Article

Pension Funds, Insurance Companies and Stock Market Development: Evidence from Emerging Markets

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Abstract: Stock markets foster economic growth through meeting the fund requirements of the firms by individual and institutional investors. Pension funds and insurance companies with their long-term investment horizon are critical institutional investors in capital markets. Therefore, this article explores the effect of pension funds and insurance companies on stock market development in 15 emerging market economies over the 2004–2019 period through panel cointegration and causality tests. The causality analysis revealed that stock market development had a significant impact on pension funds and the insurance sector in the short term. However, the cointegration analysis revealed that pension funds had a positive effect on stock market development in Brazil, Chile, Hungary, Mexico, Peru, and South Africa and the insurance sector had a positive impact on stock market development in Chile, Indonesia, Korea Republic, Philippines, and South Africa in the long term.

Keywords: pension funds; insurance companies; stock markets; panel cointegration analysis; panel causality analysis

MSC: 62M10; 91B84; 62P20

1. Introduction

A well-functioning stock market offers opportunities for companies to attract private capital, improve access to additional resources for companies, and encourage investment and growth, so the development of the stock market positively affects economic growth [1–10]. Significant research has been conducted to determine critical factors that could affect the development of the stock markets and important policies which influence this sector was conceived and implemented. According to recent literature, economic growth, saving rate, trade openness, foreign direct investments, institutional quality, and stock market liquidity are some of the factors that positively impact stock market development, and government budget deficits, inflation, or interest rate could influence it negatively [11]. Some of the papers also found that financial intermediary development influences stock market development, but most of these papers consider just the banking sector [12–19], without taking into account the institutional investors, which became more significant financial intermediaries in the 1990s.

Analyses about the impact of the institutional investors on the financial markets, including stock market development, started in the 1990s in the context of the higher assets under the management of these entities. The growing assets for funded pensions were stimulated by the pension reforms and increased pension funds' "involvement in capital market transactions" [20]. In the same period, Demirguc-Kunt and Levine [1] observed

that, in countries with more developed financial intermediaries, there is a more developed and less volatile stock market.

One of the main improvements that institutional investors are generating in the financial markets is represented by the fact that they are new sources of long-term capital, increasing market efficiency, forcing competition, and making commercial banks more competitive [21]. Other benefits refer to the stimulation of financial innovation on the financial markets, improvement of trading facilities that stimulate the market liquidity, adoption of protection measures that ensure a high level of investor protection, and strengthening the corporate governance based on the important positions that institutional investors gained in different listed companies. Blommestein [20] also suggests that institutional investors influence the demand for capital market instruments by their own portfolio choices or by the influence made on the personal sector's portfolio distribution. Ong and Iorgova [22] pointed out that, by performing these actions, institutional investors played a significant role in the transformation of the centrally planned economies from Europe into market economies. As we can notice, institutional investors play a fundamental role in any economy by reducing the finance gap and supporting growth.

Trying to synthesize the literature regarding the mechanisms by which institutional investors influence the stock market, Hryckiewicz [23] explained that there "exist two views of how the institutional growth may promote the development of the local securities markets". One view is that the influence is obtained as a result of the increased assets of the institutional investors that generate a higher demand for local securities, and the other one considers that the impact of the institutional investors on the stock market development appears as a result of the decreased informational asymmetry in the economy obtained as a result of the "better corporate governance and greater market transparency."

Although some papers deal with all the institutional investors, there is a difference between pension funds and insurance companies, on the one hand, and mutual funds, on the other. As suggested by Vittas [21], the evolution of pension funds and insurance companies are not dependent on the stock market development, as are mutual funds, because of their investment policy. Catalan et al. [24] also emphasized that this is an important distinction between contractual savings institutions and other financial intermediaries. Based on the time-frame distinction, contractual savings institutions are associated with long-term liabilities, despite the other financial intermediaries. Both pension funds and insurance companies are the leading institutional investors in bond and stock markets, as they make a major contribution to the development of stock markets as investors, but also as financial intermediaries. As an investor, their long-term investment horizon, their contribution to the financial sector development and efficiency, and their role in reducing asymmetric information can foster the stock market development. As a financial intermediary, they can allocate resources toward the stock markets and can contribute to reducing asymmetric information and stock market volatility. However, the economic development of the countries, the liquidity, and financial markets stability are also essential for the interaction between pension funds, insurance companies, and stock market development, because both pension funds and insurance companies consider the national economic indicators to be valuable decision-making tools related to financial investments.

On the other hand, a stock market with reasonable performance, stability, and depth can help pension funds and insurance companies to increase their expected investment returns. As a consequence, a bilateral interaction among pension funds, insurance companies, and stock market development is theoretically expected. However, the researchers have reached mixed results depending on country-specific characteristics, financial system development, etc. The asset allocation of pension funds and insurance companies also influences the connection between pension funds, insurance companies, and the stock market. Across countries, there are differences in the equity investments of institutional investors based on their goals and characteristics of stock markets such as stability, volatility, and returns [25,26].

This study investigated the effect of pension funds and insurance companies on stock market development in 15 emerging markets over the 2004–2019 period through cointegration and causality tests. The article intends to contribute to the literature in three ways. First, the relationship between the insurance sector and stock market development has not been fully explored; therefore, more studies are necessary for this domain.

Secondly, the utilization of econometric tests compatible with dataset characteristics leads us to obtain a relatively more robust consequence. Thirdly, our article analyzes the impact of pension funds and the assets managed by insurance companies for the same countries and the same recent period. In this context, the related literature is summarized in the following section and then the dataset and methodology are described. Section 4 presents the main results, and finally, the conclusions are presented in the Conclusion section.

2. Literature Review

Most of the studies developed at the end of the 1990s analyzed pension funds and life insurance companies, which are considered contractual savings institutions, and some studies [21,26,27] indicated that their development could stimulate capital markets. The papers generally analyze the situation of developed countries (with some exemptions), covering periods before the year 2000.

Analyzing the portfolios of the savings institutions from different countries, Catalan et al. [24] found different patterns of investment for different countries and suggested that these differences are determined by the restrictions imposed against investments in shares in various countries. The empirical test of the influence of contractual savings institutions as a total on the capital market development (measured by market capitalization) through the Granger causality test developed for a panel of 14 OECD countries and 5 developing countries found that in half of the OECD analyzed countries and just one developing country (Thailand) there is a one-way causal relationship from savings institutions to stock market capitalization with, and in two OECD countries and two developing countries, a bidirectional relationship was found. Analyzing the causality between different types of contractual savings institutions (pensions, life insurance, or non-life insurance) and stock market capitalization, Catalan et al. [24] also found mixed results.

Impavido et al. [28] investigated in a GMM framework the impact of contractual savings institutions on the securities market using a sample of 32 countries, which include developed countries but also emerging economies such as Poland, Hungary, Chile, Malaysia, or Turkey. Their results highlighted that contractual savings development positively influences both stock and bond market capitalization. They also underlined the circumstances that favor a significant influence of contractual savings institutions on the securities market: countries with market finance, countries with mandatory pension contributions, or where the cross-border stock market transactions are limited. Because of these circumstances, the authors concluded that not only do the country characteristics matter for the influence of the contractual savings institutions on the stock market, but so do policy decisions.

The second line of analyses was carried out for the institutional investors as a whole, an example being Aras and Muslumov [29] who found that for all 23 OECD countries analyzed, the institutional investor's development causes stock market development, but for the subsample of emerging countries, the stock market development causes the development of institutional investors.

Another study developed by Hryckiewicz [23] analyzed the impact of institutional investors on stock market indicators in eight Central and Eastern European countries for the period between 1995 and 2006 using the GMM technique, and did not find evidence about the influence of institutional investors' assets' growth on the stock market capitalization. A possible explanation for these conclusions is the short time of presence of pension funds and investment funds on the market in these countries. However, the results suggest the presence of the indirect effect of the institutional investors on the stock market development

as the effect of stimulating the improvement of the corporate governance practices and increased transparency of firms.

Although in the first period, the majority of the papers investigated the impact of institutional investors or contractual savings institutions on stock markets [28], later, the attention shifted to investigating the impact of pension funds on the stock market, in isolation of other institutional investors, and this is the third line of papers related to our article. This evolution of research is a consequence of the fact that the World Bank stimulated the countries confronted with ageing populations to adopt reforms of the pension system and to transform it into a multi-pillar one, to assure "three types of income support: (1) a publicly managed, unfunded, defined benefit (DB) program; (2) a privately managed, fully funded, defined contribution (DC) plan; and (3) voluntary retirement savings in the form of housing, insurance, or other assets" [30]. Theoretical and empirical studies, especially those under the auspices of IMF and World Bank, suggested that because of the reforms of the pension systems from the PAYG into a funded one, the savings mobilized by new pension funds will be allocated to the private sector through the mechanisms of the capital markets, therefore contributing to the development of stock and bond markets.

One of the first papers that analyzed the impact of the pension reform on the financial sector was that of Holzmann [31] for the case of Chile, the first country that started to reform the pension system and transform it from a public one to a privately managed one. The results suggested that pension reform contributed to the financial market development, but also highlighted that the effect on the private saving rate was negative. Contrary to this, a more recent analysis conducted by Raddatz and Schmukler [32], which focused on the same country and covered the 1996–2005 period, did not find evidence to support the idea that pension funds have a significant effect on capital markets. Investigations for other countries were carried out by Bayar [33], which analyzed the effect of pension funds on capital market development in Turkey from 2006 to 2015 and finds that in the long term individual pension funds cause the development of both stock and bond markets, or Moleko and Ikhide [34] that examined the impact of pension funds on stock and bond markets in South Africa and suggested that the impact of pension funds on the stock market capitalization is positive.

However, most of the studies analyze different samples of countries. For example, a study developed by Walker and Lefort [35] that analyzed the effect of the pension reform for 33 emerging countries found a positive impact of the pension reform on capital market development, because of the decreased cost of capital implied. Additionally, Hryckiewicz [23] showed that pension reform in eight CEEC countries had a positive impact on stock market development and pension funds had a positive influence on the stock market capitalization and revealed that the limits for different types of investments are not influencing the effect on the stock market development, and that the effects of pension funds on the stock market are more prominent in countries with mandatory pension contributions.

The importance of the level of development for this relationship is sustained by Meng and Pfau [36], who concluded that the positive impact of pension funds on stock and bond markets was significant only for the financially developed countries. Additionally, Niggemann and Rocholl [37] found that the pension reforms significantly affected both stock and corporate bond markets in a positive way by increasing the issuing activity, and this effect is most important for the emerging countries with less developed capital markets before the reforms. In the same idea, Hu [38] investigated the impact of the occupational pension funds on financial markets, and revealed that pension funds have a positive influence both in the short and long term on the market capitalization of the least developed economies. Additionally, Sun and Hu [39] revealed that pension funds exert a significant positive effect on stock market capitalization, especially in underdeveloped countries.

Different results for short or long-term are evidenced by Kim [40], who found that pension funds' assets have a positive long and short-term impact on stock market capitalization, but the short-term result is volatile. Enache et al. [41] discovered both short and long-term positive effects for 10 CEE countries for the 2001–2010 period, but the short-term

effects were found to be more significant by Kilic and Bayar [42], who showed that, for 18 OECD countries from 2001–2016 period, in the short term there is no significant effect of pension funds on stock market development, but in the long term the impact is positive.

A different approach was used by Alda García and Marco Sanjuán [43], Alda [44] or Babalos and Stavroyiannis [45] who analyzed only the influence of the pension funds' investment in equities on stock market development. Their analyses show, with some exemptions, a positive effect of the equity investment on the stock market capitalization. However, Alda [44] suggests that the increase in population amplifies the influence of pension funds on stock market development and Babalos and Stavroyiannis [45] conclude that the result is different for various geographical sub-groups.

Studies by Bonizzi and Guevara [46] and Stewart et al. [47] do not analyze the relationship between pension funds and stock market development, but notice some tendencies of the pension funds investment policy in recent years, and their findings are important to explain some of our findings. Bonizzi and Guevara [46] observed that although the previous literature found that pension funds could contribute to economic growth by stimulating savings (in Thomas and Spataro [48], there is a detailed literature survey), the introduction of the private pensions was not followed by an increase in the saving levels in the analyzed economies; in some cases even a decrease was registered. Stewart et al. [47] examined the evolution of pension funds in more developed and emerging markets and observed that in some Central and Eastern European economies (Czech Republic, Hungary, Serbia, the Slovak Republic) and Latin American economies (Chile, Costa Rica, the Dominican Republic, Mexico, Uruguay), more than 50% of the investments are represented by bills and bonds.

The fourth line of studies related to our article analyzes the link between insurance and capital markets, but such studies are not numerous. For example, Kong and Singh [49] highlighted that in many South East Asian and Central and Eastern European emerging markets, confronted with the "lack of long-term fixed-income instruments and relative illiquidity in bond and equity markets", insurance companies compensate for this by offering unit-linked products to stimulate capital markets. Additionally, some negative effects of the development of life insurance companies and pension funds in the absence of a developed stock market appear (a higher competition for the relatively few long-term instruments that could generate "excessive market volatility, underpricing of credit risk, and potentially asset price bubbles"). Sawadogo and Guérineau [50] tested the relationship between the insurance penetration and total value traded on the stock market and found that the stock transactions increases when the insurance penetration rises. The study also suggests that improvements in the legal system quality are important for this relationship. Pradhan et al. [51] developed a multivariate analysis to determine the causality between banking competition, stock and insurance market development, and economic growth in 32 European countries. The indicators employed for this analysis were insurance penetration (for total, life, and non-life insurance) and, respectively, stock market capitalization or stock market turnover. The results suggested that in the case of banking competition and economic growth, insurance market development has a long-term causal influence on stock market capitalization, but in the short term, the relationships between these variables are more complex. Analyzing just the relationship between insurance and stock market development, the authors found, in most of the countries, a bidirectional Granger causality between variables. For some countries, a one-way Granger causality running from life or non-life insurance to stock market capitalization was found. Additionally, for others, a unidirectional causality was noticed from stock market capitalization to total or life insurance.

3. Data and Methods

The article explores the effect of pension funds and insurance companies on stock market development in 15 emerging market economies through cointegration and causality analyses. In the empirical analysis, stock market development was proxied by the total value of all listed shares in the stock markets as a percent of GDP. On the other hand,

pension funds were represented by total assets of pension funds which included any plan, fund, or scheme that provides retirement income as a percent of GDP, and the insurance sector was represented by assets of insurance companies as a percent of GDP. All series were provided from the World Bank Global Financial Development Database [52] and the study duration was specified as 2004–2019, given the availability of the variables.

The sample and dataset period of the study were selected based on the presence of relevant data and the panel was composed of 15 emerging economies (Brazil, Chile, China, Colombia, Hungary, Indonesia, Korea, Republic of Malaysia, Mexico, Peru, Philippines, Poland, South Africa, Thailand, and Turkey).

The econometric model in Equation (1) is formed to explore the effect of pension funds (PENSION) and the insurance sector (INSURANCE) on the stock market development (SMC) in a country i ($i = 1, \ldots, 15$) in year t ($t = 2004, \ldots, 2019$).

$$\text{SMC}_{it} = f(\text{PENSION}_{it}, \text{INSURANCE}_{it}) \tag{1}$$

The pension funds and insurance sector are expected to positively affect the stock market development through their long-term investment horizon—promoting liquidity and capital market depth, enhancing the efficiency, and decreasing asymmetric information problems given the findings of Catalan et al. [24], Enache et al. [41], or Kilic and Bayar [42] for pension funds, and Pradhan et al. [51] for insurance.

The summary statistics of the dataset were denoted in Table 1. The mean of stock market capitalization, pension fund assets and insurance company assets as a percent of GDP were, respectively, 71.63, 20.94, and 15.50, but all three variables exhibited a considerable change among the countries.

Table 1. Dataset Characteristics.

Variables	N	Mean	Std. Dev.	Min	Max
SMC	240	71.63698	59.90319	48.40500	352.1564
PENSION	240	20.94979	25.92082	11.58000	99.65590
INSURANCE	240	15.50902	16.49059	8.790000	69.74000

Source: Authors' own computations using E-Views 11.0.

In the empirical analysis, cross-sectional dependence and homogeneity were firstly tested to determine the unit root, cointegration and causality tests, then the stationarity of the series was checked by the CIPS unit root test of Pesaran [53] given the existence of cross-sectional dependence. The cointegration interaction among pension funds, the insurance sector, and stock market development was analyzed by Westerlund and Edgerton [54] bootstrap cointegration test, and the cointegration coefficients were estimated with the Augmented Mean Group (AMG) estimator regarding cross-sectional dependence and heterogeneity by Eberhardt and Bond [55], Eberhardt and Teal, and Teal and Eberhardt [56,57].

Westerlund and Edgerton's [54] bootstrap cointegration test is based on the Lagrange Multiplier (LM) test of McCoskey and Kao [58] and takes into consideration the cross-sectional dependence. The test allows autocorrelation and heteroscedasticity in the cointegration equation and offers robust results in the case of small samples such as our study sample through the use of Monte Carlo simulations. The statistics of the cointegration test $\left(LM_N^+\right)$ can be calculated using the following Equation (2):

$$LM_N^+ = \frac{1}{NT^2} \sum_{i=1}^{N} \sum_{t=1}^{T} \hat{w}_i^{-2} s_{it}^2 \tag{2}$$

In Equation (2), the partial sums of the error terms $\left(s_{it}^2\right)$ and long-term variances $\left(\hat{w}_i^{-2}\right)$ that result from the cointegration model, are assessed through the fully modified ordinary least squares model. The null hypothesis, relying on cointegration, is tested using LM_N^+ in Equation (2). Critical values generated by the bootstrap method are used in the

event of cross-sectional dependence. Furthermore, this test gives robust results in the case of a small sample, owing to the implementation of Monte Carlo simulations.

Lastly, the causal interaction among pension funds, insurance companies, and stock market development was analyzed by Dumitrescu and Hurlin's [59] causality test, an improved version of the Granger non-causality test [60] that takes into consideration the presence of heterogeneity and yields robust findings under the presence of cross-sectional dependence.

4. Results and Discussion

The causal and cointegrating relationship between stock market development, pension funds, and inflation was examined in 15 emerging economies during the 2004–2019 period based on cointegration and causality analyses. The presence of cross-sectional dependence was first tested with tests of LM, LM CD and $LM_{adj.}$ and the findings are denoted in Table 2. The null hypothesis of cross-sectional independence was rejected at a 1% significance level and the test results pointed out the cross-sectional dependency. Then, the homogeneity was explored by the adjusted delta tilde test of Pesaran and Yamagata [61] and the test findings revealed the existence of heterogeneity.

Table 2. Cross-Sectional Dependence and Homogeneity Tests' Results.

Test	Statistic
LM test [62]	452.1 ***
LM CD test * [63]	18.41 ***
LM adjusted test * [64]	46.26 ***
$\widetilde{\Delta}$ test	6.053 ***
$\widetilde{\Delta}_{adj}$ test	6.989 ***

* two-sided test. *** indicates significance for $p \leq 0.001$. Source: Authors' own computations using Stata 15.0.

The stationarity of the three series was checked with the unit root test of Pesaran [53]. Cross-sectionally augmented IPS (CIPS) [65] with cross-sectional dependence, and the unit root test results are displayed in Table 3. The unit root test findings indicate that LNSMC, LNPENSION, LNINSURANCE were I(1).

Table 3. CIPS Panel Unit Root Test Results.

Variables	Constant	Constant + Trend
LNSMC	−1.516	−2.248
d(LNSMC)	−3.609 ***	−3.634 ***
LNPENSION	−1.965	−2.357
d(LNPENSION)	−3.535 ***	−3.725 ***
LNINSURANCE	−1.944	−1.698
d(LNINSURANCE)	−2.748 ***	−3.169

*** indicates it is significant at 1%. Source: Authors' own computations using Stata 15.0.

The cointegration relationship among pension funds, insurance companies, and stock market development was examined through Westerlund and Edgerton's [54] bootstrap cointegration test with cross-sectional dependence and heterogeneity and the results were reported in Table 4. The null hypothesis of significant cointegration relationship among the series was rejected under cross-sectional independence, but was accepted under cross-sectional dependency. The cointegration test findings verified that the econometric tests considering cross-sectional dependency should be used in the case of cross-sectional presence. We considered the bootstrap probability figures due to the existence of cross-sectional dependence and reached a significant cointegration relationship among pension funds, insurance companies, and stock market development.

Table 4. Westerlund and Edgerton's [54] Bootstrap cointegration test results.

	Constant			Constant + Trend	
LM Statistic	**Asymptotic *p*-Value**	**Bootstrap *p*-Value**	**LM Statistic**	**Asymptotic *p*-Value**	**Bootstrap *p*-Value**
2.729	0.003	0.820	10.387	10.387	0.410

Source: Authors' own computations using Gauss 11.0.

The cointegrating coefficients were estimated by the AMG estimator given the presence of heterogeneity and cross-sectional dependency, and the estimated coefficients are depicted in Table 5. The cointegration coefficients indicated that pension funds had a positive effect on stock market development in Brazil, Chile, Hungary, Mexico, Peru, and South Africa in the long term. On the other hand, the insurance sector had a positive impact on stock market development in Chile, Indonesia, Korea Republic, the Philippines, and South Africa, but had a negative impact on stock market development in Hungary and Peru.

Table 5. Cointegrating Coefficient Estimation Results.

Country	PENSION	INSURANCE
Brazil	1.9929 **	0.1416
Chile	1.1988 **	0.7817 **
China	0.4486	0.1055
Colombia	−0.5149	0.8446
Hungary	0.5050 **	−2.1425 **
Indonesia	0.0002	0.8530 **
Korea	−0.0493	0.7438 **
Malaysia	0.2534	0.0531
Mexico	0.9555 *	−0.7912
Peru	0.9838 **	−0.3827 *
Philippines	−0.4510	2.1949 **
Poland	0.0016	0.4224
South Africa	1.3766 **	0.4388 **
Thailand	0.5371	0.5428
Turkey	−0.0265	−0.0292
Panel	0.3209	0.2518

**, * indicates it is significant at 1% and 5%, respectively. Source: Authors' own computations using Stata 15.0.

The cointegration analysis uncovered a positive effect of pension funds on stock market development in Brazil, Chile, Hungary, Mexico, Peru, and South Africa in the long term. In this context, the total value of asset holdings by pension funds has considerably changed among the countries depending on their pension fund systems.

The results of existing studies related to the relationship between pension funds and stock market capitalization are inconclusive. However, most of the studies [23,36–39,41,42,44] concluded that pension funds exert a positive impact on the stock market development. However, some researchers, such as Raddatz and Schmukler, and Walker and Lefort [32,35] come to different conclusions; that pension funds have a negative or an insignificant influence on stock market development for some countries.

For example, Catalan et al. [24] found different causality relationships between pension funds and stock market capitalization: a one-way causality from pension funds to stock market for Korea, Spain, Netherlands, Canada, Norway, Sweden, Finland, Thailand, and South Africa and from the stock market to pension funds in the case of Belgium; a bidirectional causality for Chile, and no causal relationship for United States, United Kingdom, Australia, Germany, Austria, Singapore, and Malaysia. Holzmann [31] noted that there is a strong correlation between pension funds assets and stock market capitalization in Chile and evidenced the contribution of pension funds to the stock market instruments development, but did not demonstrate that pension funds cause the stock market development.

Aras and Muslumov [29] found that for the sample of emerging markets included in their analyses the stock market capitalization determines institutional investors' development. Alda [44] analyzed a sample of 13 European countries and concluded that more investment in equities of pension funds determines stock market development. Alda García and Marco Sanjuán [43] found bidirectional causality between stock market capitalization and equity pension funds and also pointed out that pension funds positively affect the stock market size in both the short- and long-term. The same results were reported by Babalos and Stavroyiannis [45], who found a bi-directional causality relationship between stock market development and pension funds' assets invested in equities for a sample of countries including Chile, Hungary, Poland or Mexico.

The cointegrating analysis also revealed different results: a positive effect of the insurance sector on stock market development in Chile, Indonesia, Korea Republic, Philippines, and South Africa, and a negative impact on stock market development in Hungary and Peru. Very few studies investigated the interaction between life insurance, nonlife insurance, and stock market development, and in general, different conclusions were reached. In this context, Impavido et al. [28] revealed a positive influence of contractual savings institutions on stock market development. However, Catalan [24] reached different results related to the causality interaction between life insurance, non-life insurance, and stock market capitalization. Similarly, Sawadogo and Guerineau [50] analyzed a sample of 37 emerging markets and found that insurance causes stock market development. Okparaka [66] found that, in the case of Nigeria, insurance investment in stocks determines stock market capitalization.

As we can see, this effect is obtained just for some countries and, in some cases, the insurance has a negative impact on stock market development. Comparing the results with other empirical findings, our results are confirmed for pensions in the case of Chile [39,45], Mexico [42], and South Africa [34], but we can also find some different results for pensions in the case of Poland or Korea [42].

The causal relationship between the pension funds, the insurance sector, and stock market development was checked through the causality test by Dumitrescu and Hurlin [59], and the causality test findings are depicted in Table 6. The causality test findings pointed out a significant unilateral causality from the stock market capitalization to the pension funds and the insurance sector. Furthermore, a unidirectional causality from insurance sector to the pension funds and insurance sector was reached.

Table 6. Panel Causality Test Results.

Null Hypothesis	W-Stat.	Zbar-Stat.	Prob.
DLNPENSION → DLNSMC	1.14306	−0.14841	0.8820
DLNSMC → DLNPENSION	3.02850	3.38620	0.0007
DLNINSURANCE → DLNSMC	1.49344	0.50845	0.6111
DLNSMC → DLNINSURANCE	2.50434	2.40357	0.0162
DLNINSURANCE → DLNPENSION	3.47665	4.22635	0.00002
DLNPENSION → DLNINSURANCE	0.74642	−0.89197	0.3724

Source: Authors' own computations using E-Views 11.0.

A mutual causality between institutional investors of insurance companies and pension funds and stock market development is theoretically expected. On one hand, institutional investors foster the development of stock market development through their long-term investment horizon, higher demand for local securities, decreased informational asymmetry as a result of better corporate governance and market transparency, improvements in competitiveness and financial innovation [20,21,23]. On the other hand, a stock market with reasonable performance, stability, and depth can support the development of pension funds and insurance companies investing in stocks. However, we uncovered a significant causality from stock market capitalization to pension funds and insurance companies. In other words, stock market development had a significant impact on the development of pension funds and insurance companies. In the related empirical litera-

ture, the researchers of papers such as [23,29,31–34,40–45] have also reached mixed results depending on country-specific characteristics, financial system development, etc. The asset allocation of pension funds and insurance companies also influences the connection between pension funds, insurance companies, and the stock market. In this context, pension funds and insurance companies are expected to foster the stock market development after a certain threshold.

5. Conclusions

Stock markets have the potential to foster economic growth and development through various channels such as fund mobilization, improvements in capital efficiency, liquidity, and corporate governance and control, and risk diversification. Therefore, the specification of factors underlying stock market development gained importance and, in turn, many institutional, social, and economic determinants of stock market development have been investigated in the literature. In this research, the effects of pension funds and insurance companies, two critical institutional investors with a long-term investment horizon, on stock market development have been analyzed in a sample of selected emerging markets by employing causality and cointegration analysis.

The causality analysis disclosed that stock market development had a significant impact on pension funds and the insurance sector in the short term, but opposite causality was not identified. However, both pension funds and insurance sector can influence the stock market development after a certain threshold over time. On the other hand, the cointegration analysis revealed that pension funds had a positive effect on stock market development in Brazil, Chile, Hungary, Mexico, Peru, and South Africa in the long term and insurance sector development had a positive impact on stock market development in Chile, Indonesia, Korea Republic, Philippines, and South Africa, but had a negative impact on stock market development in Hungary and Peru.

As the theory predicts, pension funds and insurance companies can positively influence the development of stock markets through their long-term investment horizons, by reducing asymmetric information, increasing competition and efficiency in the financial markets, and developing new financial products. However, the current economic performance of the countries and stability, liquidity, and depth of financial markets are also crucial for better interaction between pension funds, insurance companies, and stock market development. Furthermore, a stock market with reasonable performance, stability, and depth can lead the pension funds and insurance companies to raise their stock investments. As a consequence, many factors can be determinative of the interaction between pension funds, insurance companies, and stock market development.

Our findings confirm that financial market development is an important factor that affects the activity of pension funds and insurance companies, but we also find arguments for the fact that, in some countries, pension funds and insurance companies contribute to the stock market development in the long term. Therefore, policymakers can contribute to the stock market development and, through this, to a more adequate financing of the economy. On the other hand, they can contribute to the pension funds and insurance companies' good functioning, only considering the institutional investors and capital market relationship and by using the right tools and finding the best strategies that can stimulate investments in equity by pension funds and insurers.

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