

Pension: It's Impact on the World Economy

Professor Jack Lachman

Professor, Department of Accountancy,
Brooklyn College –City University of New York.

Abstract

Nations of the world feel an obligation and responsibility to plan for and enable financial security for its elderly citizens and retirees. This is a lofty goal, and its objective is not easily attainable due to new economic realities. Factors such as recessions, an increasingly longer life span resulting in a large aging population which results in the need to seek additional sources of funding, and low returns on pension fund investments, will be discussed. The paper also analyzes the various contemporary global pension systems structures as well as the performance outlook of these systems. While stating the necessary need for reform, the paper also identifies some proposed solutions to achieve this reform. Among the solutions discussed are, long term investments in infrastructure projects, increasing employment and investment in green growth projects to address the fiscal unpredictability in today's global, fluctuating economy.

Key Words: *Global Pensions Systems, Defined Benefit Plans, Funding Sustainability, Pension Pillars, Aging Population, Pension Schemes*

1. Introduction

Every nation considers it a primary obligation to help plan for the senior years of its citizens. This goal of providing for the aging population is a universal and strategic objective for all nations, regardless of their level of economic security and development. Thus, developing nations in Africa, developed nations in Western Europe, North America and Asia, countries transitioning from communism to capitalism, or countries already with developed pension systems, have the one common goal of creating a pension scheme, which will bring financial security for its citizens and retirees. (Barr & Diamond, 2010; Dorfman & Palacios, 2012). However, this paper will show that this objective is not always easily achieved.

Interestingly, while the developing nations in Africa, Asia, the Middle East, the EEC and Latin America are struggling to enhance the adequacy and penetration levels of their pension systems, the systems of the industrialized world are being threatened by longevity, low birth rates, unending fiscal deficits, public debt problems and bankruptcies. They have experienced negative or low returns on pension fund investments due to underperformance of equities and low returns on bonds, which are attributed to prevailing low interest rates as well as high unemployment rates (Amenc, Martellini, & Sender, 2009). All of these factors had adverse effects on the capacity of pension plans to meet their contractual objectives and can be traced back to the economic recession which began in 2008. The Defined Benefits (DB) or Pay-As-You-Go (PAYGs) plans are affected by a decline in budgetary support and pension

contributions. Similarly, the funded Defined Contribution (DC) plans have also been affected by a significant drop in asset values, and low returns on time deposits and bonds (Antolin, Schich, & Yermo, 2011).

The increasing lifespan of humankind and the severity of the afore-mentioned economic problems have prompted governments and employers to consider restructuring the pension system. The reform agenda has focused on adjusting the benefits and shifting from DB plans to DC or Hybrid pension plans (Barr; 2002). That notwithstanding, it is important to note that the sustainability of a pension system is determined by the design of the governance structure. Thus, depending on a country's capital markets structure and development priorities, pension funds can be invested in infrastructure financing, equity and debt markets, bank deposits, real estate or joint venture projects both in the local and international markets. According to Keith Brainard, Research Director at National Association of State Retirement Administrators (NASRA 2005), pension funds provide a long-term source of capital and also contribute significantly to the financial stability and liquidity of both the money and capital markets.

Admittedly, such long-term capital is most beneficial to the economy. Other forms of financing are:

1. Procyclical form of capital – This is a reliable source of financing for long investment projects.
2. Engaged Capital – This applies when the fund managers are involved in the management of on-going projects, which enhances the viability of such a project until asset maturity.
3. Productive Capital – This type of capital provides long-term financing for infrastructure projects, pension funds support, sustains economic growth by creating jobs, and availing reliable and affordable capital (Croze, Stewart, & Yermo 2011). To fully exploit the benefits of long-term financing that is offered, we need to transform the investment culture. This cannot be left to the free market mechanisms, but it can only be realized through implementation of transformational regulatory, educational and governance policy initiatives by government and pension funds.

2. Discussion

2.1 Taxonomy and the Organizational Frameworks of a Country's Pension Systems

While most governments agree in principle on the key objectives (i.e. consumption smoothing, insurance, poverty relief & income redistribution) and the need for multifaceted approaches to the administrative structure of any pension system, many countries have in operational terms, differed on the level of insurance and adequacy/generosity of their respective public or private pension systems. As a remedy to operational disparity, the Organization for Economic Co-Operation and Development (OECD) countries, World Bank and International Labour Organization (ILO) have designed an ideal pension taxonomy that should be adopted by Governments (Kawinski 2009). In 2005 the World Bank recommended a five-pillar framework as the most desirable guideline for developing public pension plans for both the industrialized and developing countries (Holzmann, Hinz, & Dorfman, 2008,2012). However, it is important to note that specific elements of every pillar must be tailored to a country's level of development, social security priorities and the nation's fiscal capacity. The above referred to pension models are described as follows:

2.2 Zero Pillar

This is a non-contributory pension scheme, fully financed by the government that disburses demo-grants or social pensions, solely to alleviate poverty. It offers minimal protection to low level income earners or persons who marginally participated in the structured economy. The scope, eligibility and viability of this

scheme depends upon the availability of budgetary resources, the needs of competing vulnerable groups (e.g. children's educational and nutritional needs against the provision of pension benefits to aged persons), and the existence of complimentary benefits within the wide national pension scheme. In the European and Central Asia (ECA) region this plan is offered by Kazakhstan and Kosovo. They do not operate first pillar pension schemes; rather they pay flat pensions to the elderly from their fiscal budgets on a needs basis (World Bank, 2009). However countries like Namibia, Brunei, Kiribati, Mexico City, and Nepal opted to implement zero pillar pension plans on the basis of "citizenship, residence and age" and not on a means tested basis (Pallares-Miralles, Romero, & Whitehouse, 2012).

2.3 First Pillar

This is a mandatory defined benefits pension scheme with contributions linked to employment earnings. Its objective is to replace a portion of pre-retirement income that is typically financed under the Pay-As-You-Go (PAYG) arrangement. This pension scheme addresses risks emanating from a person's lack of foresight or lack of understanding on how to manage financial markets risks and low earnings. It also ameliorates the adverse effects of lifecycle uncertainties. A majority (28/30) of countries in the ECA region have adopted First Pillar plans with limited variations. It has been applied in Lithuania (in addition to a flat benefit for all scheme members); Bosnia-Herzegovina (based on wage history); Georgia (pays almost flat benefits due to a weak revenue base with a little differentiation on account of past salaries); Croatia, Romania, Serbia, Montenegro, and Slovak Republic (adopted a PAYG variant known as 'point system'); Russia, Poland, Kyrgyz Republic and Latvia (adopted another PAYG variant referred to as 'notional accounts' system) (World Bank 2009). In Australia the Zero Pillar retirement plan is often referred to as the Government's Means-Tested Age Pension and it was first introduced in 1908. It pays basic pension to persons with an income or assets value below a specified threshold. Singles and couples earn 28 percent and 41 percent of a male's average salary respectively. However, such benefits can either be reduced or eliminated subject to income or asset value variations (Agnew, 2013).

2.4 Second Pillar

This is a mandatory and fully funded (e.g. US's 401 (k)-type) individual saving accounts or occupational (i.e. DC) pension schemes with flexible design elements. The accumulated contributions and interest earnings are used to pay for the pension or to provide for annuities to the account holder upon retirement. Additionally, the account holder has the option of selecting a portfolio of assets. Ultimately, it can be funded on a Pay-As-You-Go or capital funding basis. DC plans are designed to create a link between contributions, asset performance and the accruing benefits. It legalized the enforcement of property rights, and supports the development of the country's money and capital markets. However, it should be noted that compared to DB plans, DC plans are more costly to maintain and are prone to financial and longevity risks. In the ECA region, about thirteen of the thirty countries (e.g. Poland, Kazakhstan, Russia, Estonia, Kosovo and Hungary) have implemented this plan (World Bank, 2009).

2.5 Third Pillar

These are voluntary pension schemes that are flexible and discretionary in structure. They comprise facets of personal or occupational plans. They may be arranged as partially or fully funded DB or DC pension schemes. They can be executed for a retirement savings account and may also include disability, healthcare and life insurance components. Although Third Pillar pension schemes cover more or less similar risks as do Second Pillar plans, they nonetheless provide for the inherent rigidities in the other pension schemes. They are suitable for self-employed or employed persons in need of an extra-pension

scheme and they can also take advantage of tax incentives. In the Netherlands, Third Pillar pension's plans are strictly regulated by the government, through the Dutch Central Bank and the Dutch Authority for the Financial Markets.

2.6 Fourth Pillar

This is a non-financial (i.e. at least as far as the pensioner is concerned) plan at the far end of a multipillar pension taxonomy. It entails access to informal communal or extended family support, social programs by NGOs (e.g. provision of healthcare and homes older persons etc.), and financial or non-financial assets (e.g. home ownership, reverse mortgages etc.). The availability of such non-contributory support to the aged member of the society has a vital bearing on benefits, and eligibility requirements for the other high order pension pillars (Hinz, Egilmezler, & Biletsky, 2008).

The application of the various elements of the multipillar model is justified on the basis that using a diversified pension system increases its efficiency and effectiveness in terms of the ability to manage demographic, political, economic risks, contributory capacity, and investment opportunities. This is all aimed at ensuring that there is reliable revenue stream to finance future pension expenditures. Additionally, the multi pillar taxonomy enhances the entry flexibility and widens coverage to target populations. For example, while the Zero Pillar social pension plan is intended for the indigent or to fill coverage gaps arising from the selective nature of first and second pillar plans, a well-structured and efficiently managed voluntary Third Pillar pension will definitely serve the interests of informal sector or seasonal form employment (Holzmann, Hinz, & Dorfman, 2008).

The suitability of a pension framework is measured on the basis of two criteria. The primary criterion, measures the framework's efficacy in relation to the level of benefits adequacy, contributions affordability, equity, sustainability, predictability and the robustness of the pension system. Secondary criterion, evaluates the system's efficiency on the basis of its ability to maintain stability in the labor market, mobilize savings, and facilitate the growth and development of money and capital markets (Holtzman, Hinz & Dorfman, 2008). It is important to note that pension system benefits become long term obligations. These deferred obligations can only be realized, if pension systems contribute to a country's economic growth and capital markets developments.

2.7 Performance Outlook and the Contemporary Pension Systems Structure

Globally, 2009 estimates, reported that savings held by Pension funds under various retirement saving plans, amounted to thirty trillion dollars. Amenc, Martellini, & Sender, (2009) noted that comparatively, this is more than 150% of the total capitalization of the world's stock markets. As key institutional investors (second only to Insurance and Mutual Funds), pension funds provide vital capital for new business projects, expansion, and public debt financing, and they enhance the liquidity and stability of financial markets. In the past decade, the role of pension funds as engines of economic growth and development has been jeopardized by investment risks due to the economic downturn, the 2008 financial crisis and the subsequent recession, which astonishingly is characterized by an unstable and slow recovery. According to the OECD, the 2008 economic crisis affected every country and pension systems, the hardest hit being private pension plans. It is estimated that in 2008, private pension funds lost about 23% (\$ 5.4 trillion) of their pre-crisis valuations. This was mainly due to the sharp drop in value of equity investments (Whitehouse, 2009).

The largest drop in the value of pension funds was recorded in Ireland, at 35%. The lowest drop was in Mexico, Czech Republic and Germany at 5.2%, 7.2%, and 8.5% respectively. The following countries

also reported significant negative returns on their pension funds' assets: Australia (-26.7%), the US (-26.2%), Iceland (-22.9%), Canada (-21.4%), Japan (-20.1%), United Kingdom (-17.4%), Netherlands (-16.9%), and Switzerland (-12.6%). The average loss in value of assets across the 23 OECD member countries was placed at 23%. This outcome was inevitable, since these pension funds had been heavily invested in the stock markets. In October 2008, the stock indexes dropped by nearly 50% of their pre-crisis levels across the industrialized world (Yermo & Salou, 2008). The scenario was worse in countries where pension funds had allocated more than 33% of their investment portfolios to the stock market. Pension funds in Ireland had invested about 66% of their assets in equities, thus the corresponding sharp drop in their asset values at the onset of the financial crisis. Other countries in this category include the USA, UK and Australia (Barr, 2002).

Additionally, the financial crisis was characterized by an unprecedented increase in unemployment levels, upward of 10%, and a drop in business profitability, attributed to a significant decline in consumption and investment expenditures. As a remedy, governments across the world implemented economic stimuli packages, solely financed through increased public debt, whose primary objective was to spur confidence in the economy, to stop the recession from deteriorating into an economic tailspin and to jump start the economic recovery.

Admittedly, the economic crisis adversely affected both the public and private segments of the pensions industry, and equally affected the DB and DC pension plans (Holzmann, 2012). It negatively impacted the funding side because the high levels of unemployment resulted in a reduction of contributions and affordability constraints resulting in an increase in pension plan suspension, curtailment and termination. Conversely, the underperformance of financial markets reduced the capacity of pension funds to settle claims or to even sustain the pension plan benefits (European Commission, 2012). Notably, as of October, 2008, the funding levels for DB plans declined by an average of 10%, thus creating an estimated funding gap of two trillion dollars. In order to resolve the looming insolvency, the pension systems had to reduce benefits and/or increase contributions in order to sustain their contractual obligations. In addition, due to negative or low investment returns, holders of maturing DC plans were forced to incur losses and risk a reduction in benefits upon retirement. This problem is magnified in the pension markets of the US, UK and Australia since they have high percentages of DC pension plans. In addition, Latin American countries have recently started DC plans. However, their risk is not as severe as in the case of the OECD countries, because their plans are relatively young. In addition, they are likely to benefit from economic recovery's high returns in the long-term (Yermo & Salou 2008).

Despite the negative short-term outlook, it is evident that the world economy and the pensions market have had a significant recovery since the recession in 2008. It is important to remain cognizant of the fact that pension funds are by design long-term investments and therefore their performance should be evaluated as such. The equity downturn and the 2008 financial crisis may have dented the reliability and stability of pension funds as investment instruments, but a long term analysis of the sector's performance paints an encouraging picture. The pension industry's performance over the ten years prior to October 2008, recorded a positive growth in terms of its share of GDP, asset capitalization, and rate of return on investments. Contrary to the negative outlook in 2008, the rate of return on pension fund investments over a period of 10 years prior to October, 2008, shows the US with 6.1%, Sweden with 8.5%, and UK 6.1%. It is therefore not accurate for business and policy analysts to entirely discount the pension funds role in economy and its ability to sustain and generate benefits and annuities on the basis of short-run economic fluctuations (Yermo & Salou , 2008).

In a complementary measurement, the OECD holds that due to the modest economic recovery between the 2009-2012 the “asset-to-GDP ratio for pension funds increased from 67.3% of GDP in 2001, to 72.4% of GDP in 2011” (Salou & Yermo, 2012). The highest asset-to-GDP ratio among the OECD countries was recorded by the Netherlands at 138% and the lowest ratio was recorded by Greece at 0% (for details, see Appendix). The 2011 outcome for a short-list of other OECD member countries is as follows: Iceland (128.7%), Switzerland (110.8%), Australia (92.8%), UK (88.2%), the US (70.5%), Canada (65.7%), and Japan (25.1%); and France (0.2%), Turkey (2.2%), Korea (4.5%), Italy (4.9%), Germany (5.5%), Spain (7.8%), Poland (15.0%), and New Zealand (15.8%). According to the OECD guidelines, for a country to be considered a *mature* pension funds market it has to achieve a 20% asset-to-GDP ratio. For non-OECD countries, the highest asset-to-GDP ratio was achieved by Hong Kong (China) at 32.5% and the lowest asset-to-GDP ratio (as per the available data) was recorded by Albania at 0.0 percent. The following is the outlook for other non-OECD countries: Columbia (17.0%), Peru (16.9%), Brazil (13.8%), and Cost Rica (8.7%); and Ukraine (0.1%), Romania (1.2%), Indonesia (1.8%), Russia (3.2%) and Thailand (5.9%). The low prevalence of asset-to-GDP ratios in most non-OECD countries’ pension markets can be attributed to low pension coverage and recent adoption of DC plans. Despite the underdeveloped status, the level of pension fund assets in non-OECD countries is currently growing at a faster rate than that recorded by mature markets in OECD countries (Impavido & Tower, 2009; Salou & Yermo, 2008).

While the preceding section exhibits the importance of pension schemes to the economy by reflecting on the market value of invested assets relative to a country’s GDP (the greater the asset/GDP ratio the higher the plan’s adequacy and sustainability rating) it is also important to understand the changing dynamics of the industry. The OECD posits, that though still ranked first, the USA’s pension funds market dominance decreased by 14.1% , from 67.3% in 2001, to 53.2% value of pension fund assets in 2011 (Salou & Yermo, 2012). The shift in market share can be attributed to faster growth and the ability to attract foreign capital. Using the 2011 valuations, the distribution of OECD pension fund assets is summarized below (in trillion dollars): UK – 2.1 (10.7%), Japan – 1.5 (7.4%), Australia – 1.3 (6.7%), Netherlands – 1.2 (5.8%), Canada – 1.1 (5.6%), Switzerland – 0.7 (3.5%), and other 19 OECD countries – 1.4 (7.0%). In another report, it is estimated that in 2011 the value of OECD’s private pension market stood at \$29.5 trillion (i.e. pension funds – \$20.1 trillion (68.4%), investment banks sponsored retirement products – \$5.4 trillion (18.4%), pension insurance plans – \$3.7 trillion (12.4%), and reserves of \$0.2 trillion (0.8%). Denmark recorded the highest private pension assets-to-GDP ratio at 190%; followed by Iceland (137%), Canada (129%), and the US (117%).

3. Findings

3.1 Investment Opportunities and Instruments to the Pension Systems

At the height of the recession in 2008, the annual average rate of return on pension fund assets among the OECD countries was - 17.0%. Nevertheless, due to the global economic recovery, stability, improved business confidence and competitiveness in the international financial markets, the pension funds market yielded an improved negative rate of returns on investments of -1.7% in 2011 (Salou & Yermo, 2012). Denmark achieved the highest rate of returns among the OECD countries of 12.1% and Turkey the lowest-10.8% respectively. The superb performance by Denmark’s pension fund assets was catalyzed by its buoyant bond market and interest rate hedging operations (Dutch Association of Industry-Wide Pension Funds 2010). Whereas a significant number of countries returned positive results (e.g.

Netherlands – [8.2%], Australia – [4.1%], Iceland – [2.3%], Canada – [1.8%], and Switzerland – [0.6%]) a few, including the major economies still posted negative outcomes (e.g. Poland – [-9.1%], Chile – [6.0%], Greece – [-5.6%], Finland – [-4.4%], Japan – [-3.6%], Italy – [-2.8%], the US – [-2.7%], and UK – [-2.5%], and Spain [-2.2%]), this result painted a positive scenario as opposed to the uncertainty and pessimism of the 2008 financial crisis and recession.

The pension schemes should take advantage of these gains, by strategically realigning their investment portfolio, and reforming their operational governance structures. These actions will enable the pension plans to cover their financing gap, and sustainability.

4. Conclusions

Pension funds should play a leading role in financing infrastructure, green energy, and supporting the growth of entrepreneurship in promising new projects. The fact that there is a correlation between low asset-to-GDP ratio and the low rate of return on investments is not merely coincidental, but is suggestive of the future growth opportunities available in financing business expansion, research and development and expansion of infrastructure projects. The pension funds should invest directly, offer long-term financing and provide management advisory services. These actions should increase economic growth and employment.

In an OECD Report entitled *Infrastructure to 2030* (Volume 1 & 2), it is noted that the world's infrastructure budgetary needs until 2030 are estimated at \$50 trillion. In addition, the International Energy Agency predicts that in order to adapt to the negative effects of climate change between now and 2050, the world will be obligated to spend an additional \$50 trillion. It also suffices to say, that the economic recovery in OECD countries and the continued growth in key non-OECD countries (e.g. China, India, South Africa, Kenya, Indonesia, Brazil etc.) presents a great opportunity for both *Greenfield* and *Brownfield* enterprise and infrastructure development projects to increase the economies productive capacity (Della Croce , 2011). Among the infrastructure projects suggested that should be initiated and financed by pension funds are:

- Transport projects (e.g. ports, roads, bridges, railway systems etc.)
- Utilities (e.g. electricity distribution networks, warehousing, power generation, water and sewerage systems etc.)
- Communication projects (e.g. telecommunication networks, satellites, towers etc.)
- Social/real estate projects (e.g. schools, hospitals, stadiums, malls etc.).

It is important to note that most of these projects are technology intensive, requiring long-term commitments and large expenditures. Characterized by prolonged maturity periods, they take longer than an ordinary business to realize profits, and are prone to uncertainties and risks. Consequently, it may be difficult to finance such projects through already constrained fiscal budgets or through the traditional banking system. Therefore, such an infrastructure gap can only be adequately funded through listed equity, fixed income securities , infrastructure bonds, debt financing or *alternative* asset classes, such as private equity, dedicated infrastructure funds, equity funds, pension funds, mutual funds, insurance companies, and the emerging economies sovereign wealth funds. As of the end of 2009 it was estimated that key institutional investors in the OECD countries had an asset base of sixty five trillion US dollars. These funds should finance long-term projects with the capacity to sustain growth (OECD, 2012).

Achieving sustainable *Green Growth* is a key developmental goal and an important infrastructure component that can be an attractive investment opportunity for pension funds. It entails transitioning from polluting fossil fuels (i.e. coal & oil) to clean technologies, in order to realize low carbon, if not carbon free, and climate change resilient economies (Della Croce, Kaminker, & Stewart 2011). The cumulative expenditure on green investments necessary to achieve this economic transformation from 2012-2030 will cost an estimated \$40 trillion, or 2 % of the world's gross GDP per annum (OECD, 2012).

The prevailing low interest rates and the unstable economic prospects for the G20 countries recovering from the 2008 recession, has compelled pension funds to increasingly search for sizeable “*real assets classes which can deliver steady, preferably inflation-adjusted, income streams with a low correlation to the returns of other asset classes*” (Barr & Diamond, 2010). The following is an abridged list of institutional investor groups: IIGCC, Investor Network on Climate Risk, Investor Group on Climate Change, P8 Group, and Long-term Investors Group Denmark's ATP, Netherland's PGGM, California's CalSTRS, and CalPERS. These groups are already investing and implementing *green economy* initiatives (Della Crose, Kaminker, & Stewart, 2011).

As aforementioned, there are pension funds currently investing in green infrastructure directly. In addition, countries can issue green bonds, structure green instruments or establish green equity funds. Other institutions that offer investors an opportunity to contribute to the realization of a green economy are: the World Bank Green Bonds, European Investment Bank's Climate Awareness Bonds, Asia Development Bank's Clean Energy Bonds, US Government Green Bonds, and the UK Government's Green Deals Programme (OECD, 2012). The pension funds preference for green infrastructure assets is driven by the likelihood that these assets will yield stable and predictable cash flows. The projects lifespan can be up to 25 years. They “fit well with the long-term nature of pension fund's liabilities and can potentially deliver a ‘liquidity premium’”. Despite this impressive outlook, the OECD estimates that globally, less than 1% of the pension funds' assets are “*directly allocated to infrastructure investment, let alone to ‘green’ projects*” (OECD, 2012).

4.1 Reflections on Effects of the Recession and other Challenges on the Pensions Industry

In the past decade, the level of profitability and severity of investment risks in the pensions industry have been highlighted by the 2008 recession , as well as 2000-02 equity meltdown . The World Bank notes that the recent economic crisis affected all components of the pension system:

- Zero Pillar – This pillar is traditionally funded by taxes, thus a drop in GDP reduces the tax base and creates a financing gap.
- First Pillar – This pillar is funded by contributions from the employer and the employee, and from interest earnings.
- Second and Third Pillars – These pillars are funded by employer and employee contributions, voluntary premiums, and interest earnings. Thus a fall in equity prices and interest rates will definitely result in lower retirement payments and annuities.

As an alternative to these negative outcomes, the regulators and industry leaders were compelled to adjust their pension plan portfolios to shore up profitability and reduce uncertainty, by curtailing DB plans in favour of DC plans or adopting hybrid systems. The restructuring was intended to satisfy the following objectives: diversify funding mechanisms, strengthen the consumption smoothing function of the pension systems, and increase the level of risk-adjusted returns on pension premiums (Impavido, Lasagabaster, &

Garcia-Huitrón, 2010). The OECD estimates that between 2001 and 2011, the proportion of DB plus Hybrid plans against DC plans has been reduced from 69.7% to 65.0%. DB plans' assets shrank from 67.3% to 60.6% over the corresponding period. However, the DB system is standard in Germany, Switzerland, Finland and Norway. The DC system prevails in Chile, Czech Republic, Poland, Greece, Hungary, and Estonia (Salou & Yermo, 2012).

In another development, it is noted that population growth dynamics pose a serious risk to the sustainability of pension systems around the world, especially in Europe and China. The demographic crisis in the advanced economies is premised on the fact that while the life expectancy has been increasing from 68 years in 1955, to 80 years 2011, the fertility rate for women decreased from 2.8 children in 1950 to 1.7 children in 1990. (IMF 2004; Mujahid, Pannirselvam, & Doge, 2008). In China, the prevailing low fertility rates can be attributed to the one-child policy first implemented in 1979 (Zhang & Goza 2005). It is apparent that this has dramatically changed the population composition and the aging dependency ratio. Initially this ratio stood on four employed people for every retiree. It is projected that in the year 2060, there will be two employed for every retiree. This can result in a reduction in the economy's potential to create employment and growth in the capital markets (Holland Financial Centre, 2010).

The impact of the recession (e.g. the high public debt/GDP ratio), the demographic crisis, and the fact that research findings point to the likelihood of most DB plans being susceptible to fiscal deficits and unsustainability in the long-term (Holzmann, Hinz, & Dorfman, 2008), has necessitated the implementation of parametric (e.g. raising contributions rates, retirement age, reducing benefits etc.), systemic (e.g. shift to DC from DB plans), regulatory, and administrative pension reforms (Schwarz, & Karam, 2006). The aim of these reforms is to reduce the pension financing deficits and enhance the industry's competitiveness and transparency. The alternatives to these can only negate the pension systems core objectives. Going forward, the industry stands to gain, if it adopts pre-funding of pension systems. This can be achieved by developing efficient Public Pension Reserve Funds and/or fully-funded Private Pension Systems. In the long term, this will reduce fiscal deficits, and will enhance savings, diversification of investments, and financial markets development.

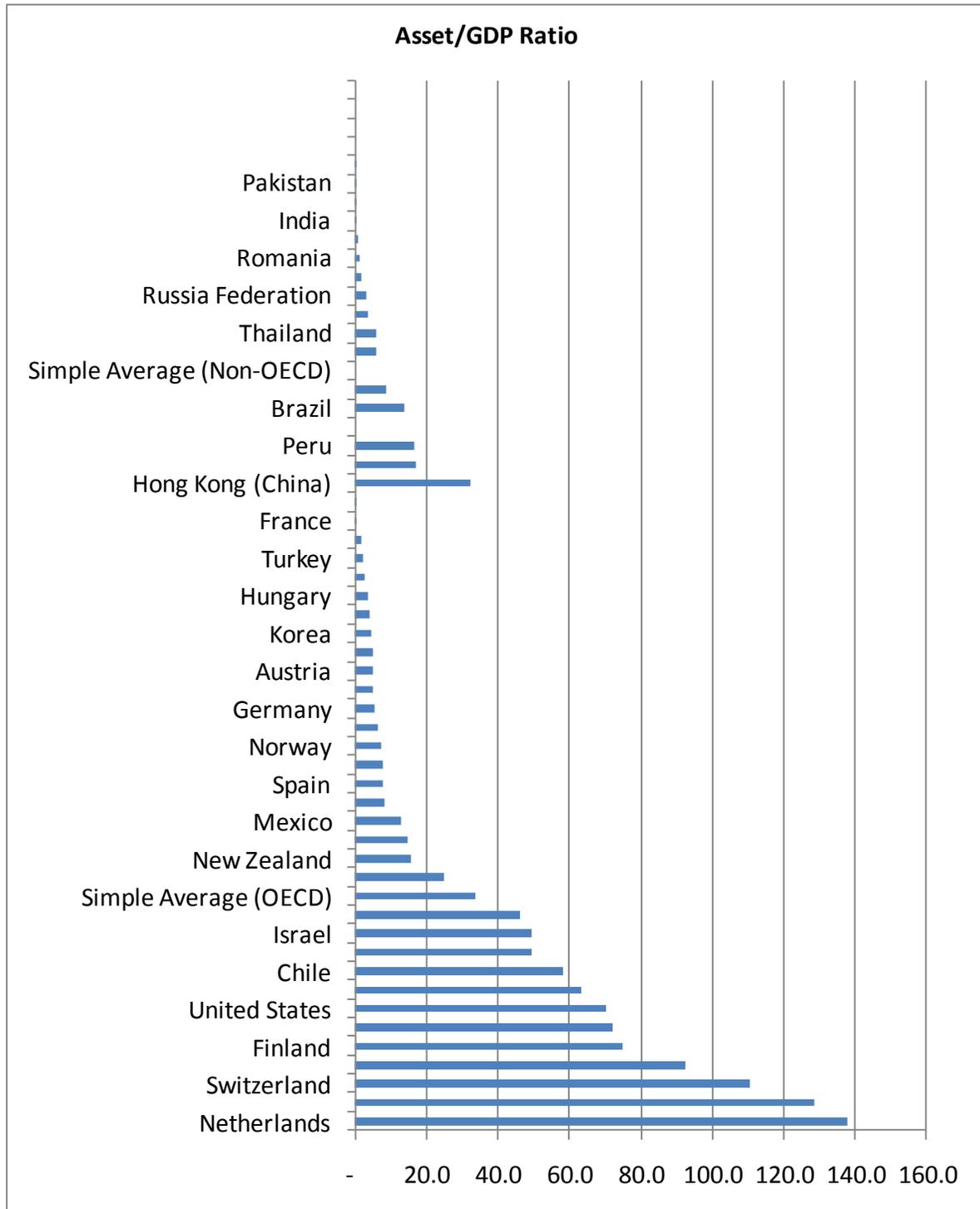


Figure 1: 2011 Pension Funds' Assets-to-GDP Ratio. Adapted from the OECD Global Pension Statistics (Salou & Yermo).

References

- Agnew, J. (2013). Australia's Retirement System: Strengths, Weaknesses, and Reforms. *Issue in Brief*,(13). Boston College: Center for Retirement Research.
- Amenc, N., Martellini, L. & Sender, S. (2009). *Impact of Regulations on the ALM of European Pension Funds*. EDHEC Risk and Asset Management.
- Antolin, P., Schich, S. & Yermo, J. (2011). The Economic Impact of Protracted Low Interest Rates on Pension Funds and Insurance Companies. *OECD Journal: Financial Markets* , 1, 1-20.
- Barr, N. (2002). The Pension Puzzle - Prerequisites and Policy Choices in Pension Design. *Economic Issues*, 29. Washington, D.C.: International Monetary Fund.
- Barr, N., & Diamond, P. (2010). *Pension Reforms in China: Issues, Options and Recommendations*. London School of Economics and Massachusetts Institute of Technology.
- Brainard, K. (2005). *The Economic Effects of Public Pensions*. National Association of State Retirement Administrators.
- Della Croce, R. (2011). Pension Funds Investment in Infrastructure. *OECD Working Papers on Finance, Insurance and Private Pensions*, 13. Paris: The Organization for Economic Co-Operation and Development Publishing.
- Della Croce, R., Kaminker, C. & Stewart, F. (2011). The Role of Pension Funds in Financing Green Growth Initiatives. *OECD Working Papers on Finance, Insurance and Private Pensions*, 10. Paris: The organization for Economic Co-Operation and Development Publishing, 2011.
- Della Croce, R., Stewart, F. & Yermo, J. (2011). Promoting Longer-Term Investment by Institutional Investors: Selected Issues and Policies. *OECD Journal: Financial Market Trends*, 1: 1-20.
- Dorfman, Mark, & Palacios, R. (2012). World Bank Support for Pensions and Social Security. A Background Paper for the World Bank 2012-2022 Social Protection and Labour Strategy. *Discussion Paper*, 1208. Washington, D.C.: The World Bank.
- European Commission. (2012). *An Agenda for Adequate, Safe and Sustainable Pensions*. Brussels: The European Commission, 2012.
- European Commission. (2010). European Economy – Progress and Key Challenges in the Delivery of Adequate and Sustainable Pensions in Europe. *Occasional Papers*, 71. [Brussels]: The European Commission.
- Hinz, R., Egelmeizer, M. & Biletsky, S. (2008). Pension Lending and Analytical Work at the World Bank: FY2002-2007. *SP Discussion Paper*, 0811. Washington, D.C.: Social Protection & Labour, The World Bank.
- Holland Financial Centre. (2010) *The Pension Challenge*. Holland Financial Centre.
- Holzmann, R. (2012). Global Pension Systems and Their Reform: Worldwide Drivers, Trends, and Challenges. *Discussion Paper*, 1213. Washington, D.C.: Social Protection & Labour.
- Holzmann,R., Hinz, R.P., & Dorfman, M. (2008). Pension Systems and Reform Conceptual Framework. *SP Discussion Paper*, 0824. Washington, D.C.: Social Protection & Labour, The World Bank.
- Impavido, G., Lasagabaster, E. & Garcia-Huitrón, M. (2010). *New Policies for Mandatory Defined Contribution Pensions. Industrial Organization Models and Investment Products*. Washington, D.C.: The World Bank.
- Impavido, G. & Tower,I. (2009). How the Financial Crisis Affects Pensions and Insurance and Why the Impacts Matter. *IMF Working Paper*, 151. Washington, D.C.: Monetary and Capital Markets Department, IMF.

- International Monetary Fund. (2004). *Global Financial Stability Report: Market Developments and Issues*. *World Economic and Financial Surveys*. Washington, D.C.: IMF.
- Karam, P., et al. (2011). *Costs of Aging. Beyond Retirees*. New York: IMF Insitute, IMF.
- Kawinski, M. *How to Present Performance of Pension Funds to the Future Pensioners*. Warsaw: Warsaw School of Economics.
- Mujahid, G., Pannirselvam, J. Brooks, D. (2008). *The Impact of Social Pensions: Perceptions of Asian Older Persons*. Bangkok: UNFPA.
- The Organization for Economic Co-Operation and Development. (2012). *G20/OECD Policy Note on Pension Fund Financing for Green Infrastructure and Initiatives*. Paris: The Organization for Economic Co-Operation and Development.
- Paralles-Miralles, M., Romero, C. & Whitehouse, E. (2012). International Patterns of Pension Provision II. A World Overview of Facts and Figures. *Discussion Paper*, 1211. Washington, D.C.: Social Protection & Labour, The World Bank.
- Salou, J., & Yermo, J. (2012). Pension Markets in Focus. *Issue*, 9. [Paris]: The Organization for Economic Co-Operation and Development.
- Schwarz, A. (2006). Pension System Reforms. *SP Discussion Paper*, 0608. Washington, D.C.: Social Protection, The World Bank, 2006.
- VB Dutch Association of Industry-Wide Pension Funds & Dutch Association of Company Pension Funds. (2010). *The Dutch Pension System. An Overview of the Key Aspects*. Den Haag: VB and OPF.
- Whitehouse, E. (2009). *Pensions and the Crisis. How should Retirement-Income Systems respond to Financial and Economic Pressures*. [Paris]: The Organization for Economic Co-Operation and Development (OECD).
- The World Bank. (2009). *Pensions in Crisis: Europe and Central Asia Regional Policy Note*. Washington, D.C.: Human Development Sector Unit, The World Bank.
- Yermo, J., & Salou, J.M. (Eds.). (2008). Pension Markets in Focus. *Issue*, 5. [Paris]: The Organization for Economic Co-Operation and Development (OECD), December 2008. Web. 5 May 2013.
- Zhang, Y., & Goza, F.W. (2005). Who Will Care for the Elderly in China? A Review of the Problems Caused by China's One Child Policy and their Potential Solutions. *Working Paper Series*, 05-07. Bowling Green State University: Center for Family and Demographic Research.