
A Literature Review of the Nexuses Between Insurance, Economics, Institutions, and Human Development

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A LITERATURE REVIEW OF THE NEXUSES BETWEEN INSURANCE, ECONOMICS, INSTITUTIONS, AND HUMAN DEVELOPMENT

ABSTRACT

A detailed survey of the literature examines the efforts made to establish the conceptual and empirical links between the development (penetration and density) of the insurance market and economic growth, insurance and institutional development, insurance, and human development, respectively. Accumulated evidence tests the hypothesis of a positive association (correlation and/or causality) between insurance and economic growth, insurance and institutions, and insurance and human development, the latter as measured by some internationally accepted indicators. The studies encompass different countries, and various time windows and employ disparate methods. This review puts together those results and permits recognizing stylized facts.

Keywords: Insurance, Growth, Institutions, Human Development

JEL Codes: G20, G22, O16

RESUMEN

Una revisión detallada de la literatura examina los esfuerzos realizados para establecer los vínculos conceptuales y empíricos entre el desarrollo (penetración y densidad) del mercado de seguros y el crecimiento económico, el desarrollo institucional y de seguros, los seguros y el desarrollo humano, respectivamente. La evidencia acumulada contrasta la hipótesis de una asociación positiva (correlación y/o causalidad) entre seguros y crecimiento económico, seguros e instituciones, y seguros y desarrollo humano, este último medido por algunos indicadores internacionalmente aceptados. Los estudios abarcan diferentes países y varias ventanas de tiempo y emplean métodos dispares. Esta revisión reúne esos resultados y permite reconocer hechos estilizados.

Palabras clave: Seguros, Crecimiento, Instituciones, Desarrollo Humano

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1. INTRODUCTION

The insurance industry, notably in developing countries, is both an important engine of financial development and economic growth financing. In the two, life and non-life insurance, the industry protects against hazards randomly and timely distributed. The first case concerns biological contingencies, for instance, death, disease, disability, aging, or widowhood, whereas the second seeks to guarantee a certainty equivalency to an otherwise stochastic value of net worth since the expected value of assets depends on the contingencies they are exposed to, times the likelihood of occurrence of those contingencies.

Two aggregated indicators help us to analyze the industry: "penetration" defined as premiums on GDP, and "density" or premiums on inhabitants. The first one measures the size of the sector concerning the economy, while the second measures the per capita output of the industry. Insurance has high-income elasticity, so its growth rate is expected to surpass the GDP growth rate. Because of that, "penetration" is higher in developed countries than in developing ones. In turn, "density" indicates the potential for the sector to grow.

The sector's relevance resides both in the services it yields, as well as the diversification of the risk profiles their coverage policies produce, leading to the long-run stability of income flows for the insured. These activities allow for intertemporal stability in consumer expenditures when potential losses occur, requiring both the accumulation and diversification of coverage assets through capital markets. This process demands the efficient management of an investment portfolio of long-run and low-risk assets. Additionally, the contribution of insurers to economic growth is complemented by the social coverages through unemployment or mandatory social security plus the re-insurance wholesale protection of the industry.

Our objective is to review jointly the literature on the nexuses between 1) Insurance and Economic Growth, 2) Insurance and Institutional Development, and 3) Insurance and Human Development. The sparse evidence collected suggests the importance of a comprehensive quantitative study encompassing the three nexuses, exploring its complementarities and synergies. The studies encompass different countries, and various time windows and employ disparate methods. This review puts together those results and permits recognizing stylized facts. We develop a detailed survey of the literature, which examines the efforts made to establish the conceptual and empirical links between the development (penetration and density) of the insurance market and economic growth, between insurance and institutional development, and

insurance and human development, respectively. Abundant accumulated evidence tests the hypothesis of a positive association (correlation and/or causality) between insurance and economic growth, insurance and institutions, and insurance and human development, the latter as measured by some internationally accepted indicators. The nature of this study implies that no new quantitative assessment is made. The study points to the relevance of the insurance sector for development by controlling risks and promoting human and physical capital accumulation.

Following a discussion of insurance activity (Section 2), we analyze the literature on the insurance sector's contribution to economic growth (Section 3). We then explore the documented nexus between insurance and institutional quality since sound institutions reinforce economic growth by improving conditions for capital accumulation (Section 4). Then, we analyze detected empirical links between human development (as measured by health and educational proxies to welfare) and insurance (Section 5). Finally, we conclude that the analysis of prior studies serves to stylize facts that can help formulate hypotheses to develop an encompassing empirical study on the three nexuses taken together (Section 6).

2. INSURING

Human existence is subject to biological and material shocks, affecting the health, life, and net worth of people. Those negative events trigger demand for coverage to shield family and firm wealth against expected costs (Black and Skipper, 2000). Moreover, agents are aware that the likelihood of certain negative events is endogenous concerning their actions (moral hazard), which the insurers try to disincentivize by pricing their policies, introducing co-insurance, partial coverage, etc. Butler et al. (1998), point out that generous accident coverage can lead to a relatively low productivity rate by workers, and more serious accidents and absenteeism owing to prolonged diseases, compared to situations where insurers offer less generous coverage. Thus, generously covered exogenous risks can engender endogenous risks which need to be addressed by mechanisms other than pricing likelihoods of occurrence.

Potential damages impact agents both on the value of their stocks (assets) and in the flows they originate. Bernheim et al. (2003) find that life insurance reduces the percentage of households experiencing an acute financial deterioration after the death of the main contributor to family earnings in advanced economies. Said deterioration arises in one-third of non-insured households in their sample, against only 6 percent of the insured. Yogo (2009), for the same countries, finds that a household

headed by a 65-year-old person in good health perceives a 16-percent increase in the present value of its real and/or financial assets when contracting life insurance. This is because life insurance is not only coverage but also a savings instrument.

The insurance industry is valuable because it makes it possible to develop instruments that absorb and diversify risks that persons and firms face. Capital accumulation entails bridging the present and the future. It fuels expansion in the economy, and the projection of the insurers is vital: its reserves should cover the expected summation of individual events as well as being a cushion to face the systemic risk of the insured as a collective.

The contribution to the collective risk of the insured also deserves an intertemporal view. For example, in the specific case of life insurance, prizes collected in the initial years of a certain group would exceed the benefits paid to dependents of the deceased insured, compensating and or investing while the survivors of the group are aging. In this framework, the total risk profile of the insured determines the impact on long-run funds that the companies accumulate for compensation. To prevent funds from eroding prizes should be calibrated to reflect that only a small percentage of the insured lives beyond the average life expectancy (Cummins et al., 2018). Thus, it is cumbersome that prize pricing should cover different types of insurable events (and associated risks), analyzing schemes such as scoring (or recording of a client's incidents to determine the prizes) that firms establish on their insured as incentives to reduce endogenous risk (for instance, being a smoker).

Risk management in the industry enables the combination of coverage and prizes to be optimal concerning alternatives such as self-insurance (agents saving and accumulating funds to face their own risk), or mutuality (savings or accumulated funds by families or other groups to cover collectively the risks any member of the collective faces). Thus, the advantages of insurance are clear: the prizes paid because of the risk diversification process of insurance companies are the lowest cost they can face given certain levels of risk coverage. The superiority of insurance over individual or collective savings is based on the Law of Large Numbers, whereby the larger the number of insured, the more stable and predictable their losses are. The companies can offer both lower prizes or those that decrease over time, unlike what happens in the cases of self-insurance or mutuality arrangements. This result is threatened by the occurrence of events that are currently unexpected but that are foreseeable in the future. This may be an aging population, which puts trade-offs to the systemic level because offering prolonged coverages at the time of retirement implies either increasing prizes during the active stage, either paying lower compensation in the future, or choosing lower future consumption (Butrica et al., 2009).

Society's demographic and sanitary changes also have impacts on public social security and health services, increasing their expenses and their participation in the GDP in the long run. This situation, in the event of cyclical variations in production, would require higher present or future taxes (debt), thus impacting disposable savings. If the individual income flows grow at a lower rate than taxes, the net funds for consumption, saving, and prize acquisition compete among them and the result of that interaction concerning tastes, interests, and/or priorities of the agents can affect the industry's coverage demand. At the same time, in the case of non-life insurance, growing losses exist due to increasingly more catastrophic events linked to climate change and other natural disasters (Hufiel et al., 2016).

3. FROM FINANCIAL STABILITY OF INCOME FLOWS AND ASSET STOCKS TO ECONOMIC GROWTH

Insurance has a central role in the intertemporal stability of income flows of the insured, as well as in the private and collective levels of capitalization, aspects that *ceteris paribus* help to hold consumption levels constant, ease long-run economic planning, increase investment, and stimulate innovation and the introduction of new technologies. These elements promote economic growth (Grant, 2012; Dickinson, 2000), while the stabilization of the income currents of the insured, as well as the coverage of potential threats of undercapitalization, contribute to maintaining stable rates of production growth (Holzman and Kozel, 2007).

Insurance companies play a transcendental role in the stabilization of financial markets by being long-run investors and providing liquidity in financial stress situations. Thus, the capital allocation function they perform (prioritizing low-risk, long-maturity assets), allows them to act in a countercyclical way concerning other types of financial intermediaries, bringing stability and certainty to the securities they trade and price (Catalan et al., 2000). As managers of important amounts of capital, insurers compete directly in some sense with banks in the process of financial intermediation. However, systemic problems impact differently on the former from the latter. Weisbart (2018) shows that between 2007 and 2016 there was only one year (during the 2008 financial crisis) in which the insurance industry did not generate a positive contribution to GDP, while the banking industry slowed the growth rate for seven years, despite the robust help from globally expansive monetary policies to support its recovery.

Insurance companies go bankrupt or need rescue policies less frequently than banks. Bart and Klein (2018), using data from the "Best's

Impairment Rate and Rating Transition Study 1977-2016”, conclude that between 2005 and 2016 some 89 insurance companies in the USA had liquidity problems while 525 banks went bankrupt in practical terms and were then acquired by the Federal Deposit Insurance Agency through bailout policies. Moreover, the difficulties of the insurance sector in the 2008 global financial crisis, which motivated insurance companies’ bailouts, as what occurred with the mega insurer AIG, were linked to some insurers working in quasi-banking activities, such as the Credit Default Swaps (CDS) business (Castagnolo and Ferro, 2014).

This is a consequence of the differences between insurance companies and banks in the financial markets. Banks are endogenously potential instability generators because of the natural mismatch between deposits (liabilities) and credits (assets). That mismatch allows maturity transformation (for example, from short-term deposits to long-term lending) which is potentially unstable in panic situations that would induce depositors to withdraw their money in advance. A central bank acting as a lender of last resort is one way to address the problem, which, in turn, implies socializing the losses of the failed banking system due to unrecoverable assets. Insurers, on the other hand, do not face this problem. Additionally, by competing with banks as producers of credit, insurance companies provide financing to actors and or segments that not all banks cover, easing penetration and/or density of the sector and financial markets in general (Hufeld et al., 2016).

4. INSURANCE INFLUENCE ON ECONOMIC GROWTH: EMPIRICAL EVIDENCE

Recent economic literature provides abundant analyses and empirical estimates showing that countries with the most developed financial systems (banking, insurance, and capital markets) reach greater economic growth rates than countries with less developed financial markets.

The pioneering studies on the nexus between financial development and economic growth were concentrated in banking or stocks and bonds markets (King and Levine, 1993; Rajan and Zingales, 1998, inter alia), while more recent contributions go beyond and suggest that the links are not constant. Instead, they behave like an S-Shaped Curve that is very important for developing countries and flattening for developed ones, as Ul Din et al. (2017) suggest.

Beenstock et al. (1988), analyze 12 countries for the period 1970-81 and non-life insurance. They conclude that prizes are correlated with interest rates and GDP, while the short- and long-run “marginal propensity to

insure" grows with per capita GDP and is larger in the long run. Ward and Zurbruegg (2000) measure the nexus between economic growth and life insurance for 9 OECD countries during the period 1961-96, finding that economic growth lifts the demand for insurance in some countries, while the opposite is true for others. The USA and the UK, which have the most complex and developed financial markets with specialized segments (unlike universal banking that is common in Continental Europe, notably in Germany), do not face significant statistical effects. Nevertheless, Kluger and Ofoghi (2005), testing the same, find it significant for Britain when aggregated data for insurance are used (life plus non-life).

Webb et al. (2002), using a broad sample of countries, find that higher levels of banking development and insurance penetration yield, jointly, greater effects on economic growth than the respective individual incidence. This reinforces the notion of complementarity between both types of financial intermediaries. On the other hand, Esho et al. (2004), analyzing the relationship between the legal framework, insurance demand, and GDP growth for a sample of 44 countries from 1984-98, find that the real GDP level and the strength of property rights in a country are positively correlated with insurance demand.

Based on a panel of 56 countries for the period 1976-2004, Arena (2008) finds robust, positive, and significant evidence between growth and insurance for life and non-life business. Using the variable penetration as an indicator of the size of the sector in terms of GDP, the study measures the elasticity between the two variables and sets it at 0.15. This means that faced with a 1-percent increase in penetration, its impact on GDP growth is 0.15. Arena (2008) also finds that banks, capital markets, and insurance companies play a complementary role in promoting an increase in the level of economic activity.

Also, using a panel of 29 OECD countries in the period 1974-2004, Arena (2008) finds that, at the aggregate level, life insurance is a key determinant of growth of 15 countries in the sample, while non-life insurance is significant for growth in the remaining 14 countries. Tong (2008) shows that life insurance has a positive and significant effect on the economic growth of the USA and South Korea, however, it negatively affects Sweden and Germany. Instead, for non-life insurance, the relationship is positive for the sample. In the same sense, Ćurak et al. (2009) find a positive relationship between growth and insurance for 10 developing countries, considering the sector. Ege and Bahadir (2011), also based on panel data for 29 OECD countries in the period 1999-2008, see a positive and significant relationship between insurance and economic growth.

Han et al. (2010), achieve similar results for 77 countries, including developed and developing ones for the period 1995-2004, although they

consider the contribution of insurance to economic growth in the latter more important than that of the former. Ouédraogo et al. (2016), try to establish the relationship between insurance and economic growth, taking an extensive sample of 86 developing countries for the period 1996-2011. They show that considering heterogeneity, life insurance has a positive effect on per capita economic growth, an effect which varies according to the structural differences of countries.

Olayungbo and Akinlo (2016) obtain a significant (but differentiated) relationship between insurance penetration and growth for eight African countries in the period 1970-2013: positive in the short and long run for Egypt; negative in the short run but positive in the long run for Kenya, Mauritius, and South Africa; negative both in the short and long run for Algeria, Nigeria, Tunisia, and Zimbabwe. Differences could be attributed to state-owned insurance companies in some countries. Ul Din et al. (2017 a), examine the relationship and economic growth for 20 countries from the period 2006-2015, measuring prizes collected, penetration, and density for all types of insurance. They find that life insurance has a positive and significant relationship between penetration, density, and growth for developed countries and just for penetration and growth among developing countries. On the other hand, non-life insurance has proportionally more incidence on GDP growth in developing countries.

Ul Din et al. (2017 b), investigate the relationship between insurance and economic growth for the USA, the UK, China, India, Malaysia, and Pakistan for the period 1980-2015, finding a positive relationship for the six countries. Nevertheless, when analyzing the sector in disaggregated terms, life insurance is only significant for the UK, India, and Pakistan, while non-life insurance is significant for the USA, China, and Malaysia. Hou and Cheng (2017) examine the banking sector of 31 countries between 1981 and 2008. They find that this sector's size is significantly correlated with economic growth while insurance and the securities market were not significant for many countries. Additionally, they suggest that different financial institutions play a differential role in output growth depending on the income level and the financial development of the countries.

Finally, Peleckiene et al. (2019), analyze the relationship between insurance and economic growth for a group of European Union countries for the period 2004-15 which, at the same time, belong to the European Insurance Federation (Lithuania is not included). They determine that the descriptive statistical analysis reveals that the insurance sector's development is more pronounced in the richest countries, such as the UK, Denmark, Finland, Ireland, France, and the Netherlands. Moreover, they detect a positive and statistically significant relationship between insurance penetration and economic growth in Luxemburg, Denmark, the Netherlands, and Finland, and a negative and statistically significant

relationship in Austria, Belgium, Malta, Estonia, and Slovakia. The Granger Test denotes a one-direction causality from insurance to GDP in the Netherlands, Malta, and Estonia. In Austria, the causality is bidirectional among variables, while there is no observable causality in Slovakia.

Table 1 summarizes the literature review with sample sizes, methodology used, time windows employed, and sector or subsector and variables tested. The evolution of the literature follows a natural path, from cross-sectional studies to panels, from a limited number of periods and countries to ample time windows and sets of countries, from the simplest techniques to complex approaches, and from concentration in insurance and financial and macroeconomic variables to the addition in most recent studies of institutional variables. Depending on the database, the reach is life insurance, non-life insurance, or both.

Table 1
Empirical Literature Linking Insurance and Economic Growth

Author	Countries studied	Methodology	Time Window	Sector/Variables
King and Levine (1993)	80	Panel Data	1960-1989	All Financial markets
Rajan and Zingales (1998)	USA		1981-1990	All Financial markets
Webb et al. (2002)	55	OLS	1980-1996	Banking and Life Insurance (penetration)
Ward and Zurbrugg (2000)	9 OECD	Granger Causality Test	1961-1996	Life and Non-Life Insurance (Penetration and Density)
Kugler and Ofoghi (2005)	UK	Co-integration Test	1971-1997	
Esho et al. (2004)	44	GMM	1984-1998	
Han et al. (2010)	77		1995-2004	
Tong (2008)	USA, Sweden, Germany, and South Korea	OLS, FE	1997-2007	
Kjosevski (2011)	North Macedonia	Regression Analysis	1995-2000	
Cristea et al. (2013)	Romania	Pearson Correlation Index and Regression Analysis	1997-2012	
Peleckienė et al. (2019)	27 Eurozone	Granger Test with Linear Regression	2004-2015	
Ul Din et al. (2017 a)	20	Hausman Test with Panel Data	2006-2015	
Haiss and Sümegi (2008)	29 European	Panel Data	1992-2005	
Beenstock et al. (1988)	12 OECD		1970-1981	
Ćurak et al. (2009)	11 European		1992-2007	
Ege and Bahadır (2011)	29 OECD		1999-2008	
Arena (2008)	55		1974-2004	
Ul Din et al. (2017 b)	USA, UK, China, India, Malaysia, and Pakistan	Auto-Regressive Panels with Distributed Lags	1980-2015	Life and Non-Life Insurance, Banking and Capital Markets
Hou and Cheng (2017)	31	GMM and PMG (<i>pooled mean group</i>)	1981-2008	
Ouédraogo et al. (2016)	86 Developing	Cross Country OLS	1996-2011	Life Insurance plus Macro and Institutional
Olayungbo and Akinlo (2016)	8 African	Bayesian Regression VTP-VAR	1870-2013	Non-Life Insurance (Penetration and Density)

Source: Own elaboration based on cited authors.

5. INSURANCE LINKS WITH INSTITUTIONAL DEVELOPMENT: EMPIRICAL EVIDENCE

The connection between insurance and institutional quality has been analyzed to a lesser extent than the link between insurance and economic growth. North and Weingast (1989) and North (1991) are pioneers, and analyze the incidence of the institutional framework (considering variables such as respect for property rights, and levels of corruption, among others) as a stimulus factor for investment; thus, a reduction in uncertainty leads to an expansion in economic activity, which in the long run would imply a positive association between institutional quality, insurance, and growth. The presence of developed insurance markets, through the coverage they provide and the risk diversification activity of insurers, allows the cost reduction of the events, which, in turn, stimulates growth. In both unstable and unpredictable contexts, some hidden or oversized risks can debilitate the efficiency of the economic system and lengthen economic growth.

A well-documented fact is the S-shaped curve of the relationship between economic development and the insurance sector. Enz (2000), for instance, considers that the influence of life insurance on growth accelerates for low economic development levels, while it decelerates when the country develops. The elasticity of demand for life insurance should therefore be higher in emerging countries than in developed ones with mature institutions. Beck and Webb (2003) corroborate the former with an estimate using panel data for 68 countries in the period 1961-2000. Hogarth and Kunreuther (1992) and Froot (1999) highlight that even in developed countries some contingencies are uncertain when markets can cover them properly (some extreme catastrophes, cyberattacks, terrorism, etc.), leading to a demand for public intervention to cap responsibility. Those elements increase transaction costs, yielding disincentives to hire coverage as well as dissuading some investments because of the difficulty to cover them appropriately.

The nexus between institutional quality-transparency-uncertainty-size of the insurance sector finds a clear justification in that sequence. Thus, if the per capita income is correlated with the quality of the institutions, and the latter determines the degree of uncertainty, we can conclude that institutional quality is the deepest determinant for the sector to develop. Brown and Kin (1993) consider the evidence from 45 countries for the period 1980-87, showing that purchasing life insurance in the sample countries is positively correlated with the income level and the development of social security, as well as being negatively linked to the practice of religion (mostly in Muslim countries), inflation, and volatility in economic policy. Social security can be understood as a replacement

for voluntary insurance. The more intense the religious practices are, the less secular society is. A religious society depends more on family and social networks of solidarity or charity to cover negative events than a secular one.

Outreville (1996) works on the data of 48 countries in 1986. He observes that the development of the life insurance sector is positively correlated with the development of financial markets and negatively correlated with the monopolistic structures of the markets in the same countries. Chui and Kwok (2009), for 38 countries in the period 1966-2004, find that the size of insurance markets, particularly for life insurance, has a significant relationship, with the expected signs, national income, the expected inflation rate, the banking sector development, and the index of investor protection, life expectancy, and religion (negative in the latter two).

Political instability, corruption, and a weak democratic system affect the incentives for efficiency gains and long-run investments. Erbas and Sayers (2006) find this to be true for a sample of 70 countries for the period 1994-2003. They also detect adverse selection problems when insurers cannot assess the insurable risk level of their clients. High defensive prizes based on an expected greater likelihood of occurrence of the events, together with a low appreciation by clients when they estimate a low probability of the adverse scenario, conspire against coverage. Uncertainty creates a breach (insurance gap) between both prices, configuring a failure in the insurance market.

For 25 OECD and 22 Asian countries, for the period 1987-98 Ward and Zurbruegg (2002) find that per capita GDP, financial development, political stability, and rule of law have a positive and significant effect on the demand for life insurance policies. In the same direction, Sepehrdoust and Ebrahimnasab (2015) corroborate the results presented by Nesterova (2008) and Feyen et al. (2011) for 90 developing countries from the period 1999-2011. They show that a sound economic, political, and legal system is cumbersome for the development of financial systems and life insurance, these elements being essential to enhancing its penetration and density, and as a result, their positive contribution to growth and development. In the same vein, Esho et al. (2004) suggest that the value of contracts depends on legal norms and their enforcement, the efficiency in conflict resolution through the financial system, and the stability and integrity of the legislative process. Deficiencies in the former imply a more costly and relatively unpredictable conflict settlement process, yielding negative incentives for growth and the expansion of the sector. Knack and Keefer (2002) find that strong property rights protection and a clear contractual relationship generate incentives to acquire insurance. Dragos and Dragos (2013) show that a country's level of corruption is decisive to the development

of non-life insurance, while the institutional preconditions for life insurance are commercial freedom and taxation.

Giné et al. (2019) base their findings on a sample of 180 countries during 1996-2016. They say that a clear link exists between the per capita GDP and the size of the sector. At the same time, they state that the development of a country's economic and financial institutions is important to the development of the insurance markets, although these factors are more strongly correlated with life insurance compared to non-life insurance. Finally, the measures of institutional quality analyzed by the authors show a greater correlation with penetration of the sector than per capita income in low-income countries, another corroboration of the S-shaped curve hypothesis.

Table 2 summarizes the literature review with sample sizes, methodology used, time windows employed, and sector or subsector and variables tested. The pattern of the literature is quite similar to the path followed by the literature linking insurance and growth: samples started as cross-sectional, methods that started as mere descriptive statistics and evolved to ample panels, complex techniques, and extensive geographical reach. Also, some variables included in the studies open the discussion to issues that are at the same time institutional and concern human development, such as income distribution, education, and expectancy of life.

Table 2
Empirical literature Linking Insurance and Institutional Development

Author	Countries studied	Methodology	Time Window	Sector/Variables
North and Weingast (1989)	England	Historical Data Analysis	XVII Century	Fiscal, Monetary, Foreign Trade, Debt and Public Expenditure, inter alia
North (1991)	European		XII-XVII Centuries	
Hogarth and Kunreuther (1992)	USA	Surveys on Actuaries	1990	Life and Non-Life Insurance plus variables to address ambiguity
Outreville (1996)	48 Emerging	Cross Section	1986	Life Insurance (Penetration and Density) Plus Macro
Knack and Keefer (2002)	OECD	OLS	1986-1995	Per Capita GDP and GNI, Macro-financial, International Country Risk, Gini Index, Ethnic and Demographic
Erbas and Sayers (2006)	70		1994-2003	Non-Life Insurance (Penetration), Macro-financial, World Bank Governance Index
Ward and Zurbrugg (2002)	25 OECD and 22 Asian	Cross Country OLS	1987-1998	Life Insurance (Penetration) Macro-financial, Civic, and Political Rights
Chui and Kwok (2009)	38		1996-2004	Life Insurance (Penetration, and Density), Macro, Banking, Education, Religious and Institutional
Dragos and Dragos (2013)	31 European		2006-2010	Life and Non-Life Insurance (Density), Macro-financial, Political, and Institutional
Giné et al. (2019)	180		1996-2016	Life and Non-Life Insurance, Macro-financial, Political and Institutional Variables from the World Bank Governance Index
Feyen et al. (2011)	90 Emerging and Developed		2000-2008	Life and Non-Life Insurance (Penetration and Density), Macro-financial, Demographic, Political, and Institutional, Labor and Education
Enz (2000)	90 (life insurance), 88 (non-life insurance)	Panel Data	1970-1998	Life and Non-Life Insurance (Penetration-Density) and GDP
Beck and Webb (2003)	68		1961-2000	Life Insurance (Penetration, Density), Macro, Banking, Education, Religious and Institutional
Brown and Kin (1993)	45		1980-1988	
Sepehrdoust and Ebrahimnasab (2015)	11 Emerging		1999-2011	Life-Insurance (Penetration), Macro-financial, Labor Market, and World Bank Governance Index
Nesterova (2008)	14 European		1996-2006	Life Insurance (Penetration), Macro-Financial, Demographic, Political, Institutional, and Education

Source: Own elaboration based on cited authors.

6. INSURANCE RELATIONSHIP WITH HUMAN DEVELOPMENT: EMPIRICAL EVIDENCE

The nexuses between density and penetration of the sector with human development are less explored than the links between insurance and economic growth or insurance and institutional development. We attribute it to the complexity of the definition of the concept: what is and what is not human development. Employing the concept in the Human Development Index (HDI) of the United Nations Development Program (UNDP), it is possible to identify some references which address their links (or the links of their components) with insurance. The HDI consists of an indicator of the average achievements in some fundamental dimensions: enjoying a long and healthy life, acquiring knowledge, and enjoying a dignified life. The HDI is a synthetic indicator made of the arithmetic mean of normalized indexes of health (and healthy life), education, and the level of life.

Li et al. (2007), find a positive and significant correlation between the demand for life insurance and the HDI for OECD countries. Emamgholipour et al. (2017), using a data panel for 2004-2012, show that the effect of the HDI on life insurance demand is positive and significant in Middle Eastern and North Africa (MENA) countries. They conclude that improved living standards, a better-educated population, and increased life expectancy will enhance life insurance consumption intertemporally. It sounds reasonable since the more valuable human capital stock is, the more sensible it is to protect it through insurance. Codruta et al. (2019), using an econometric spatial model for Romania, find a positive and significant correlation between the penetration of the life insurance market and the standard of living, longevity, and educational level (all components of the HDI) in each subnational division of the country.

When variables other than the explicit HDI are used as proxies of the concept of human development, references grow, and many empirical analyses appear that deal with the links between insurance, education, employment, life expectancy, and urbanization, among others. The education variable is an important determinant for life insurance consumption, generally proxied as the percentage of persons with secondary or tertiary studies concerning the total population. Thus, the more educated the population is, the greater their awareness becomes of the need to insure against negative events on their capital stocks and/or income flows, and a positive relationship between both variables is foreseeable.

Nevertheless, the empirical results in the literature are mixed. Auerbach and Kotlikoff (1989) point to a negative effect of education on life insurance demand, while Beck and Webb (2003) do not obtain definite results concerning that relationship. Truett and Truett (1990), in a time series study for Mexico and the USA, find that education and family income impact positively on the demand for life insurance, although the elasticity of demand concerning both variables is lower for the education variable.

Lenten and Rulli (2006) show a positive and significant relationship between the employment variable and the insurance demand, especially for live coverage in the case of Australia. Dragos (2014), with panel data for emerging countries from Central and Eastern Europe and Asia for the period 2001-2011, find that the demand for life insurance among persons with tertiary education is significantly lower than the average educated population because of the educational difference does not adequately capture the risk-aversion of the potential buyers of policies which are complex to understand. On the other hand, the study reveals that income is the main determinant of life insurance demand both in Asia and Eastern Europe, while urbanization, as Hwang and Gao (2003) also observe, only has a positive influence on life insurance purchasing in the emerging Asian economies.

Millo and Carmeci (2015), with panel data addressing spatial effects in Italy in the period 1996-2001, show that the demand for non-life insurance depends on the income population, as well as on the proportion of youngsters in the population, with a negative relationship with the education variable. Lee et al. (2018), studying 10 Asian countries for the period 1990-2013, find that income, the proportion of youngsters in the population, and tertiary education influence life insurance purchases, while inflation, urbanization, life expectancy, and secondary education do not show a significant influence. For life expectancy, some studies such as Beenstock et al. (1986) and Outreville (1990) show ambiguous effects on life insurance demand of variables such as mortality risk, income variability, and medical shocks (including disability or chronic diseases with costly treatments) associated with each stage of the life cycle.

Table 3 summarizes the literature review with sample sizes, methodology used, time windows employed, and sector or subsector and variables tested. This literature follows a similar path that those already analyzed of insurance and growth, and insurance and institutions. The emphasis is on analyzing both, isolated variables as well as indexes which encompasses a complete set of human development indicators.

7. CONCLUSIONS

Our objective is to review jointly the literature on the nexuses between 1) Insurance and Economic Growth, 2) Insurance and Institutional Development, and 3) Insurance and Human Development. The studies encompass different countries, and various time windows and employ disparate methods. This review puts together those results and permits recognizing stylized facts. We try to explain, in a structured way what the body of the previous literature asserts and in which line of thought research papers fit and make their contribution, as well as the implications of what we know from and, can take from the discussed literature. We also assess what policy or other decision-making consequences could be derived from the presented findings of the literature and what implications should rather not be derived.

Exogenous risks are a fact of life. There are different forms of coverage against exogenous risks: self-insurance, mutuality, and modern insurance companies. The latter has the potential to enhance economic growth since they cover and spread risks, reduce uncertainty for long-term investments in human and physical capital, protecting the stocks and therefore their income flows. On the other hand, institutions are the way people organize the necessary long-run cooperative interactions for capital accumulation and growth. Institutions reduce risks, turning them into uncertainty (in the Knightian sense), and build bridges between the present and the future, pricing each event according to its probability of occurrence. Thus, well-functioning institutions induce growth. Finally, material achievements through growth, which are protected against the worst risks and uncertainties on life and property by institutions, yield the sanitary and educational achievements considered to be a common measure of human development. They include low infant mortality, longevity, good health indicators, literacy, and other educational achievements.

The insurance industry, particularly in developed countries, is an important engine of economic growth and drives the development of their financial systems because its intermediation makes it possible to generate instruments that absorb and diversify the risks persons and firms face. The insurance companies' risk management policies can produce better results than mutuality and self-insurance. Besides, insurance activity stabilizes intertemporally income flows of the insured, as well as the capitalization levels of individuals and society, which help maintain stable consumption, ease long-run planning, foster investment, and innovation, and create new technologies. These elements promote economic growth.

Over the last three decades, economic literature has made a great effort to disentangle the conceptual and empirical nexuses between the insurance industry, economic growth, and institutional and human development. Economic growth recognizes correlational and causal links with financial development. Even though the literature is abundant, some results contradict the intuitive explanations, both in significance and signs of the influences. These empirical counterexamples are sometimes related to complexities in local markets (for example, if the sector is nationalized), the macroeconomic context (for instance, if inflation is pervasive), and to the development level of the country. In general, countries with more developed financial systems register economic growth rates which surpass the same of countries with lower financial development.

Banking and insurance have complex inter-dependency relationships. Life insurance undergoes a nexus of substitution or complementary with social insurance, even when non-life insurance does not experience those relationships. Insurance does not face the type of systemic risks found in banking due to the lack of overlapping between assets and liabilities maturities, but it is subject to idiosyncratic risks because of catastrophic events. The probability of risky events occurring is estimated based on relative frequencies and the latter can change in response to extreme events. Similarly, there are tendencies, such as growing longevity, affecting life insurance, and some contagion in a systemic financial crisis within the insurance industry, when insurers produced quasi banking products.

Enhanced institutional quality implies more transparency, lower uncertainties, and greater possibilities for the development of the sector. If conditions for capital accumulation improve, they will feed economic growth, and this, in turn, will improve human development. Political instability, corruption, and a weak democracy erode incentives for long-run investment. Thus, a low institutional quality yields uncertainty, stifling the development of the sector with an under-production of policies. Deficiencies in the legal system and its enforcement, the inefficiency in conflict resolution through justice, the instability of norms, etc. imply a more costly and unpredictable negotiation process that negatively affects the expansion of the sector.

Human development introduces educational and sanitary levels into the discussion, enhancing a more ample welfare notion than the mere per capita GDP consideration. With human development, insurance demand grows because human capital is more valuable and productive, and because there is more accumulated physical capital to protect.

Because the separate examination of links between insurance and economic, institutional, and human development shows possible complementarities and a complex relationship between them, a possible follow-up of this study would be to make an empirical assessment of the relationship between economic growth, institutional and human development, considered together, and insurance penetration and density.

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