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Financial development, institutional investors, and economic growth



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ABSTRACT

This study analyzes the nonlinear relationship between financial development under the presence of institutional investors (assets in insurance companies, mutual funds, and pension funds, as a percentage of GDP) and economic growth. The analysis considers data on 116 economies obtained from the World Bank for the period 1991–2014. We examine both industrialized and developing economies using a dynamic panel threshold technique. We find that countries below the finance threshold grow less and those above the threshold grow faster. In addition, in the industrialized economies, institutional investors have a positive effect on the growth of GDP per capita.

1. Introduction

Goldsmith (1969) was the first to show empirically the existence of a positive relationship between financial development and GDP per capita. One reason for this positive relationship is that financial intermediation increases efficiency before increasing the volume of the investment (Bencivenga & Smith, 1991; Greenwood & Jovanovich, 1990). Many studies support the concept that a positive relationship exists between financial development indicators and economic growth (e.g., Beck & Levine, 2004; Beck, Levine, & Loayza, 2000; King & Levine, 1993; Levine, 1997, 2003; Levine, Loayze, & Beck, 2000; Rajan & Zingales, 1998).

Although recent literature emphasizes a nonlinear relationship between finance and economic growth, there is mixed evidence about the impact of the former on the latter. Some studies report that finance has a positive impact on economic growth for values above the threshold (Deidda & Fattouh, 2002; Rioja & Valev, 2004), while others report the opposite impact (Arcand, Berkes, & Panizza, 2015; Cecchetti & Kharroubi, 2012; Ergungor, 2008; Law & Singh, 2014; Shen & Lee, 2006).

The role of institutional investors in economic growth has not been deeply analyzed using dynamic panel techniques in the financial literature. However, since institutional investors have a significant influence on financial development in capital markets, we can expect them to affect economic growth rates as well. Prior literature provides some positive evidence of this relationship for insurance companies (Arena, 2008; Chang, Lee, & Chang, 2014; Curak, Loncar, & Poposki, 2009; Haiss & Sümegi, 2008; Liu, Lee, & Lee, 2016; Ward & Zurbuegg, 2000), mutual funds (Klapper, Sulla, & Vittas, 2004), and pension funds (Davis & Hu, 2006; Holzmann, 1997).

The main objective of this study is to investigate how financial development under the presence of institutional investors affects economic growth. This research extends the existing literature in four aspects. First, we follow the dynamic version of Hansen's panel threshold model to explore the relationship between finance and economic growth. Hence, we estimate our model following the methodology employed in Kremer, Bick, and Nautz (2013), based on the combination of instrumental variable estimation introduced by

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Caner and Hansen (2004) and the Hansen (1999) panel threshold model for controlling the endogeneity issue of working with the initial GDP per capita. Second, we perform a robustness analysis using data on different types of institutional investors (mutual funds, insurance companies, and pension funds). Third, we use a large panel data of 116 economies for the period from 1991 to 2014, separating the sample in industrialized and developing economies. Finally, we analyze two measures of financial development, credit bank to private sector and domestic credit to private sector.

The results confirm the evidence in favor of the existence of a nonlinear relationship between financial development and economic growth. We find a threshold that defines two regime-independent effects of financial development on economic growth. Our results report that economies grow when their financial development is above the threshold; this threshold is higher for industrialized economies. In addition, we report evidence that in industrialized economies, institutional investors have a positive and statistically significant impact on economic growth.

The remainder of this paper is organized as follows. Section 2 provides the literature review. Section 3 presents the data and variables. Section 4 explains the methodology. Section 5 presents the results. Finally, Section 6 concludes.

2. Literature review

The relationship between financial development and economic growth has been widely investigated in financial literature. Many econometric techniques have been employed, such as individual country analysis, cross-country analysis, time series, panel data, and threshold analysis, more recently. However, the evidence is mixed regarding the impact of financial development on economic growth. McKinnon (1973) and Shaw (1973) show that commercial banks dominate the financial structure in the first stages of financial development. In turn, Pagano (1993) suggests three ways in which the development of the financial sector can promote economic growth: increase in the productivity of investments, reductions in transaction costs (more liquidity of investments), and changes in savings. King and Levine (1993) find, for a sample of more than 80 countries, a positive and significant relationship between several financial development indicators and growth in GDP per capita. Rajan and Zingales (1998) report that firms in countries with more developed financial systems can access cheaper external funding, which increases economic growth. Beck et al. (2000) find that financial intermediaries exert a large, positive impact on total factor productivity, which influences overall GDP growth. Rioja and Valev (2004) find no statistically significant relationship between finance and growth at low levels of financial depth, a strong and positive relationship at intermediate levels, and a weaker but still positive and statistically significant relationship at higher levels. After the 2008 subprime crisis, many academicians and policymakers questioned the optimal size of the financial system for a sustained economic growth. For example, Law and Singh (2014) find that financial development is beneficial to economic growth only up to a certain threshold. Finally, an increase in the equity markets, a method to substitute debt financing, reduces the effect of financial development on economic growth (Fink, Haiss, & Vuksic, 2009; Rousseau & Wachtel, 2011).

The participation of institutional investors in capital markets increases as the economy develops (Beck & Levine, 2004; Demirgüç-Kunt & Levine, 1996), and this will in turn have a positive impact on economic growth. For example, related evidence exists for mutual funds (Klapper et al., 2004), insurance companies (Arena, 2008; Chang et al., 2014; Curak et al., 2009; Haiss & Sümeği, 2008; Liu et al., 2016; Ward & Zurbruegg, 2000), and pension funds (Davis & Hu, 2006; Holzmann, 1997). Klapper et al. (2004) evidence that more advanced mutual funds are associated with more developed countries. Arena (2008) uses a GMM estimator to analyze the panel data of 56 countries using total premiums, life and nonlife premiums separately. The variables have a positive impact on GDP growth. Haiss and Sümeği (2008) provide cross-country positive evidence for the effect of insurance on the economic growth of 29 countries, using a modified Cobb-Douglas production function. Curak et al. (2009) examine the relationship between the insurance sector and economic growth in 10 European countries using the fixed-effects panel model. The authors find that insurance sector development positively and significantly affects economic growth. Ward and Zurbruegg (2000) conduct a cointegration analysis, and suggest that in some countries, the insurance industry Granger causes economic growth, and in other countries, the reverse is true. Thus, the relationship is country specific. Chang et al. (2014) examine the relationship between insurance activities and economic growth for 10 OECD countries using a dynamic panel data technique, reporting evidence that in half of the sample, the impact is positive and statistically significant. Liu et al. (2016) investigate the relationship between insurance activity and economic growth for G-7 countries using a bootstrap Granger causality test. They find a long-term relationship between the series. Holzmann (1997) provides positive evidence for Chilean pension funds on economic growth. The author reports that pension funds contribute to the local economic growth using a total factor productivity analysis. Using a sample of OECD countries and emerging markets, Davis and Hu (2006) find that assets in pension funds contribute positively and significantly to economic growth.

3. Data and variables

We use an unbalanced panel data of 116 countries, obtained from the World Bank over the period from 1991 to 2014. The data are presented in a three-year average annual frequency in order to use appropriately the GMM estimation.¹ Thus, we have a maximum of eight non-overlapping data points for each country. The appendix provides the list of economies, data definitions, and sources for the variables used in this study.

Economic growth (GROWTH) is defined as the annual difference of the natural logarithm of real GDP per capita of each country for

¹ The participation of institutional investors is more recently in comparison with the control variables used in studies that consider the five-year average. We follow some studies with recently dated control variables, and they use the three-year average in order to have more periods.

the corresponding period (RGDP), and real GDP per capita with a one-year lag (L.RGDP). The endogenous regressor is the log of initial income (L.RGDP).

We use two indicators for financial depth and banking development to define the relationship between financial development and economic growth. We use bank private credit to GDP (CB), and the ratio of domestic credit to the private sector to GDP (DCPS). The latter indicator isolates credit issued by banks (vs. the central bank) and that issued to enterprises (vs. governments; [Levine & Zervos, 1996](#)).

We include institutional investor variables (II) to estimate the effect on economic growth. Further, we test for the robustness of the variables by performing individual regressions using as proxies for institutional investors mutual fund assets (MF), insurance company assets (IC), and pension fund assets (PF), respectively. All variables are expressed as a percentage of GDP. Thus, the ratios are not biased by the size of the product of each country.

In our model, we introduce several other variables that impact economic growth, including government consumption, gross capital formation, trade openness, and inflation. Government expenditure (GVE) is calculated as the final expenditure of the general government (% of GDP), which measures the composition of fiscal expenditure. In general, evidence shows that government expenditure has a negative impact on growth ([Barro, 1990](#); [Connolly & Li, 2016](#)). Gross capital formation (GCF) measures capital, and we express it as a percentage of the GDP; we expect this variable to affect growth positively due to its effect on productivity. International trade openness (OPENNESS) is calculated as the ratio of the sum of exportations and importations (% of GDP). We anticipate this variable to have a positive relationship with growth because higher openness enhances growth through higher competition and technological progress ([Winter 2004](#)). Inflation (INFL) is calculated as the price to consumer index (IPC), and measures the degree of uncertainty of the future market environment. We expect this variable to be negatively related to growth because firms become more reluctant to make long-term commitments in the presence of higher price variability. Finally, we use the annual gross population (POPULATION).

[Table 1](#) provides a statistical description for the dependent and explanatory variables used in the estimations according to the type of institutional investor.

4. Method

The most common methods for exploring the finance–growth nexus are cross-country regressions and panel data techniques. Note that the estimates can be biased for a variety of reasons including measurement error, reverse causation, and omitted variable bias. To address these biases, researchers have used, as instruments, the dynamic panel regressions with lagged values of the explanatory endogenous variables (see [Beck et al., 2000](#); [Rioja & Valev, 2004](#)). Such methods have several advantages over cross-sectional instrumental variable regressions. In particular, they control for endogeneity and measurement error not only of the financial development variables but also of other explanatory variables.

The estimated regression is:

$$GROWTH_{i,t} = \mu_i + \beta_1 * FIN_{i,t} I(FIN_{i,t} \leq \gamma) + \delta_1 I(FIN_{i,t} \leq \gamma) + \beta_2 * FIN_{i,t} I(FIN_{i,t} > \gamma) + \emptyset X_{i,t} + \varepsilon_{i,t} \quad (1)$$

where GROWTH is the growth in the real GDP per capita of country i in year t . $X_{i,t}$ denotes the vector of explanatory variables partitioned in $X_{1,i,t}$ of the exogenous variables uncorrelated with $\varepsilon_{i,t}$, and $X_{2,i,t}$ of endogenous variables correlated with $\varepsilon_{i,t}$. The original income, the lag of the real GDP per capita (L.GDP), is correlated with $\varepsilon_{i,t}$. The set of uncorrelated variables is as follows: GVE, which represents government expenditure (% of GDP); GCF, which is the gross capital formation (% of GDP); OPENNESS, which is the sum of all exports and imports (% of GDP); INFL, which represents inflation, measured by average consumer prices; DCPS, which denotes domestic credit to the private sector (% of GDP); POPULATION, which is the population growth rate (% of GDP); and institutional investors (assets of mutual funds, insurance companies, and pension funds; all as % of GDP). See the [appendix](#) for a summary of all variable definitions.

We follow the [Kremer et al. \(2013\)](#) procedure to address the elimination of fixed effects. Thus, we first employ the forward orthogonal deviations transformation developed by [Arellano and Bover \(1995\)](#). This method is based on [Caner and Hansen \(2004\)](#) and considers four steps to obtain the coefficients. First, the endogenous variable $X_{1,i,t}$ is estimated as a function of the instruments by

Table 1
Summary statistics of the raw data.

	Mutual Funds (MF)				Insurance Companies (IC)				Pension Funds (PF)			
	Mean	S.D.	Min.	Max	Mean	S.D.	Min.	Max	Mean	S.D.	Min.	Max
GDP per capita growth	2.33	2.56	−6.41	10.51	2.47	2.70	−6.38	17.43	2.51	2.65	−6.41	11.61
Institutional investor (MF/IC/PF)	29.30	70.90	0.03	596.50	18.55	24.25	0.13	104.96	24.43	31.17	0.01	164.55
Log Initial GDP per capita	4.20	0.48	2.85	4.96	3.89	0.62	2.51	4.96	4.15	0.48	2.92	5.04
Domestic credit to private sector	86.05	51.76	8.58	253.48	63.74	48.81	2.56	253.48	82.49	51.09	10.37	253.48
Bank credit to private sector	77.46	46.11	8.58	253.48	58.75	43.44	2.55	253.48	75.11	45.94	10.18	253.48
Openness	82.46	50.87	20.10	391.67	85.22	54.32	17.10	423.58	96.18	73.21	20.10	433.05
Government expenditure	17.45	4.47	8.38	27.29	16.07	4.86	4.95	27.40	16.76	4.55	6.68	27.29
Gross capital formation	23.50	5.22	11.22	47.25	23.90	5.72	7.59	47.25	23.25	5.00	8.62	47.25
Inflation	4.17	5.71	−2.78	51.43	5.41	6.35	−1.79	78.41	4.14	3.68	−0.95	27.70
Population growth	0.77	0.86	−1.55	5.09	1.26	1.53	−1.55	15.80	0.74	0.86	−1.55	4.21

Note: Min., Max, and S.D. denote minimum, maximum, and standard deviation, respectively.

Ordinary Least Squares (OLS) using lags of the endogenous variable. Second, we obtain the fitted values of $\hat{X}_{1,i,t}$. Third, using $\hat{X}_{1,i,t}$ in the regression equation, we estimate the threshold parameter γ using OLS. After that, we obtain the sum of the residuals $S(\gamma)$, and repeat this procedure for a subset of the threshold variable FIN. Finally, we select as threshold γ the value that $\hat{\gamma} = \text{argmin}(\gamma)$ for the subset analyzed.

Caner and Hansen (2004) define the 95% confidence interval of the threshold value as:

$$\Gamma = \{\gamma : LR(\gamma) \leq C(\alpha)\}$$

where $C(\alpha)$ is the 95th percentile of the likelihood ratio statistic $LR(\gamma)$ asymptotically distributed. Once $\hat{\gamma}$ is calculated, the regression coefficients can be estimated using GMM.

5. Results

Table 2 reports the results of estimating equation (1) using private credit provided by banks (CB) as a financial development indicator, and three types of institutional investors. The results are also presented for industrialized and developing economies.

The result of the empirical relationship between private sector credit and growth shows a significant difference in the threshold according to the development of the economies. For the private sector credit, developing economies report a threshold of 28.11%, 10.47%, and 19.48% of the GDP, when we consider mutual funds, insurance companies, and pension funds, respectively, as the institutional investors. Industrialized economies report higher threshold values, a result that is consistent with the financial literature (Law & Singh, 2014). The thresholds are 105.4%, 105.14%, and 107.67% of the GDP considering mutual funds, insurance companies, and pension funds as institutional investors, respectively. After establishing the threshold existence, we analyzed the two regime-dependent finance coefficients. The results show that the private sector credit has a negative and statistically significant effect on economic growth if it is less than the threshold value for industrialized and developing economies (except in the case of developing economies when we control for insurance companies as institutional investors). Also, we report a positive and statistically significant effect of private sector credit on economic growth in both developing economies (pension funds as the institutional investor) and industrialized (all three types of institutional investors) economies. Our results differ from some studies (Arcand et al., 2015; Cecchetti & Kharroubi, 2012; De Gregorio & Guidotti, 1995; Law & Singh, 2014) that show a positive effect of private sector credit on economic growth for values below the threshold, and positive effect above the threshold. Our results are consistent with some other studies that report a higher impact of finance on economic growth according to the income level in economies (Deidda & Fattouh, 2002; Henderson, Papageorgiou, & Parmeter, 2013; Rioja & Valev, 2004). Hung (2009) argues that financial development directed toward investment activities promotes growth, but consumption loans move in the opposite direction". Thus, we argue that institutional investors in economies try to allocate resources to productive activities, and also reinforce the depth of the banks by providing long-term capital resources to finance firms

Table 2
Dynamic panel threshold estimations. Credit Bank (as % of GDP) thresholds and growth.

	Developing countries			Industrialized countries		
	Mutual Funds (MF)	Insurance Co-(IC)	Pension Funds (PF)	Mutual Funds (MF)	Insurance Co-(IC)	Pension Funds (PF)
Gamma						
Threshold estimates	28.106	10.470	19.480	105.398	105.135	107.677
95% confidence interval	[16.34–31.62]	[10.41–31.88]	[18.99–32.33]	[45.38–112.72]	[39.64–110.64]	[80.43–110.64]
$\hat{\beta}_1$	−0.419 *** (0.157)	0.312 (0.454)	−0.714 ** (0.360)	−0.058 ** (0.027)	−0.039 *** (0.013)	−0.076 * (0.041)
$\hat{\beta}_2$	5.119 (3.272)	0.753 (3.359)	9.838 * (5.905)	6.917 ** (2.708)	3.798 *** (1.396)	7.763 ** (3.572)
$\hat{\delta}_1$	−0.116 *** (0.042)	−0.077 *** (0.027)	−0.107 *** (0.023)	0.001 (0.008)	−0.008 (0.008)	−0.013 (0.010)
Impact of covariates						
Initial income	−2.631 (7.966)	−8.870 ** (4.483)	−3.142 (4.574)	−7.725 (11.057)	−12.322 * (7.246)	−21.212 (14.057)
Government expenditure	−0.374 (0.259)	−0.249 ** (0.101)	−0.256 (0.156)	−0.289 * (0.162)	−0.315 ** (0.149)	−0.298 ** (0.152)
Population	−3.488 *** (0.725)	−1.161 *** (0.295)	−1.780 *** (0.305)	−1.005 *** (0.389)	−1.054 *** (0.389)	−0.801 ** (0.339)
Gross capital formation	0.406 *** (0.106)	0.249 ** (0.064)	0.398 ** (0.049)	0.386 *** (0.052)	0.384 *** (0.051)	0.435 *** (0.058)
Inflation	−0.078 ** (0.035)	−0.049 ** (0.020)	−0.008 (0.034)	−0.033 (0.100)	−0.031 (0.062)	−0.419 *** (0.144)
Openness	0.023 (0.021)	0.024 ** (0.012)	0.030 ** (0.013)	0.031 (0.027)	0.030 * (0.016)	0.039 * (0.021)
Institutional (MF/IC/PF)	0.002 (0.012)	0.011 (0.034)	−0.009 (0.033)	0.000 (0.005)	0.037 *** (0.014)	0.046 * (0.024)
Observations	98	263	123	142	144	130
N (countries)	24	107	31	31	30	32

Note: See Table A1 for variable definitions.

*, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

(especially insurance companies that provide annuities and pension funds).

The other control variables are consistent with the theory regarding their impacts on economic growth for both industrialized and developing economies. The coefficients of initial income, government expenditure, and inflation are negative in all the specification models, and statistically significant in some. Government expenditure is a relevant determinant and has a negative impact on economic growth (Barro, 1990; Connolly & Li, 2016; Grier & Tullock, 1989; Law & Singh, 2014). Barro (1990) suggests that the effects of government expenditure on growth involve two channels, a negative effect of taxation and a positive effect of public services. For higher values of government spending, taxation dominates the public services channel. Inflation distorts economic growth, and this evidence is consistent with the related economics literature (Kremer et al., 2013). Population reports a negative and statistically significant impact on economic growth as expected (consistent with Kremer et al., 2013). Gross capital formation has a positive and statistically significant effect on all the models. Openness is positive in all the specification models and statistically significant in some (consistent with Law & Singh, 2014). This effect of openness is caused by more competition and technological progress. Finally, gross capital formation affects growth by increasing the capacity of the production of goods and services at lower costs, which means high productivity, and therefore, higher economic growth.

The use of domestic credit to the private sector as an alternative proxy of financial development is shown in Table 3. The threshold values are 26.76%, 10.96%, and 20.42% of the GDP, considering mutual funds, insurance companies, and pension funds as the institutional investors for developing economies, respectively. These thresholds are very similar in comparison with the use of bank credits as a proxy of financial development. Now, the threshold values are 60.17%, 60.17%, and 106.82% of the GDP considering mutual funds, insurance companies, and pension funds as the institutional investors for industrialized economies, respectively. The threshold values are consistently higher for industrialized economies in comparison with those for developing economies. Countries with domestic credit below (above) the threshold experience decreased (increased) economic growth. These results are consistent with those obtained by using bank credits as a proxy of financial development. Institutional investors, such as insurance companies and pension funds, play a positive role in the economic growth of only industrialized countries. The remaining control variables are consistent with the theory regarding their impact on economic growth for both industrialized and developing economies.

6. Conclusions

This research provides new evidence on the nonlinear relationship between finance and economic growth considering three types of institutional investors, in addition to the normal control variables. The results are consistent for the two measures of finance, the private credit provided by banks and the domestic credit to the private sector. To develop our analysis, we follow Kremer et al. (2013) based on the contributions of Hansen (1999) and Caner and Hansen (2004).

Using the dynamic panel threshold model, we find two regime-independent effects for the finance variables (bank credit to the

Table 3
Dynamic panel threshold estimations. Domestic private credit (as % of GDP) thresholds and growth.

	Developing countries			Industrialized countries		
	Mutual Funds (MF)	Insurance Co-(IC)	Pension Funds (PF)	Mutual Funds (MF)	Insurance Co-(IC)	Pension Funds (PF)
Gamma						
Threshold estimates	26.76	10.96	20.42	60.17	60.17	106.82
95% confidence interval	[16.44–31.49]	[10.48–31.86]	[20.42–31.49]	[45.57–127.41]	[39.70–125.54]	[51.17–125.57]
$\hat{\beta}_1$	−0.481 *** (0.184)	0.245 (0.364)	−0.717 * (0.384)	−0.112 *** (0.043)	−0.092 *** (0.034)	−0.069 ** (0.033)
$\hat{\beta}_2$	6.796 ** (3.440)	1.340 (3.093)	10.691 * (6.420)	4.346 * (2.436)	2.553 (1.621)	7.327 *** (2.800)
$\hat{\delta}_1$	−0.109 ** (0.045)	−0.080 *** (0.027)	−0.094 *** (0.022)	0.021 * (0.011)	−0.024 ** (0.010)	−0.012 (0.010)
Impact of covariates						
Initial income	−0.012 (8.779)	−7.821 * (4.556)	−3.026 (4.888)	−13.710 (9.705)	−15.330 ** (7.704)	−22.089 ** (10.990)
Government expenditure	−0.258 (0.272)	−0.226 ** (0.103)	−0.220 (0.181)	−0.209 (0.136)	−0.214 (0.140)	−0.287 ** (0.139)
Population	−3.150 *** (0.851)	−1.197 *** (0.299)	−1.767 *** (0.339)	−0.696 * (0.362)	−0.841 ** (0.391)	−0.940 *** (0.338)
Gross capital formation	0.384 *** (0.107)	0.261 *** (0.064)	0.398 *** (0.051)	0.417 *** (0.058)	0.408 *** (0.063)	0.464 *** (0.059)
Inflation	−0.076 ** (0.036)	−0.050 *** (0.019)	−0.028 (0.038)	−0.090 (0.097)	−0.072 (0.068)	−0.474 *** (0.107)
Openness	0.025 (0.022)	0.024 ** (0.012)	0.030 ** (0.014)	0.061 *** (0.021)	0.050 *** (0.016)	0.042 ** (0.018)
Institutional (MF/IC/PF)	0.000 (0.013)	0.026 (0.037)	−0.004 (0.034)	−0.001 (0.006)	0.032 ** (0.015)	0.056 *** (0.018)
Observations	98	263	123	142	144	130
N (countries)	24	107	31	31	30	32

Note: See Table A1 for variable definitions.

*, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

private sector or domestic credit to the private sector). The threshold for finance varies and is lower for developing economies. There is no consensus about the impact of finance on economic growth. Our results support the evidence that the impact of finance is positive and higher for industrialized economies.

Institutional investors have a positive effect on economic growth in the GDP per capita of industrialized economies. This finding suggests that policy-makers should provide good regulations and incentives for them.

The identification of country- or region-specific thresholds in the finance–growth nexus might provide more information and could be explored in future research.

Appendix

Table A1

List of variables.

Variable	Definition	Source
Bank credit to private sector	Three-year average of domestic credit to private sector by banks (% of GDP)	World Development Indicators (WDI), World Bank
Domestic credit to private sector	Three-year average of domestic credit to private sector (% of GDP)	WDI, World Bank
Economic growth	Three-year average of the annual growth rate of real GDP per capita	WDI, World Bank
Government expenditure	Three-year average of general government final consumption expenditure (% of GDP)	WDI, World Bank
Gross capital formation	Three-year average of gross capital formation (% of GDP)	WDI, World Bank
Inflation	Consumer Price Index (IPC)	WDI, World Bank
Initial income	Three-year average GDP per capita at (t-1) (in constant 2010 US\$)	WDI, World Bank
Insurance companies	Three-year average of insurance company assets to GDP (%)	Nonbanking financial database, World Bank
Mutual funds	Three-year average of mutual fund assets to GDP (%)	Nonbanking financial database, World Bank
Openness	Three-year average of the sum of exportations and importations (% of GDP)	WDI, World Bank
Pension funds	Three-year average of pension fund assets to GDP (%)	Nonbanking financial database, World Bank
Population	Three-year average of the annual growth rate of population	WDI, World Bank

Table A2

Industrialized and developing economies.

Industrialized economies (32): Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea Rep., Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States.
Developing economies (84): Algeria, Argentina, Armenia, The Bahamas, Bahrain, Bangladesh, Barbados, Benin, Bolivia, Botswana, Brazil, Brunei Darussalam, Bulgaria, Burkina Faso, Cabo Verde, Cambodia, Cameroon, Chad, China, Colombia, Dem. Rep Congo, Rep.Congo, Croatia, Cyprus, Dominican Republic, Ecuador, Egypt Arab Rep., El Salvador, Fiji, Gabon, Georgia, Ghana, Guatemala, Guyana, Honduras, Hong Kong SAR, China, India, Jamaica, Kazakhstan, Kenya, Kuwait, Latvia, Lithuania, Macedonia FYR, Madagascar, Malawi, Malaysia, Mali, Malta, Mauritius, Mexico, Moldova, Mongolia, Mozambique, Namibia, Nepal, Nicaragua, Niger, Nigeria, Oman, Panama, Paraguay, Peru, Philippines, Qatar, Romania, Saudi Arabia, Senegal, Serbia, Singapore, South Africa, Sri Lanka, Sudan, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkey, Uganda, Ukraine, Uruguay, Venezuela, Vietnam.

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