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Developing Coherent Pension Systems: Design Issues for Private Pension Supplements to NDC Schemes

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Abstract: This paper reviews the design of private pensions alongside a notional defined contribution (NDC) – or public – component. A mix of public and private pensions is the best way to deliver a strong combination of five core outcomes: coverage, adequacy, sustainability, efficiency, and security. Choices for market structure, benefit type, contributions, and investment strategy can be guided by their impact on these outcomes. The clarity of an NDC formula allows the joint distribution of public and private pensions to be modeled – which can be crucial for optimal investment strategies given, for example, the negative correlation between real per capita gross domestic product growth and equity markets over long periods. NDC payout formulas have broad applications where annuity markets are weak.

Key words: Pensions, Pension Funds, Retirement Income, Bond Market, Equity Markets

JEL codes: H55, G23, J26

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Abbreviations and Acronyms

DB	Defined Benefit
DC	Defined Contribution
FDC	Funded Defined Contribution
GDP	Gross Domestic Product
NDC	Notional Defined Contribution
PAYG	Pay-As-You-Go

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1. Introduction

This paper reviews the factors that should guide the design of private funded pensions to create a complete pension system alongside a notional defined contribution (NDC) component. It argues that a mix of public and private pensions is most effective to deliver the best combination of pension outcomes. Corner solutions that rely solely on public pensions (whether NDC or not) or just private pensions (whether defined benefit (DB), funded defined contribution (FDC), or a hybrid) have no obvious examples of sustainable success in either developed or developing countries. The design principles set out below are well-known in theory but are often not followed in practice. So, the paper aims to (re)state them succinctly to (re)establish some simple but powerful principles for use by NDC (and other) policy makers when designing private pensions to help complete the pension system.

The paper defines the different pension pillars and then sets out the criteria by which to judge success or failure of a pension system: coverage, adequacy, and sustainability alongside its efficiency and security. Evaluating the success of a system is difficult if no metrics of success exist against which to judge it (including the distribution of outcomes by income and gender). It then highlights the wide range of (overlapping) risks to which pension pillars are subject and different ways in which the “right” mix has been investigated. The next section considers the design of a private pension pillar across two dimensions. The first design question looks at the way in which private pensions will need to be delivered – using the concept of the pension value chain and market structure to highlight the key issues and options. A key part of the value chain is who provides recordkeeping and account administration. A well-functioning NDC pillar may already deliver administrative capacity that could be leveraged to improve recordkeeping and account administration in private pensions – particularly where it is based on a well-functioning tax collection system. Thus creating an NDC pillar may give scope for economies of scale across pension pillars.

The second set of design questions looks at the more “traditional” elements of benefit design, contribution levels, eligibility, and payout phase. In an ideal world, the future income to be delivered by a pension system would look at the joint distribution from the combined NDC and private pillar. NDC systems allow a clearer identification of potential outcomes in that they are (in theory) less prone to ad hoc adjustments and pre-election changes than traditional DB public pension pillars. The precise NDC rule may have important implications for optimal investment strategies in private pensions – something that governing bodies of pension funds and pension regulators should consider. For example, in many countries real per capita gross domestic product (GDP) growth (which can feature in NDC rules) is negatively correlated with the real growth of equity markets. So, an NDC rule linked to per capita GDP, sitting alongside a private pension pillar in which there are equity investments, may combine uncorrelated forms of risk. NDC payout formulas have potential use to provide an income until death in countries that will struggle to have deep and efficient traditional annuity markets. It is then important that design coherence flows to the regulatory and supervisory approach so that these can also focus on how best to achieve the long-run outcomes. Finally, a robust program management or “mission office” greatly assists the delivery of the reforms, so that great designs are not lost by poor implementation.

2. Using long-run pension outcomes to guide decision making on private pensions

2.1. Defining the different parts of a pension system

Before introducing the key outcomes, it is necessary to identify how NDC and private pensions can make up an overall pension system and highlight the risks to which different pension pillars are exposed. Public pension provision comes broadly in the form of “zero pillars” – poverty-alleviating payments paid out of government revenues that do not require contributions – and “first” pillars that are typically mandatory and can have the full range of benefit options, but are often DB. Many first pillars are pay-as-you-go (PAYG), whereby current contributions fund current pensions, but a number are at least partially funded.

Examples range from the CCSS in Costa Rica,¹ the Social Security and National Insurance Trust in Ghana, and Vietnam Social Security (VSS). Such arrangements are very rare in Europe, where many countries are very reliant on large PAYG public pillars with systems that are in great need of diversification (European Commission 2012). The NDC debate focuses on this “first pillar.” It introduces a mechanism that does not fund the benefits in advance, but aims to avoid the buildup of unsustainable DB promises by altering pensions in payment with changes in factors such as longevity (if politics do not intervene). Figure 2.1 describes the basic pillars and their associated risks.

Figure 2.1: Different pension pillars have different functions and face common and unique risks

Sources of retirement consumption	Risks affecting payout size
Zero Pillar: Poverty prevention	Fiscal, intergenerational, longevity
First Pillar: Public contributory – consumption-smoothing	Fiscal, intergenerational / political, longevity, labor market, GDP
Second Pillar: Mandatory private contributory DB, FDC, or a hybrid	Capital market (investment returns/costs), labor participation, longevity
Third Pillar: Private contributory DB, FDC, or a hybrid	Capital market: Investment/costs Labor market/individual myopia
Fourth Pillar: Financial assets	Economic growth, instability
Fourth Pillar: Family transfers	Family size/wealth/culture/location
Fourth Pillar: Housing/physical	Housing market, labor income
Labor income and own consumption	Labor market, agricultural market
Longevity and inflation risk are pervasive	

¹ CCSS = Caja Costarricense de Seguro Social.

Decisions on private pensions typically focus on the second and third pillars. Terminology varies globally; many European countries characterize the second pillar as employer-provided, and the third pillar as individual pensions. In the World Bank framework, the key dividing line is whether pensions are mandatory (second pillar) or voluntary (third pillar). In this framework, an employer could be involved in the second and/or third pillar. The line between mandatory and voluntary pensions is blurring with the use of autoenrollment – as introduced in the United Kingdom, New Zealand, and Turkey and under development in Ireland. A common feature across all private pensions is that they involve the investment of assets (abstracting from the case of book reserves, which are more of an anomaly than a practical choice for modern pension design). Section 3 outlines the pros and cons of how to design these arrangements, and provides some guidance for making the best choice in different contexts.²

2.2. Combining public and private pensions

Deciding on the “best” or “optimal” makeup of private pensions in combination with a given NDC (or other form) of public pension provision requires criteria against which to judge various options. A large literature exists on optimal pension design in terms of mixing PAYG or unfunded pension provision with a funded pension component (first pillar versus second and third pillars in the terminology above). A critical early paper (Aaron 1966) focused on how to decide whether to choose PAYG exclusively (when the natural rate of growth is above the rate of return on capital) or to choose funded pensions (when the natural rate of growth is below the rate of return on capital). Merton (1983) showed that a mix could be preferable as it allows wealth-constrained young workers with lots of human capital to share risks with higher-wealth older workers with little remaining human capital. Numerous

² However, the terminology can sometimes get in the way. Many of the issues identified in this paper in terms of good design for “private” pensions would apply equally to a “public” pension fund that was investing assets to meet either a DB liability or with an FDC structure. A country that had an NDC pillar plus a funded “public” pension plan such as a provident fund is still effectively bringing together notional and real assets to jointly provide retirement income. The only real difference is the institutional setup, where the choice of “public” or “private” should depend on which arrangements are likely to provide secure strong governance, scale, and expertise.

studies since have explored different reasons why a combination of PAYG and funded pensions would be optimal, but the weight for each might vary systematically between countries or vary for different reasons. These include: relaxing assumptions about certainty of knowledge about key parameters; investigating intergenerational risks; the availability of insurance for different risks; or refinements in modelling of the intergenerational welfare maximization problem being investigated (Gordon and Varian 1988; De Menil, Murtin, and Sheshinski 2006; Bohn 2009; Miles 2001; Knell 2010; Beetsma, Romp, and Vos 2013; Devolder and Melis 2015; De Menil et al. 2016).

A perhaps more intuitive way to make the case for public and private pensions is to review the experience of countries that have a single, or a very dominant, pillar. Overreliance on a public pillar will create issues with sustainability, particularly in the case of DB plans, as seen in the case of many (but not all) European countries. Overreliance on private pensions funded with contributions will fail to deliver good coverage of retirement income across the whole population. Chile in 1981 and Mexico in 1997 both shifted from an effectively wholly public to a wholly private system of pension provision. For both it was necessary to recreate core elements of public pensions to ensure sufficiently broad coverage of income in old age and to alleviate old-age poverty (Chile in reforms starting in 2008 and Mexico in a series of reforms starting with the “70 y Mas” reforms).³

As a practical guide to developing private pension pillars to accompany NDC (or indeed other public pension pillars), this paper uses five key outcomes – as set out in work on

³ A good global survey of the choices different countries have made is provided by International Patterns of Pension Provision II (Pallares-Miralles, Romero, and Whitehouse 2012), and, for a smaller set of countries, by the OECD’s Pensions At A Glance. International comparisons of saving for old age were developed recently by the “FINDEX” index and can be found in work by Demirguc-Kunt et al. (2015) and Demirguc-Kunt, Klapper, and Panos (2016). Recent in-depth regional reviews of history and current practice include: The Inverting Pyramid for Europe and Central Asia (Schwarz et al. 2014); Live Long and Prosper for East Asia Pacific (World Bank 2016); Pension Systems in Southeast Asia (Park 2012); Pensions at a Glance Latin America and Caribbean (OECD 2013); Pension Patterns and Challenges in Sub Saharan Africa (Dorfman 2015); and for the 22 members of the Arab League a review of Trends and Policy Reforms (Price et al. 2017). For longevity comparisons, see the UN’s World Population Prospects (UNDESA 2015), and for long-run international comparisons of asset returns in 22 countries since 1900, see the London Business School, Credit Suisse Global Investment Year Book (Dimson, Marsh, and Staunton 2016).

Outcomes Based Assessments (Price, Ashcroft, and Hafeman 2016) that builds on earlier work such as International Patterns of Pension Provision II (Pallares-Miralles, Romero, and Whitehouse 2012) and Holzmann and Hinz (2005). The five outcomes are:⁴

- *Efficiency* – relating to costs, investment returns, and labor market impact of pension design. Pension provision faces numerous market failures. This means the “competitive” market can deliver suboptimal outcomes (Impávido, Lasagabaster, and García-Huitron 2010). Failures relate to the ability of consumers to understand the products and make informed decisions (Benartzi and Thaler 2007; Harrison 2012), to the quasi-utility nature of pension delivery given the huge economies of scale in administration and investment management, through to the well-documented examples of mis-selling scandals in multiple jurisdictions (United Kingdom Financial Services Authority and Financial Conduct Authority, India [Government of India 2015], Mexico, Chile). Transparency is an important element of any good system, but a simple focus on disclosure will not be sufficient to ensure members get the best outcomes. Good governance is profoundly important to ensure members get the best net-of-fee returns they can – and indeed good governance is relevant to all the outcomes in one form or another (Ashcroft and Franzen 2017).

A critical feature for effective pension systems that is often ignored is including a clear target for (low) total costs. In a world where real returns are likely to be only 3–4 percent in the long run, having a fee level of 1 percent means that total fees are taking 25–33 percent of returns. The objective is not low fees on their own, but to minimize costs and fees that do not increase coverage, contributions, or investment returns.

⁴ There are other ways to break down the outcomes: for example, see the work of the Melbourne-Mercer Global Index, whose “Integrity” category includes many of the areas in “Security” in the Outcomes Based Assessment framework; previous work (ACFS and Mercer 2013); the Global Aging Institute (Jackson, Peter, and Howe 2013); and work by the American Academy of Actuaries (ForwardThinking Task Force 2014).

- *Sustainability* – relating to the funding of public or private DB promises, but also the affordability of given contributions by employer and employees. Private pensions that involve DB promises underwritten by employers clearly add another dimension to sustainability. Payout phases delivered by insurance companies mean that a pension policy maker needs to have confidence in the sustainability of the insurance regime. Where this confidence is lacking, or annuity markets are not well developed, other pension payouts can help deliver income. Political sustainability should also be a central focus since pension systems need to be maintained across multiple electoral cycles. This places a premium on using pension commissions to build consensus. Clarity on what each pillar of the system can and cannot deliver is critical to anchor expectations and help avoid unrealistic expectations – supported by simple clear messages, rather than attempting to turn people into pension experts.
- *Adequacy* – relating to the level of pension income –at both the point of retirement (or drawdown) and at later ages. A pension pillar should deliver in its own right, but ultimately it operates in combination with other sources of retirement income. Governments directly impact the level of income either through direct contributions or through providing incentives such as tax relief or matching. The distribution by income and by gender is especially important for assessing outcomes – particularly if scarce tax resources are used to provide incentives, which can often benefit higher-income workers if not well targeted. The rules for a “zero” pillar, if it exists, or any base level of income guaranteed to all in old age by virtue of citizenship are also clearly important in considering the size and shape of a private pension pillar.
- *Coverage* – relating to the percentage of the relevant populations contributing and receiving pensions – with coverage of informal workers possibly the single biggest challenge in global pensions (Bosch, Melguizo, and Pages 2013). Again, the distribution by income and gender is important to understand so that projections for the “average”

worker do not mask large inequalities in future outcomes that will call into question the success and legitimacy of the pension system. In the past, many countries with occupational DB pensions had long “vesting” rules whereby workers had to work for 5 or even 10 years to receive pension rights. This leads to lower pensions for women, who tend to have shorter and more broken career histories. Hence an ambition for broad coverage with gender equality would lead to a need for low or no vesting periods – which is a natural feature of most FDC pension arrangements. Likewise, rules on annuitization of income, or the sharing of pension rights on death or divorce, will also affect gender equality – since again in most countries women’s labor market participation tends to be lower than that of men and pension contributions reflect this labor market experience. This gender inequality is particularly stark in some regions – e.g., the Middle East and North Africa (Price et al. 2017).

- *Security* – relating to the security of assets, the reliability of promised pensions, and the central role of a regulator and supervisor. This is critical for all private pensions, but consideration should be given to whether an NDC system should be subject to external scrutiny as well. It is essential that public confidence is created and maintained for the robustness of the formula for the notional returns, and for assurance that the inputs (such as changes in mortality or wage rates) are accurate; and that management of other issues, such as cost control, is effective. It is important in the sequencing of private pension reforms that sufficient time is given to create or improve the regulator and supervisor and ensure it is effective before the first contributions are made. Failure to allow enough time to get the regulator up and running can lead to significant problems for new pension pillars – for example, as seen in the reforms in Ghana from 2008, which have taken years to correct. It can also contribute to the implosion of reforms, as in Mexico’s 1992 “SAR” reforms, which failed initially and then had to be revisited in 1997. Section 4 includes a discussion of some key supervisory issues.

The five outcomes presented above clearly interact. A country could aim for a higher level of adequacy simply by increasing contribution rates to DC private pensions. But in combination with contributions to public sector pensions, this could make the labor market inefficient as employers and workers try to avoid contributions. It can make the system unsustainable because contributions take too large a share of employer profits or of government revenue. A country may aim to rapidly expand coverage of private pensions but will need to target incentives more effectively. It could use matching or a tax credit rather than simple tax relief but with a cap on total incentives so that broad coverage is not unaffordable. This effect was seen, for example, in the United Kingdom, where tax relief for private pensions was available for up to GBP 1.8 million before the global financial crisis of 2008/2009, but was progressively scaled back as successive governments made decisions about the best use of scarce public resources.

3. The first design question: How to deliver private pensions

Before getting to questions of contribution rates, accruals, investment strategy, and payout phases and how private pension investment strategies could interact with NDC accumulation rules, it is important to have a rigorous focus on each part of the pension value chain (Figure 3.1). How will individuals and employers be identified and enrolled, make contributions, have their accounts created and managed, have their investment strategies developed and executed, and finally have their pension income distributed?

Individual voluntary pension provision – or the “third pillar” – is very often structured as a product purchased by individuals from a private provider as a “normal” financial product. Providers are often insurance companies, or dedicated pension fund management companies – and are often themselves part of larger financial services groups. This can be a sensible and important first step in a journey to building all the necessary pillars of pension provision. Albania, for example, founded its third pillar in 2009 at a time when there were certainly not the preconditions for a move to a mass market second pillar, whether via

compulsion or autoenrollment. Turkey in 2003 is a similar example, with its autoenrollment reforms following only in 2016/2017.

This third-pillar model certainly allows pension products to be rapidly and freely available. However, translating availability into coverage can be very tough. These third-pillar pensions have a value chain that is more akin to the sales of insurance products – relying on a network of sales agents and competition between many vertically integrated providers.⁵

Moreover, when a country wants to expand coverage, policy makers face the problem of politically influential incumbent providers who may well resist the development of a different approach that is better suited to expand coverage and improve efficiency. The experience of the United Kingdom in developing autoenrollment reforms shows that even well-developed proposals by an effective pension commission that generated broad political consensus faced very strong resistance from many incumbents. This led to two separate reviews into the proposals made for autoenrollment in 2007 and 2010, both of which had the potential to derail or significantly undermine the reforms that have now added over 9 million savers to occupational pension schemes (out of some 30 million workers) and significantly cut costs for the median saver.

Figure 3.1: Stages of the pension value chain



⁵ Insurance provision is almost never compulsory in the way that pension contributions are often mandated or quasi-mandated – except for car insurance, some forms of personal liability insurance, and in the case of Turkey, mandatory earthquake insurance. Rules set by mortgage lenders can sometimes make home insurance effectively compulsory as well as some form of life cover, but this is not universally the case, and there is typically no check once a mortgage is provided that the cover remains in place.

3.1. Membership and payment channels

A central question is how members will join a pension plan and how they will make their payments. The key message here is to make it as simple as possible for members to join a pension plan and to make their payments, and to ensure that there is a segmented strategy that matches the enrollment channel to the nature of the labor market. If the labor market is highly formal, then using the employer as an administrative channel to enroll members and make payments is a natural (and efficient) initial option. If a functional mechanism already exists whereby employers pay social security contributions for workers and deduct tax and social security contributions from workers' gross wages, then adding an extra requirement to channel a flow of income to a pension provider can be effective. An NDC pillar would clearly need high-functioning public pension administration systems to operate effectively. Informal labor markets are typically viewed as a feature of developing economies – where a lot of innovation is taking place as outlined below – but the development of the “gig economy” or the “uberization” of the labor market means that many developed country policy makers would be well advised to study how to maintain coverage in the face of these challenges (Secunda 2017) – or indeed how to use new approaches to extend coverage to the self-employed, who are often excluded.

3.2. Recordkeeping and account management

Once people are enrolled into a pension system and making payments, there is a need to keep records for all payments and to maintain their account balance (Barr and Diamond 2008). In DB systems, the recordkeeping can be simpler than in DC systems because a DB system is organized around a benefit formula focused on wages and years of service. Finally, FDC systems need to keep track of each contribution, the assets into which they were invested, and the returns to be allocated to the individual. When contributions are made is vital in DC systems because this determines when assets are invested. In some cases, in DB systems it does not matter when workers contributed – only their years of service and final salary. NDCs require very strong administrative systems to support them, but since there

are no assets, they do not need to have custodians or to conduct daily, market-based valuations.

The ability to manage records and accounts for 40 years (or 60 if the payout phase is included) is very unlikely to be widely distributed in an economy. Many employers, particularly those that are small and medium sized, do not have the time or expertise to deliver the added value of well-run occupational pension schemes. Running a pension administration operation has many logistical and technical challenges. Moreover, there are profound economies of scale that are critical to delivering the most efficient operations (Bikker 2013). The notion of a single administrative clearinghouse has gained popularity – particularly since the successful reforms in Sweden since 1992 (Palmer 2000). Many ways exist to deliver such a system. Some countries, including Sweden and New Zealand, use their tax authorities to act as the collection and administration agency. Others, such as India, run a competitive tender for a private company to deliver the services of a Central Record Agency (CRA). In Mexico, the different pension fund management companies established a clearinghouse between themselves known as PROCESAR. But this does not translate automatically to lower prices because the companies control the entity. A critical feature of this option is that the public sector tax provider is able to operate at low cost (e.g., around 10 basis points per year for administration in Sweden). In very many countries, this is not the case. Sluchynsky (2015) showed that some public sector providers deliver good value but many do not.

The clearinghouse model may not be preferred in a situation with concerns over governance since it presents a single point of failure in the pension regime. It may also not be preferred if the government and regulator have doubts about the ability to deliver a major information technology (IT) reform. However, in either of these scenarios one might question whether the country has achieved the preconditions necessary for the launch of a major new pension reform (Holzmann 2009).

3.3. Governance and investment strategy

Governance and organizational design are some of the most important elements in delivering good pensions (Clark and Urwin 2008; Ambachtsheer 2016). The key issues relate to the legal structure of the pension fund, including issues such as the separation between a governing body that focuses on long-run strategy (including investment strategy) and an (expert) management team that has the freedom to take decisions to implement the strategy. In relation to investment, the full board would be involved in agreeing the long-run investment strategy as set out in the Statement of Investment Principles (along with a Statement of Investment beliefs). This will include issues such as the long-run objective for the strategy and strategic asset allocation. Clear differences will arise between a DB and a DC pension fund – but perhaps not as much as in the past, as techniques like asset–liability management used in DB funds are seen to help create a more disciplined approach in DC funds so that they focus on their long-run retirement income function rather than shorter-term investment returns.

A very wide range of institutional designs have been used internationally, particularly in relation to the investment strategy for member contributions. Options range from control by a public sector body (Norway’s Pension Fund Global, for example, which is a department of the Ministry of Finance); an arms-length institution such as a Social Security Agency, provident fund, or a specific pension delivery body (for example, the Kosovo Pension Saving Trust; Malaysia’s Employees Provident Fund; and the UK’s National Employment Saving Trust or NEST); private fund managers and employer-sponsored pension funds with very strict investment regulations (e.g., India’s National Pensions System [NPS] particularly for public sector workers in the early years of the system; Mexico’s AFOREs⁶ in the early years when there were very restrictive investment limits and almost 100 percent allocation to government bonds; and Turkey’s Pension Foundations); and finally private fund managers and employer-sponsored funds with either no quantitative limits or much looser ones (e.g.,

⁶ AFORE = Administradora de Fondos para el Retiro.

Chile; Mexico’s AFOREs now with greater latitude in the investment regulations; India’s NPS now with similarly greater latitude after successive relaxation of the investment limits; and most UK and US private providers). The latter category includes countries with “prudent person”-style investment regulations that give the governing body broad authority to make decisions on investment allocations.⁷

3.3.1. Individual choice of asset allocation

Some countries have a single strategy for all members (in the same way the NDC formula offers only one option). Other countries have a choice for additional voluntary contributions. In the individual pension market, a process often exists whereby potential clients are taken through options by an adviser who recommends an asset allocation that matches members’ attitudes to risk. However, there is not much evidence to support the view that the typical member can really understand the options or that levels of financial education are sufficient to give confidence that members can navigate the choices in relation to pensions (Lusardi and Mitchell 2011, 2014). This is an area where the sales agent can have a great influence – and can make members “choose” the product that benefits the agent not the member (Halan and Sane 2016). Some countries have effectively removed sales agents from the process or banned the payment of commissions to agents because it skews their recommendations and behavior (e.g., the United Kingdom following the Retail Distribution Review).

Modern pension policy is very focused on developing good default options for members. Sweden invested heavily in the early years of the Premium Pension System to encourage members to make individual decisions about their preferred pension provider and strategy. Ultimately these efforts were not judged to be effective and the quasi-government/not-for-profit default fund known originally as AP7 gained greater prominence. Over 90 percent of people now “choose” the default fund. In the United Kingdom, the default fund offered by

⁷ The OECD conducts a useful annual survey of global investment regulations for pension funds.

NEST (the new not-for-profit provider created as part of the autoenrollment reforms) has seen over 99 percent of members move into the default fund. Enrollment of greater than 90 percent is common in many different types of pension funds. NDCs could provide transparency and clarity gains as they make it much easier to show combined pension accounts and forecasts of combined retirement income. However, transparency for members may be more theoretical given that many will find it very difficult to really understand issues such as indexing and longevity factors – and may not even appreciate there are genuinely no assets backing their account.

The literature on pension performance highlights that governance of the fund is often a highly significant factor in determining performance – along with the scale and cost-effectiveness of the institution (CommonWealth Partners 2017). Perhaps uniquely in global markets, it is the not-for-profit providers who tend to come out as the most effective in rigorous comparisons of different providers (Impávido, Lasagabaster, and García-Huitron 2010; Murray 2014; Heale and Martiniello 2017). It is important to be sure that a country has enough independence from political interference to allow independent governance to sustain the benefits of the model. Politics may always have some influence on institutions, but the key is whether there is sufficient independence to allow a focus on the best long-run interests of members to be the main driver of the pension fund. Reversals in pension reforms seen after the global financial crisis highlight that the most efficient approach can fail to create the most secure option because quasi-government structures may be more easily unwound or even nationalized (Hungary, Poland) than those that are more separated. As far as is known, no employer-sponsored pensions run as separate entities were “reversed” in the crisis.

3.3.2. Investment strategy in private pensions and the potential impact of the NDC rule

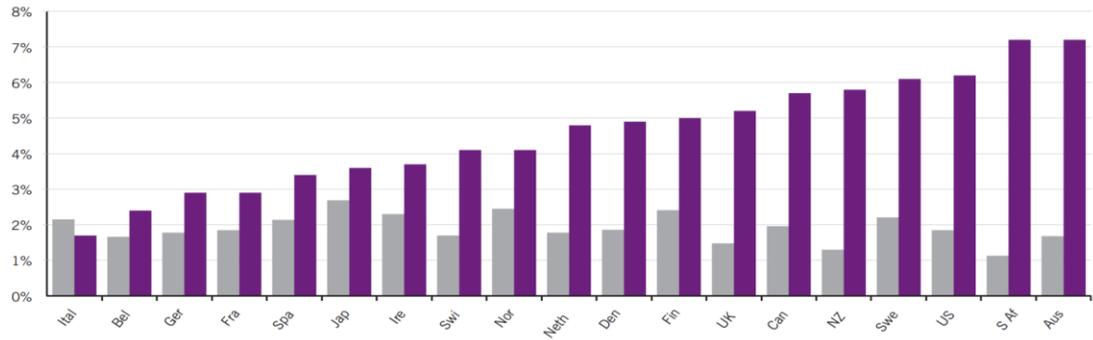
The NDC formula creates a return on notional capita. There are many options – and this section highlights the importance of modelling the likely joint distribution of outcomes between the NDC and funded pillars. If the NDC system is based on a GDP growth rate, or

has a wage indexation or price indexation formula, how is that correlated with likely returns from different investment strategies? Are asset prices positively or negatively correlated with the formula driving the NDC payout? This is relevant to the accumulation phase of private pensions but also to the decumulation phase. How do the payout rules for private pensions (annuity, repricing or variable annuity, phased withdrawal or lump sum) interact with the NDC formula – and other pension pillars – such as “Social Pensions” providing minimum income for all?

Real equity market returns tend to be negatively correlated with real per capita GDP growth. The result was established in Dimson, Marsh, and Staunton’s 2002 “Triumph of the Optimists,” using data from 1900 to 2000 and subsequent updates of their Global Investment Returns Year Book (Dimson, Marsh, and Staunton 2012). This result goes against simple intuition for many people, but as explored in detail in Ritter (2005, 2012), there are in fact sound reasons for the result. They help to shed light on the nature of equity market returns – and the importance of good corporate governance in helping to ensure that companies return cashflows to shareholders if they do not have rigorously evaluated investment projects that will yield a positive net present value.

The result for 19 developed countries between 1900–2011 is a correlation between real returns on equities and growth of real per capita GDP of minus 0.39. That is, if someone was seeking the highest real returns on equities when choosing between a sample of countries in 1900 they would have done best if they had chosen the countries that subsequently had the lowest growth in per capita GDP rather than those that had the highest growth (Figure 3.2). The -0.39 correlation is for real equity returns in local prices. If US dollars are used, then the correlation is still negative at -0.32 (Ritter 2012).

Figure 3.2: Developed country correlations for real GDP growth rates and real equity prices, 1900–2011

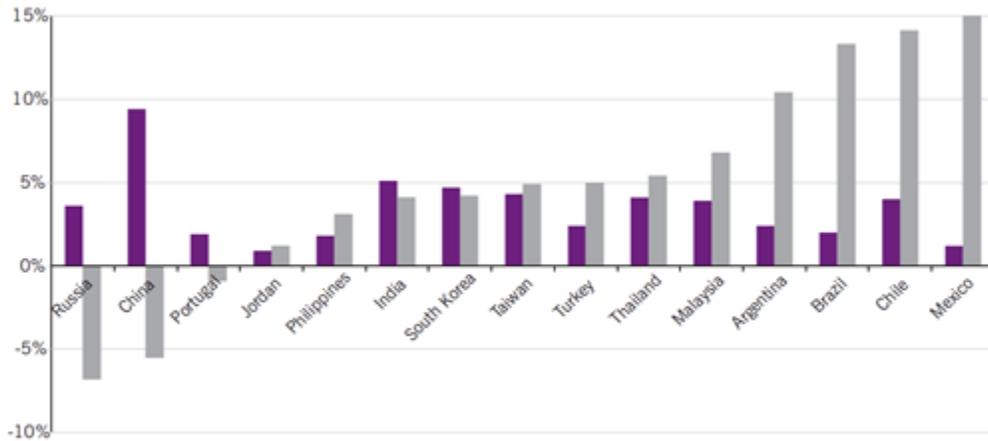


Real per capita GDP growth rate per annum (on left in gray) and real equity return per annum (on right, in purple), 1900-2011. The real return data (dividends plus capital gains, adjusted for inflation, in local currency units) are from Dimson, Marsh and Staunton (2012). Real per capita GDP growth rates are from the World Bank, Dimson, Marsh and Stanton (2012), and Maddison (2010).

Source: Ritter 2012.

An obvious question is whether this is just a feature of developed countries. Using the same dataset but for a shorter run of years given the later emergence of equity markets in developing countries, the same negative correlation exists. Analysis of 15 large emerging markets between 1988 and 2011 found a correlation of -0.41 (Figure 3.3).

Figure 3.3: Developing country correlation of real GDP growth rates and real equity prices, 1988–2011



Real per capita GDP growth rate per annum (on left in purple) and real equity return per annum (on right, in gray), 1988-2011. The real return data (dividends plus capital gains, adjusted for inflation, in local currency units) are from MSCI (2012). Real per capita GDP growth rates are from the World Bank. For the BRIC countries of Brazil, Russia, India, and China, the numbers start in 1993 or 1995 rather than 1988.

Source: Ritter 2012.

However, if one takes aggregate GDP growth rather than per capita GDP growth, the correlation is positive. Aggregate GDP growth, however, does not abstract from the impact of population growth, with the intuition for the positive correlation being that the growth of population is akin to existing owners of capital getting extra customers. Per capita GDP growth, by adjusting for population growth, focuses on growth driven by productivity. The development of new and better ways to produce goods and services is as likely to come from new entrants, which may even harm the profits of existing owners of capital. In addition, over time in a broadly competitive market, the gains from productivity are competed away (Ritter 2012). In countries where pension funds can invest freely in any market and are not restricted to their home market, the correlations could change significantly. The picture will depend on the country and the pension funds – but the message is to investigate the correlations.

Thus determining the “right” investment strategy for the private pension pillar in an NDC system should take into account whether there was a per capita GDP term or just an aggregate GDP term in the NDC formula. Likewise, but not shown here for space, where there are NDC formulas that use the growth of wages it is important to investigate the correlations between the growth of notional assets and real assets in the funded pillars to determine likely future retirement income. A key takeaway is that these issues should be investigated during the design phase of an NDC pillar. But even for countries where the NDC formula is already set, the regulator of private pension funds and the governing bodies of those funds should both take an interest in how the precise NDC formula might impact the optimal investment strategy for their members. It would be interesting to examine whether current NDC countries see any systematic differences in the investment allocations of their private pension pillars, to the extent that the issue has been internalized by any major fund.

3.4. Investment execution

Once an investment strategy has been determined, the issue is then to execute it. The range of options here mirror those above with the investment strategy – from wholly in-house

public sector or not-for-profit options to fully outsourced private fund managers. The governance of the overall process and the monitoring of the implementation remains critical to deliver good value for money for members. Moreover, the political environment can play a key role in determining the “right” approach.

The US’s Thrift Savings Plan delivers DC pension benefits for federal government workers. It is probably the world’s most efficient system, with total costs to members for administration and investment of under 5 basis points per year. This is partly driven by huge economies of scale in administration. But it is also driven by the entirely passive investment execution that is a requirement of its legal provisions. This requirement was imposed by the US Congress as a way of preventing any form of political control over the direction of its investments (Long 2019 forthcoming). A very different country and context identified a similar type of mechanism: the Kosovo Pension Saving Trust (KPST) was established as a funded DC pillar to provide the major source of retirement income for future Kosovan pensioners. It was founded in a postconflict environment, with no domestic capital market to speak of. The governing board of the KPST includes three foreign members as a way of bringing international expertise and reducing domestic political interference. The board of the KPST determines the investment strategy, which it is then required to execute via external fund managers selected at scale by competitive tender. The KPST has a requirement to keep costs to a minimum and a target to progressively reach 50 basis points per year as a share of assets under management (Zalli 2019 forthcoming). These options are useful examples for countries that may have fears that in-house investment management by public sector or arms-length bodies such as provident funds may be susceptible to political control.

However, the most robust internationally benchmarked evidence tends to suggest that the best net-of-fee returns come from the in-house management and execution of investment by very large not-for-profit funds of the type found in Canada and the Netherlands, and in some of Australia’s superannuation funds (Heale and Martiniello 2017). As highlighted above, these structures cannot be replicated in all places. But they do appear to be able to

deliver an enhanced alignment of interests between the pension fund and the investment managers, and can save significant costs. The longer the investment chain, the higher the costs and the higher the potential for weaker alignment.

3.5. Payout phase – administrative arrangements

A pension system is only complete when it has started to pay out an income in retirement.⁸ To do this requires good-quality account administration (see above) so that accumulated balances can be returned to members. It also requires the basic administrative capability to ensure proof of (continuing) life and the minimization of fraud and error. Perhaps too little attention is paid to the administrative requirements of the payout phase compared to the accumulation phase. An NDC pillar by design integrates the two phases and can provide useful insights for private pensions. When administrative systems are not well-developed, the process to choose and receive a pension can take many months and even longer. In many countries it will be simple to make payments directly into bank accounts electronically and automatically. There is substantial merit in using the most effective payments channel so that it is simple and low cost for a person to receive pension payments in old age. Issues relating to the type of payout product are covered in section 4.

4. The second set of design questions: Product features

Once a country is clear about what it wants private pensions to achieve in terms of additional outcomes to public pensions, and has thought through the most effective market structure and governance to deliver pensions, it also needs to consider “traditional” issues of benefit design, eligibility, and payout rules. These areas are clearly not all mutually exclusive. A good policy design and public consultation process will allow iteration and

⁸ The term “annuity” is not used in the same way in every country. Note that the terminology around payouts and annuities can be very confusing. In some countries, products marketed as annuities provide a way to accumulate assets to be taken as a lump sum when the person retires. In other countries a lump-sum payout would indicate the opposite of an annuity, which is thought of as a stream of income payments. This paper aims to link the payout category to the income stream it creates – hence an annuity pays an income until death in the standard form and a phased or systematic withdrawal allows periodic payments but no guarantee of income until death.

adaptation in design. But a central message of this paper is that the process should be coherent and logically consistent. A country should not promise its people no risk, certain outcomes, and high benefits and then choose an FDC private pension pillar with limited expertise and weak governance over investments. Equally, a country should not follow a global trend – for example, choosing “pure DC” private pensions with all the risk taken by individual members – if viable risk-sharing options might have been discarded in the rush to avoid the implications of final salary DB plans with fully guaranteed benefits. In terms of benefit structure, the best way to think about the suitability for the private pension pillar is to include the existing provision on the public sector side. Countries described as having “moved from DB to DC” in truth have only seen this for private pensions.

Another element in determining the “right” benefit structure is to be very precise on the actual terms of the pension. A DB pension can mean a formula based on total years of work, with a long vesting period, calculated on final salary and guaranteed against wage inflation for deferred members and then against price inflation for pensions in payment. This is very expensive to deliver, has negative impacts on gender equality through the vesting rules, and greatly enhances the impact of wage inequality. Moreover, anchoring to inflation and wages makes it very difficult to adjust to shocks in the return on investments. However, a DB formula can be much more flexible – it can focus on career average salary to deal with inequality, have low or no vesting rules to aid gender equality, and only allow indexation of benefits if funds are sufficient to pay for it. Likewise, a pure DC formula that places all the risk on the member can lead to very large differences in retirement income purely by virtue of the start and end year of a person’s contributions (Cannon and Tonks 2004). This can easily be modified to improve its risk-sharing properties. As above, nominal or real capital guarantees can be considered – with best practice to use a backstop fund for the guaranteed elements (Antolin 2011).

Contribution levels are of course central to the final pension outcome, as is the “density of contribution”; e.g., the total number of payments made over a working life and when these are made. Contributing for 10 years may provide rights to some form of public pension,

independently of when the contributions were made. But for private pensions it makes a very big difference if the 10 years were spent at the start of the working life and the money had 40 years to grow, or in the final 10 years of working life. In developed economies with formal labor markets, the density of contributions tends to be likely to be 100 percent for each year of employment for formal sector workers. In countries with greater informality, many workers may find it very difficult to contribute 12 months per year (Rofman, Apella, and Veza 2013). Hence modelling the likely payout from a 5 percent contribution as a share of wages should build in scenarios for likely payouts for those with less than a 100 percent contribution record. The current debates about the performance of the Chilean system are partly driven by the realization that many workers have far less than “official” projections – because many simple projections assume a worker will contribute the whole time. Even if many other variants are presented, the full implications may be lost on workers – even if the implications of a failure to contribute should be obvious. Working out the “right” level of contributions can be greatly assisted by models to project pension payouts from private pensions (OECD 2012; IOPS 2014; Dowd and Blake 2013; Sane and Price 2018).

The final issue in this brief overview of the nature of the pension product relates to the payout phase.⁹ Without specifying the payout phase it is not possible to state clearly the outcomes that the pension system is seeking to achieve. Many private pension systems are better described as asset accumulation systems rather than retirement income systems. This is because they allow members to withdraw money from the pension pot for other purposes such as health, education, and housing, and then withdraw the full amount of money at retirement in a lump sum. A multipurpose accumulation vehicle can be well-designed – as in the Malaysian and Singaporean examples – with some assets permanently identified for retirement and some proportion allocated for access if needed. But early access is often not well-designed and can lead to significant leakage. The Society of Actuaries in the United States, for example, estimated that some 40 percent of US

⁹ This section does not go into great detail on all the different annuity options found in a range of publications – for example, Rocha, Vittas, and Rudolph (2011) and Brown et al. (2001).

retirement assets leak before retirement – principally because workers can take the full accumulated pot when they change employer.

4.1. Adapting the NDC payout formula for use in the funded pillars

The NDC formula used to generate the retirement income in Sweden provides an attractive way for countries to deliver income guaranteed until death for their citizens without the need for well-functioning annuity markets (Price and Inglis 2017). The periodic repricing of income from the accumulated assets removes the need for the regulatory capital to back the promised income in a traditional single premium annuity. It also overcomes the psychological barrier people face when spending 40 years building their assets and then having to pass them all to an insurance company in one block to gain an annuity. This issue is compounded by the insurance companies often not exploiting the illiquidity premium that comes from having access to a source of capital that cannot be withdrawn (Rocha and Thorburn 2007). Another recent and innovative example in the payout space was suggested by the UK's NEST, which would combine a phased withdrawal with a deferred annuity.

An NDC pillar, by providing an income until death (along with any basic minimum pension), may mean that the absence of annuity-like options in the private pillar is less serious for old-age poverty. It may also allow a simplification of the task for private pensions by focusing on the first 10 or 15 years of retirement, which gives a fixed, and potentially manageable, target for many people. The NDC pillar could increasingly take over as people age. One way to increase the coherence of this type of arrangement is for public pensions to start at a relatively low level in the early years of retirement as people rely more on private savings, but for the public component to ramp up in the latter stages of old age when private assets have been drawn down and there are fewer people to cover and hence potentially lower costs. Since the wealthy are more likely to reach old age, the higher public pension would need to be taxed to ensure equity. This would further enhance the cost savings relative to the standard model of a payout that is anchored by the income paid at retirement (see Price and Inglis 2017 for a more detailed investigation of this idea).

Other forms of payout outside a traditional annuity include phased or systematic withdrawal options. These do not provide the guarantee of income until death, but can be a simple and effective way to move beyond a “lump-sum” pension system to one that focuses on delivering income. Moreover, in systems that deliver a relatively high level of income from the public pillar, such as Australia’s, one argument is that there is less of a need for an additional source of income until death, particularly if a public health provision exists. However, even in Australia the government itself believes that the current arrangements do not maximize potential outcomes and is developing a comprehensive retirement income product (Murray 2014; Productivity Commission 2018).

4.2. Regulation and supervision

A final area of design relates to regulatory and supervisory arrangements. Many regulators have adopted risk-based supervision (IOPS 2014). But before starting to use the techniques of risk-based supervision, it is vital to set out the long-run aim or objective for the regulator. The choices between inherently different activities within a regulator from on-site supervision through to communication and education can be more coherently decided within a framework that considers their contribution to the long-run outcomes – even if the measures of success are sometimes focused on intermediate indicators. Price, Ashcroft, and Hafeman (2016) developed a methodology that unites the outcomes with risk-based supervision, known as Outcomes and Risk Based Supervision. The recently revised OECD Core Principles of Private Pension Regulation (OECD 2016) now include a clear statement that the focus of regulation should be on achieving the five long-run outcomes highlighted above.

The best approach is one where the regulator and supervisor use the choice of instruments that will best reduce the risks. This should include strict compliance where necessary. For the risk of fraud that will reduce assets and hence reduce adequacy, few measures are as important as mandating the use of custodians – as well as a focus on the overall governance of an organization. In other areas, greater flexibility can be given so that the regulator can

focus on the weakest institutions. NDC arrangements could be included in supervisory scope to enhance accountability, transparency, and trust.

The issues discussed above are far more important than a focus on structures – whether a supervisor is specialized or integrated with other sectors such as insurance and securities – where there is no clear pattern globally in terms of integrated, hybrid, specialized, or functional regulators (Masciandaro and Quintyn 2009). The global financial crisis highlighted that structure did not dominate outcomes. All models had examples of successes and failures. The key to dealing successfully with the challenges of regulation had more to do with the “ability to act” (in terms of having the legal powers and resources) and the “willingness to act” (in terms of having the independence, quality of staff, and behavioral characteristics for tough but proportionate decisions needed for effective regulation (Viñals et al. 2010).

A final note worth adding is the importance of getting the implementation of policy right. Policy makers should ensure their teams have sufficient understanding of operational issues, including on Identification (ID) and IT, and on the program management skills to implement major policy and operational change. The role of the program or mission office in pension reforms in the United Kingdom, in New Zealand’s autoenrollment reforms, and in India’s world-record-setting financial inclusion initiatives is instructive for potential reformers (Pande and Ryder 2017).

5. Conclusions

This paper reviews the factors that should guide the design of private funded pensions to create a complete pension system alongside an NDC component. It argues that a mix of public and private pensions is most effective to deliver the best combination of pension outcomes. Corner solutions that rely solely on public pensions (whether NDC or not) or just private pensions (whether DB, FDC, or a hybrid) have no obvious examples of sustainable success in either developed or developing countries.

The paper sets out the criteria by which reformers can judge success or failure of adding a private pension pillar to the NDC pillar. Pension system outcomes cover coverage, adequacy, and sustainability alongside its efficiency and security. Achieving these outcomes requires a mix of designing a value chain to deliver private pensions and what type of product will be delivered. A key part of the value chain is who provides recordkeeping and account administration. A well-functioning NDC pillar may already deliver administrative capacity that could be leveraged to improve recordkeeping and account administration in private pensions – particularly where it is based on a well-functioning tax collection system. Thus creating an NDC pillar may give scope for economies of scale across pension pillars.

The second set of design questions looks at the more “traditional” elements of benefit design, contribution levels, eligibility, and payout phase. In an ideal world, the future income to be delivered by a pension system would look at the joint distribution from the combined NDC and private pillar. The paper argues that NDC systems potentially allow a clearer identification of potential outcomes in that they are (in theory) less prone to ad hoc adjustments and pre-election changes than traditional DB public pension pillars. In addition, the NDC rule may have important implications for optimal investment strategies in private pensions – something that governing bodies of pension funds and pension regulators should consider. For example, in many countries real per capita GDP growth (which can feature in NDC rules) is negatively correlated with the real growth of equity markets. Also, importantly, NDC payout formulas have potential use to provide an income until death in countries that will struggle to have deep and efficient traditional annuity markets. It is important that design coherence flows to the regulatory and supervisory approach so that these can also focus on how best to achieve the long-run outcomes. Finally, a robust program management or mission office greatly assists the delivery of the reforms, so that great designs are not lost by poor implementation.

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ABSTRACT

This paper reviews the design of private pensions alongside a notional defined contribution (NDC) – or public – component. A mix of public and private pensions is the best way to deliver a strong combination of five core outcomes: coverage, adequacy, sustainability, efficiency, and security. Choices for market structure, benefit type, contributions, and investment strategy can be guided by their impact on these outcomes. The clarity of an NDC formula allows the joint distribution of public and private pensions to be modeled – which can be crucial for optimal investment strategies given, for example, the negative correlation between real per capita gross domestic product growth and equity markets over long periods. NDC payout formulas have broad applications where annuity markets are weak.

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