

Insurance consumption in the Maghreb countries (Algeria, Morocco and Tunisia): Financial and institutional determinants

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Abstract. *This article seeks to examine the determinants of insurance consumption in the Maghreb countries (Algeria, Morocco and Tunisia) over the period 1996-2017. We focused mainly on financial and institutional determinants. The main results show that only the level of financial development measured by M2/GDP has a negative impact on the insurance markets. However, we have demonstrated the positive effect of GDP/cap on insurance development in the study countries.*

Keywords: insurance; Maghreb; panel data model.

JEL Classification: G22; O16.

Introduction

Insurance is considered as a very important determinant in economic development. In fact, the first session of the United Nations Conference on Trade and Development (UNCTAD) in 1964 recognized that a developed insurance and reinsurance market is a characteristic of developed countries (economies). This has allowed the insurance sector to take an increasing place in the financial system of countries.

Many studies have attempted to link economic, financial, demographic and legal variables to the insurance business. The first studies concerned the American insurance market. Later, more general analyses tried to find homogeneous explanations for the determinants of insurance demand in developed and developing countries.

In addition, the importance of the relationship between financial development and economic growth and the relationship between insurance development and economic growth is well recognized and addressed in the economic literature.

The Maghreb countries' awareness of the importance of insurance in the economic and financial development process has led to a wave of reforms ranging from market liberalization to private and foreign partners to the application of prudential rules in line with international standards. This has led to considerable progress in this sector in recent years. For example, we note an average increase in insurance premiums from \$794 million in 1995 to \$3122 million in 2016.

This strong increase in insurance consumption is a positive factor in mobilizing savings in these countries. It is then necessary to study the factors that determine this variation.

This article seeks to examine, over the period 1996-2017, the determinants of insurance consumption in the Maghreb countries (Algeria, Morocco and Tunisia). It also aims to fill the small number of studies on insurance demand in these countries.

This article will be organized as follows. Section 1 highlights the review of the literature - theoretical and empirical - on insurance demand. Section 2 is devoted to the presentation of the insurance sector in the Maghreb. Section 3 presents the methodology and results of the study before concluding.

1. The importance of insurance in economic growth: Literature review

Insurance activity is one of the components of the country's financial infrastructure. It can influence the economy on several aspects and in particular on growth, financial depth, trade openness, foreign direct investment, urbanization, consumption, employment, poverty (Cristea et al., 2014).

(Skipper, 1997) summarizes the contribution of insurance to the economy by the following elements:

1. Insurance promotes financial stability and reduces anxiety.
2. It can be used as a substitute for government security programs.
3. Insurance facilitates trade and commerce.

4. Mobilizes national savings.
5. Insurers enable risk to be managed more efficiently.
6. Loss mitigation.
7. Insurers and reinsurers have economic incentives to help insureds reduce losses.
8. Promotes a more efficient allocation of capital.

For Ward and Zurbruegg (2000), the economic importance of insurance depends on its role as a production driver. In fact, risk transfer and disaster compensation encourage people who are risk averse to make more purchases and thus spend more (in real estate and automobiles). This results in positive externalities in terms of increased purchases, profits and employment, both within the insurance sector and in other sectors. In addition, insurance facilitates innovation in an economy by proposing to cover new risks as part of “civil liability insurance”.

In addition, insurance promotes financial intermediation and the accumulation of productive capital. As a financial intermediation and corporate investor service, it contributes to the diversification of the corporate portfolio and consequently to greater risk taking and better productivity. In the case of individuals, when the price of insurance increases, individuals are more motivated to change their behavior (they become more cautious). This will have beneficial effects on the accumulated productive capital.

Webb, Grace, and Skipper (2002) argue that life insurance and property and liability insurance can contribute to economic growth, both according to their specificities:

1. Life insurance helps to optimize the allocation of resources by reducing the demand for liquidity and other assets by transforming the composition of the personal savings portfolio into more productive assets. This aspect is similar to the banking sector in the choice of investment quality.
2. Property and liability insurance reduce the probability of corporate bankruptcy in the event of catastrophic losses. This therefore influences investment and reinvestment decisions.
3. In addition, insurers can reduce the cost of financing risk and so increase the return of the projects.

Currently, the importance of insurance in economic growth is significantly increased in the context of the liberalization, globalization and the deregulation of financial markets (Outreville, 2014). The increasing integration of the insurance sector into the financial sector will encourage many economists to investigate the impact of insurance on the economy through empirical investigations. Examples include: (Browne et al., 2000; Ward and Zurbruegg, 2002; Hussels et al., 2005)

Demetriades and Hussein (1996) use a country-specific cointegration and causality test to understand the dynamic and causal relationship between economic growth and insurance sector.

In a related perspective, Ward and Zurbruegg (2000) examine this causal relationship in nine OECD countries. The study covers annual data on GDP and total premiums written from 1961 to 1996. The results show that there is no consensus among countries. The cause is the specific circumstances of each country, such as the level of development of the

insurance market. In another study, Ward and Zurbruegg (2002) find that the income elasticity of insurance in Asia is declining considerably and appears to be inelastic, suggesting that the link between economic development and insurance market development is very weak.

In order to verify the results of Ward and Zurbruegg (2000), which show the absence of a long-term relationship between the insurance sector and economic growth in the United Kingdom, Kugler and Ofogui (2005) conducted a study on the English insurance market that strongly contradicts the results of the first study.

Arena (2008) finds that there is a close relationship between the activity of the insurance sector and economic growth, regardless of the insurance branch, life or non-life. The author used the Generalized Moment Method (GMM) on a panel of 55 developed and developing countries for the period 1976-2004. He finds that life insurance contributes to economic growth only in the case of developed countries. While non-life insurance drives growth, in both types of countries, with a greater level in developed countries. In these countries, insurance activity contributes, in cooperation with the banking sector and the financial market, to reducing transaction costs, pooling risks, improving financial intermediation through better allocation of resources and better interaction between the three components of the financial system.

Han et al. (2010) test the same relationship on a panel of 77 developed and developing countries during the period 1994-2005. They followed the method used by Beck and Levine (2004) regarding banks, the financial market and economic growth. The conclusion of the study confirms the existence of a more significant relationship between non-life insurance and growth than life insurance. Regarding the separation between developed and developing countries, the authors reveal that the impact of insurance on growth is more significant in developing countries than in developed countries. They argue that a 1% increase in life insurance leads to economic growth of around 2.495% in developing countries and only 0.812% in developed countries. The same is true for non-life insurance, where a 1% increase in insurance density leads to economic growth of 8.78% in a developing country compared to 1.309% in a developed country.

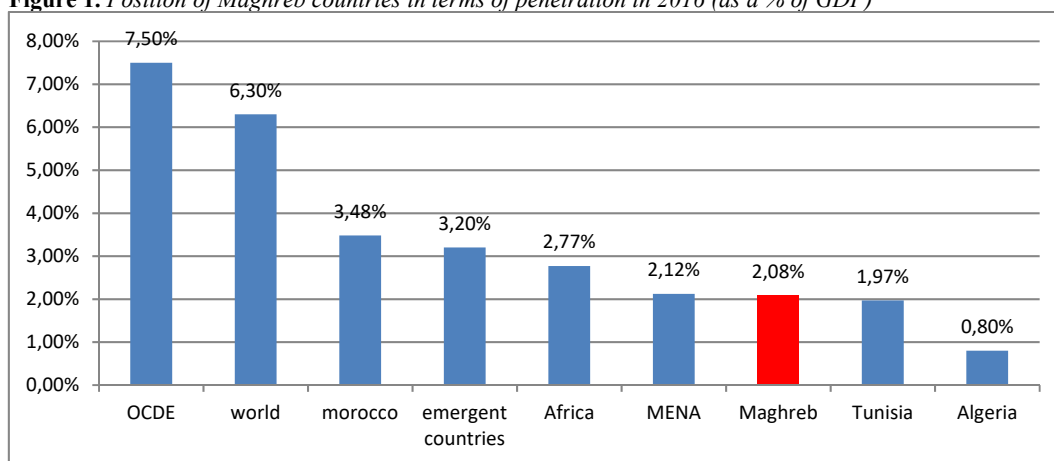
Chen, Lee, and Lee (2012) focus on the conditions that affect the relationship between life insurance and economic growth. The results vary from one country to another. Indeed, the impact of insurance on growth is positive. However, it is rather low in middle-income countries compared to low-income countries. They also conclude that the financial market and insurance are substitutable and not complementary. The estimation shows the existence of a negative and significant effect between financial development indicators and life insurance.

In conclusion, the results of studies on the link between growth and the insurance sector are controversial. All the studies take the insurance penetration rate or density as a variable measuring the level of insurance development, GDP per capita as a measure of economic growth. In addition to macroeconomic, demographic and institutional variables.

2. The background of Maghreb country insurance industry

In order to position the Maghreb insurance market worldwide, we refer to the traditional comparative aggregates, namely, the penetration rate and insurance density. The first is to determine the participation of insurance in to the national wealth creation. While the second one, gives us information on the expenditure devoted by the inhabitants to the insurance sector.

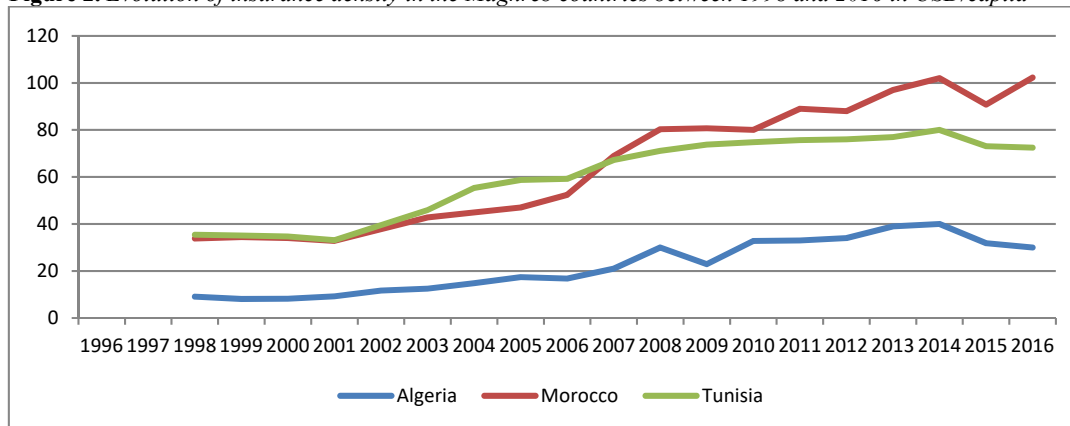
Figure 1. Position of Maghreb countries in terms of penetration in 2016 (as a % of GDP)



Source: Produced by us from Sigma 3-2017 data.

The evolution of the insurance sector's share of GDP in the Maghreb countries is stable, with a premature decline in Morocco, which should be one of the countries with the lowest insurance penetration rate in the Maghreb region given its income level and population. However, it is the most efficient in the region. With a rate of 3.48% in 2016, Morocco was able to surpass the average of emerging and African countries as well as the MENA region. For the other countries, the penetration rates have evolved in very small ranges (between 0.5 and 0.8% in Algeria and 1.5 and 2% in Tunisia). This shows the inability of the reforms undertaken in these countries to give a dynamic to this sector and thus play its role as a financing partner of the economy.

The Maghreb countries rank last in terms of insurance penetration rate with a rate of 2.08%. This rate is approximately the same as in the MENA region, but far from that of OECD countries.

Figure 2. Evolution of insurance density in the Maghreb countries between 1998 and 2016 in USD/capita

Source: Produced by us from Swiss.Re data.

Insurance density represents the average insurance expenditure per capita. The evolution of this aggregate shows a considerable improvement for Morocco and Tunisia between 2000 and 2007 with a slight increase in Tunisia. This situation was soon inverted to enable Morocco to triumph in the Maghreb market with an average expenditure of \$102 per capita in 2014. Algeria comes last, very far from its neighbors, with an estimated expenditure of \$40 per capita (representing half of what a Tunisian spends on average).

The insurance sector in the Maghreb countries has very low development rates; we list below the main factors that explain this developed sector in the study by Feyen, Lester, and Rocha (2011). They cite first and foremost the religious factor. Indeed, insurance is less developed in Muslim-majority countries due to the lack of conventional sharia-compliant products (Feyen et al., 2011). Research has also shown that demand for insurance is boosted by the existence of a retail credit market (such as mortgage loans and household loans), which is less developed in the Maghreb countries. In addition, the dominance of state-owned enterprises tends to slow down the development of this sector.

There are other factors that are difficult to measure and empirically test and that constitute obstacles to the growth of the insurance market, such as:

- The fragmentation of the insurance sector;
- The size of insurers who cannot attract insureds and who lack innovation;
- Lack of professional competence;
- Weak consumer protection regulation (due to lack of transparency and trust).

3. Methodology and results

This study seeks to explore the factors that may affect insurance demand in the Maghreb countries from 1996 to 2017; we try to take into account the economic, financial and institutional specificities of this region. Based on the existing literature and in particular on the analyses of Outreville (1996), Lewis (1989), Browne and Kim (1993), Beck and Webb (2003), we propose to estimate insurance consumption through the penetration rate according to the variables:

- Economic and financial: GDP per capita, level of financial development, credits to the private sector, level of savings and share of social insurance.
- Institutional: the rule of law and regulation.

Economic and financial variables

The variable used for the insurance sector is the insurance penetration rate, which measures the contribution of insurance premiums to gross domestic product (GDP). This variable is used in several empirical studies alongside insurance density.

GDP per capita: Studies on the determinants of insurance demand identify income as the main factor positively affecting insurance demand (Campbell, 1980; Lewis, 1989; Outreville, 1996; Beck and Webb, 2003; Li et al., 2007; Sen, 2008; Poposki et al., 2015). Increased income is likely to lead to an improvement in people's living conditions and thus a greater preference for luxury products and services and better savings and investment prospects. As a result, this leads to an increase in the consumption of insurance products.

Social security: For Browne and Kim (1993) and Beck and Webb (2003), social security systems reduce agents' insurance needs. We use GDP contributions as a measure of the social security system. We expect a negative relationship between this ratio and insurance consumption.

For the financial sector, the choice of variables was based on work by King and Levine (1993) and Outreville (1990). The first one is the liquidity ratio, calculated as the ratio between money supply (M2) and GDP. This indicator measures the “financial depth” and overall size of the financial system. The second variable is the quasi-money to GDP, which is a measure of the progress of financial intermediation in that it is through term deposits and savings that banks contribute to the optimal allocation of resources in the economy. In fact, these two indicators are the most used in empirical research, because they are available for many developing countries over a long period of time. The third variable is credit to the private sector as a share of GDP. It measures the importance attached to private sector financing by the banking sector.

Institutional determinants

We assume that the financial and insurance development also depends on the regulatory framework established by the government. This framework ensures the smooth conduct of financial transactions and guarantees the protection of policyholders (Fergusson, 2006, in Cezar, 2012). Regulatory quality captures the ability of government to formulate and implement good policies and regulations that promote economic practice. Together with the rules of law (Esho et al., 2004) measure the contribution of the legal, regulatory and institutional framework to the development of financial and insurance systems.

Sources of data

The data are taken from the annual reports of the National Insurance Council (CNA) for Algeria, the Tunisian Federation of Insurance Companies (FTUSA) for Tunisia and the Ministry of Economy and Finance for Morocco. For regulatory and legal data, we used the database “The Worldwide Governance Indicators, 2018 Update”. The other data are from the World Bank database.

Model specification

The model is based on previous empirical work (Browne and Kim, 1993; Outreville, 1996; Beck and Webb, 2003), in which we introduced financial sector development indicators and institutional measures.

Using the panel data, the equation is formulated:

$$PEN_{it} = \beta_0 + \beta_1 M2_{it} + \beta_2 cred_{it} + \beta_3 GDP_{it} + \beta_4 Q.M_{it} + \beta_5 R.Q_{it} + \beta_6 R.l_{it} + \mu_{it}$$

where *pen* is the annual insurance penetration rate; *M2* is the matrix of financial sector development indicators; *cred* is the matrix of private sector credits, *GDP* is the economic variables used as an income measure, *QM* is the savings matrix, *QR* and *RI* represent the matrices of institutional variables; $\beta_{1,2,3,4,5,6}$ are the coefficients to be estimated; μ_{it} is the error term; *i* is country; and *t* is time or period.

We carry out a panel data analysis on a sample of 3 countries over the period 1980-2017.

Estimation method

In panel data, it is often interesting to identify the effect associated with each individual. That is, it does not change over time, but varies from one individual to another. This effect can be fixed or random. Hausman's (1978) specification test is the most commonly used to select the appropriate model, the fixed-effects or random-effects model.

Results and interpretations

The results of the Fisher test lead us to reject the null hypothesis of inter-individual homogeneity, so we must favor a model that takes into account individual specificities.

Based on the estimation results, and more specifically, the Hausman test statistics, it can be seen that the estimates used will be those of models with fixed individual effects. The Hausman test refutes the hypothesis that there is no correlation between the random term and the explanatory variables of the model. (P-value = 0.00% < 5%). The estimators of the compound error model are biased; it is preferable to retain those of the fixed effect model that are unbiased.

Table 1. Financial and institutional determinants of insurance demand

Models	Pooled OLS	Fixed effect model	Random effect model
Coefficients	Estimates [std. Error] (P-value)	Estimates [std. Error] (P-value)	Estimates [std. Error] (P-value)
Intercept	4.423025 1.758889 0.0147	9.65738 2.06128 0.00002	4.423025 1.758889 0.012
GDP	2.69081 0.575728 0.0000	3.01220 0.521542 0.00000	2.690809 0.575728 0.000
Credit to private sector	0.6021165 0.1798084 0.0014	0.0533382 0.212985 0.8032	0.6021165 0.1798084 0.001
M2/GDP	-2.35653 0.6092171 0.0003	-3.74374 0.649291 0.0000	-2.35653 0.609217 0.000
Social cotisation	-0.2495212 0.1421709 0.0845	-0.287706 0.127569 0.0280	-0.249521 0.1421709 0.079
Quasi-Money	-0.3708632 0.3403498 0.2804	-0.229779 0.306614 0.4567	-0.37086 0.3403498 0.276
Regulatory quality	1.281969 0.338807 0.0004	0.590396 0.350465 0.0975	1.281969 0.338807 0.000
Rule of law	0.1091925 0.1322068 0.4122	0.0790255 0.118532 0.5077	0.1091925 0.1322068 0.409
R ²	0.9032	0.900499	
Adjusted R ²	0.8915	0.923839	
F test	0.0000	0.00023	

VIF = 3.07, LM = 1.000, Hausman = 0.0000, Durbin Watson = 1.956.

According to the results of the estimation, GDP per capita seems to be a very important indicator of insurance activity in the Maghreb. An increase of GDP/CAP of 1% leads to an increase in the insurance penetration rate of more than 3%. This finding is consistent with the previous studies (Outreville, 2013), which found a high income elasticity of insurance demand in developing countries. The indicator credits to the private sector as a percentage of GDP (cred) has a particular advantage, because it represents the volume of funds chained to the private sector. This indicator is more related to insurance through the existence of the obligation of insurance policies relating to companies. This ratio is a more appropriate indicator to measure the capacity of investment to increase insurance demand. In all regressions, this ratio is positively correlated with the insurance penetration rate (but not significantly). Arena (2008) explains this result by a problem of collinearity between these variables.

The money supply ratio (M2/GDP) can be an indicator of financial intermediation, mainly in the Maghreb countries where the main component of financial development has taken place in the banking sector. The relationship of this ratio with insurance shows a negative sign, which means that an improvement in this ratio of 1% leads to a decrease in insurance of 3.74%. This is justified by the fact that the M2/GDP ratio does not actually provide information on financial development in the Maghreb countries, if we know that M2 is essentially composed of monetary liquidity and not sophisticated financial instruments (cheques, bank cards, etc.). This result is not different from the results obtained by (Carson et al., 2014) regarding the supply of insurance in developing countries.

The quasi-currency variable provides us with information on the relationship between the use of savings in the financial institutions and the demand for insurance. Indeed, we assume the existence of a positive relationship due to the fact that economic agents who trust their banks may have the same intention towards insurance, which is also a means of saving, especially in the case of life insurance. The estimation of this relationship in the case of the Maghreb countries shows a non-significant and negative relationship. This can be explained by the lack of an insurance culture among the local population who limits their savings at the bank level.

The regression shows that the variable “social contributions” has a negative and significant coefficient. This is consistent with the recent theoretical and empirical literature presented above. The Maghreb countries have compulsory social security systems, considered generous in terms of compensation, which leaves the population indifferent to economic insurance.

The institutional indicators, represented by the quality of regulation and compliance with the law, do not seem to have any effect on insurance consumption in the three countries studied, as the coefficients are positive but not significant at 5% level. This result is in contradiction with those found by (Hussels et al., 2005) and (Poposki et al., 2015) concerning the rules of law.

4. Conclusion

The aim of this article was to explore the financial and institutional determinants of insurance demand in the Maghreb countries (Algeria, Morocco and Tunisia). In this context, we presented a synthesis of the existing empirical literature on the determinants of demand for life and non-life insurance. A consensus is reached for some variables while others have remained ambiguous.

The main results of this study are firstly the positive and significant effect of economic growth, measured by GDP per capita, on the insurance penetration rate. While in the opposite way, social insurance affects negatively the demand for insurance.

Second, among the financial variables, only the financial deepening variable (M2/GDP) is considered to be a barrier to the development of insurance demand. While, credits to the private sector / GDP and quasi-currency have no relationship with the insurance sector.

Third, it seems that the institutional variables used in this study, namely the rule of law and regulation, are not determinants of insurance demand in the Maghreb countries.

In summary, GDP/cap is the most important factor that determines insurance consumption in the Maghreb countries and over time.

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