done on the supply side to analyze the impact of the market structure.

References

1. Arndt, H.W., 1988, Comparative Advantage in Trade in Financial Services, *Banca Nazionale Del Lavarò Quarterly Review*, March: 61-78.
2. Baldwin, R.B., 1971, Determinants of the Commodity Structure of the US Trade, *American Economic Review*, 61:(March).
3. Beenstock, M., Dickinson, G. and S. Khajuria, 1988, The Relationship Between Property-Liability Insurance Premiums and Income : an International Analysis, *Journal of Risk and Insurance*, 55: 259-72.
4. Bernanke, B.S. and A.S. Blinder, 1988, Credit, Money and Aggregate Demand, *American Economic Review*, 78: 435-39.
5. Dee, P.S., 1986, *Financial Markets and Economic Development: The Economics and Politics of Korean Financial Reforms*, (Kieler Studies, Universitat Kiel, Institut fur Weltwirtschaft).
6. Doherty, N.A., 1981, The Measurement of Output and Economies of Scale in Property-Liability Insurance, *Journal of Risk and Insurance*, 48: 390-402.
7. Frech, M.E. and J.C. Samprone, 1980, The Welfare Loss of Excess Non-Price Competition: the Case of Property-Liability Insurance Regulations, *Journal of Law and Economics*, 13: 429-40.
8. Gupta, K.L., 1984, *Finance and Growth in Developing Countries*, (London: Croom Helm).
9. Jones, L., 1985, Public Enterprise for Whom? Perverse Distributional Consequences of Public Operational Decisions, *Economic Development and Cultural Change*, 33: 333-47.
10. Jung, W.S., 1986, Financial Development and Economic Growth: International Evidence, *Economic Development and Cultural Change*, 34: 333-46.
11. McKinnon, R., 1976, *Money and Finance in Economic Growth and Development*, (New York: M. Dekker Inc).
12. Patrick, H., 1966, Financial Development and Economic Growth in Underdeveloped Countries, *Economic Development and Cultural Change*, 14: 174-89.
13. Reichenstein, W. and J.W. Elliott, 1987, A Comparison of Models of Long-Term Inflationary Expectations, *Journal of Monetary Economics*, 19: 405-25.
14. Skipper, H.D., 1987, Protectionism and the Provision of International Insurance Services, *Journal of Risk and Insurance*, 54: 55-85.
15. UNCTAD, 1987, *Statistical Survey on Insurance and Reinsurance Operations in Developing Countries*, (Geneva: United Nations).
16. UNCTAD, 1984, *Insurance in the Context of Services and the Development Process*, (Geneva: United Nations).
17. UNCTAD, 1982, *Problems of Motor Insurance in Developing Countries*, (Geneva: United Nations).

18. Vogel, R. and S. Buser, 1976, Inflation, Financial Repression, and Capital Formation in Latin America, in McKinnon, Ed., *Money and Finance in Economic Growth and Development*, (New York: M. Dekker, Inc.).

Appendix

Property-Liability Insurance in 55 Developing Countries

Country	Gross Premiums % of GDP	Type of Market Structure	Country	Gross Premiums % of GDP	Type of Market Structure
Afghanistan	0.15	1	Jamaica	2.09	3
Argentina	2.10	3	Korea (Rep. of)	1.28	3
Bangladesh	0.25	1	Lesotho	2.10	3
Barbados	3.04	3	Malawi	1.36	3
Bolivia	0.45 ⁱ	3	Malaysia	2.15	3
Botswana	1.08	3	Mexico	0.65 ⁱ	2
Brasil	0.73 ⁱ	3	Morocco	1.60	2
Burkina Faso	0.46	2	Mozambique	0.39	1
Burundi	1.06	1	Nicaragua	0.95	1
Cameroon	1.10	3	Nigeria	0.82	3
Central Africa	0.40	3	Panama	1.83	3
Chad	0.25	1	Papua New Guinea	1.47	3
Chile	0.70	3	Paraguay	0.69	3
Columbia	0.94	2	Peru	0.90 ⁱ	2
Congo	0.97	1	Philippines	0.66	3
Costa Rica	1.76	1	Rwanda	0.82	1
Ecuador	0.65	3	Saint-Lucia	2.83	3
Egypt	0.90	2	Seychelles	2.03	1
El Salvador	0.74	3	Singapore	1.61	3
Ethiopia	1.33	1	Sri Lanka	0.57	1
Gabon	1.47	3	Sudan	0.66	2
Gambia	0.96	2	Syria	0.47	1
Ghana	0.16	2	Thailand	0.54	3
Guatemala	0.50	3	Tunisia	1.13	2
Guyana	2.20	3	Venezuela	1.50	2
Honduras	0.75	3	Zambia	2.15	1
India	0.44	2	Zimbabwe	1.88	3
Indonesia	0.45	2			

Key: i = very high inflation rate. Estimation may be biased.

Type of market structure:

1 = Monopolistic market;

2 = Localization of ownership (only domestic companies);

3 = Localization of insurance (market allowing foreign-owned companies to operate).

Source: UNCTAD (1987).

Copyright of Journal of Risk & Insurance is the property of Blackwell Publishing Limited and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.