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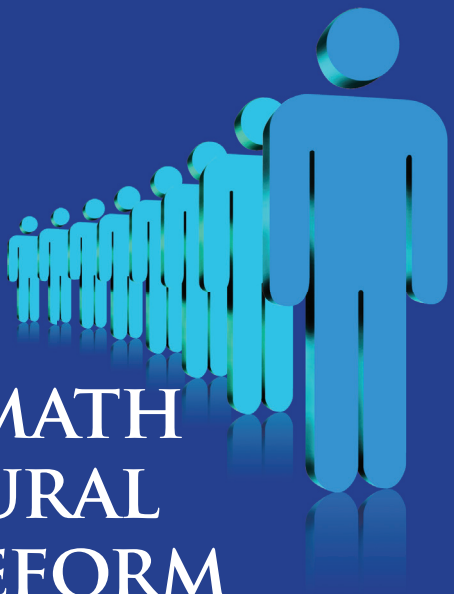

The Aftermath of Structural Pension Reform

Managing Legacy Costs of Defined Benefit Pensions in India

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GARY HENDRICKS

Asian Development Bank

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Abbreviations

ADB	–	Asian Development Bank
DBS	–	defined benefit scheme
DDO	–	drawing and disbursing officer
DGPFO	–	district general provident fund officer
GPF	–	general provident fund
JharNet	–	Jharkhand State Information and Communication Network
NIC	–	National Informatics Centre
NPS	–	New Pension Scheme
NSDL	–	National Securities Depository Limited
OTR	–	own tax revenue
PFRDA	–	Pension Fund Regulatory and Development Authority
PPO	–	pension payment order
PRAN	–	permanent requirement account number
SBI	–	State Bank of India
TCS	–	Tata Consultancy Services

NOTE

The fiscal year of India ends on 31 March. FY before a calendar year denotes the year in which the fiscal year ends.

Foreword

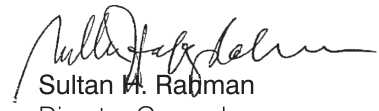
On 1 January 2004, the Government of India embarked on the most important pension reform since its independence in 1947. It replaced the traditional defined benefit pension scheme with a new defined contributory scheme for central government employees. This unprecedented pension reform was driven mainly by the fiscal imperative to truncate the unfunded defined benefit civil service pension scheme that covers around 30 million central and state government employees.

Fiscal stress emanating from civil service retirement benefits was imposing an annual expenditure of over $30 billion on the central and state governments and had created an implicit pension debt—that is, the aggregate net present value of all pension payments due to government employees in the future—of over $600 billion, equivalent to 64% of India's gross domestic product in 2006. The steep increase in states' pension outlays was due mostly to the significant expansion in the number of state government employees, extension of pension coverage to employees of various nongovernment institutions, periodic increases in cost of living allowances, and improvements in life expectancy.

Almost all states were increasingly concerned about the sustainability and fiscal implications of their existing pension schemes and decided to adopt the New Pension Scheme. However, states still face sizable legacy costs for employees and pensioners covered under the old defined benefit scheme, although the magnitude and long-term impact of these costs remain unknown. Furthermore, almost all state governments lack the appropriate arrangements to collect and monitor data relating to current pensioners and future retirees. To quantify the financial impact on expenditure and savings from the reform accurately, state governments require good-quality demographic, income, and service data on their existing employees.

This book contains an account of the processes undertaken during, results achieved by, and the lessons learned from the efforts of five states—Assam, Bihar, Chhattisgarh, Jharkhand, and Madhya Pradesh—to estimate their current pension liabilities, to project annual pension costs over the next 15–25 years, and to explore options for managing their annual costs. These efforts benefited from technical assistance from the Asian Development Bank, which has supported and continues to support pension reform in Asia and the Pacific.

It is our hope that this book proves to be a valuable resource for policy makers, academics, and pension industry stakeholders, not only in India but also in other Asian Development Bank member countries, in instituting the same or similar pension reforms as those undertaken in the five states in India.



Sultan H. Rahman
Director General
South Asia Department

Acknowledgments

This book records the efforts carried out from 2006 to 2011 to establish a pension and payroll database system for five states in India: Assam, Bihar, Chhattisgarh, Jharkhand, and Madhya Pradesh. The databases were then used to project each state's pension liabilities and explore options to manage such liabilities. These efforts were supported by a technical assistance project financed by the Japan Special Fund of the Asian Development Bank (ADB). The assistance was headed by Cheolsu Kim (project leader), principal financial sector specialist, ADB, and Gary Hendricks (task manager), a veteran regulator and pension analyst with over 35 years of experience.

The transition from a conventional paper-based to an automated payroll recording system was a huge undertaking. The mind-set of people accustomed to traditional practices had to be changed. Political commitment from each state government—to adopt the proposed reforms and to adapt to these—needed to be secured. Each state's efforts had to be guided through the arduous task of manually inputting data on up to 300,000 employees and 150,000 pensioners. Technical advice and oversight had to be provided during the formulation and implementation of automated procedures capable of continuously updating data once automated. Throughout these efforts, the project benefited from the strong commitment and generous effort of many institutions and individual stakeholders, which we acknowledge and for which we express our appreciation and gratitude.

First, we wish to acknowledge the Government of India for its active participation and support for the project. In particular, we would like to express our gratitude to K. P. Krishnan, secretary, Economic Advisory Council to the Prime Minister; Tarun Bajaj, joint secretary (pension and insurance), Department of Financial Services; Shashank Saksena, director, Department of Financial Services, Ministry of Finance; and Anuradha Thakur, director, Department of Economic Affairs, Ministry of Finance. Discussions with and comments from them were very useful and provided many insights, which have been used in the implementation of the project and in the writing of this book.

The five states played a pivotal role in the installation of automated employee, payroll, and pensioner databases, with ADB providing the project design and required inspiration and guidance, as well as technical and occasional hands-on assistance. Each state provided the human resources, supervision, and financing (sometimes with donor assistance) necessary to construct the databases, execute the automation designs, update computer hardware and software, and implement new processing procedures. Deep gratitude is

therefore offered to the state secretaries of finance, without whose foresight, commitment, and leadership none of the states could have succeeded in installing the data systems. Also crucial were the participation and support of the directors of treasuries and accounts in each state and major district treasuries. They were the primary instruments of project implementation by supervising the many dozens (usually hundreds) of state civil servants who provided the source data and were trained on and executed the new methods of operation. Indebtedness is also owed to the State Bank of India, which provided high-quality, fully automated data on pensioners whose pensions it administers. In some states, it administers upward of 90% of all state pensions. The effort to install automated payroll and pensioner databases in the five states could not have succeeded without its assistance.

We would like to acknowledge the consultants who worked so tirelessly to complete this project. Subhash Garg, an Indian Administrative Service officer who was on sabbatical and, later, partial leave, acted as co-team leader for the 4 years required to construct the databases. Two international information technology experts, Ashish Joshi and Sanjay Sangal, worked assiduously in the field, providing critical technical assistance to the states.

Finally, we also wish to acknowledge Bruno Carrasco, director, South Asia Department, for his support and invaluable advice. Anna Alipio, associate project officer, and Pamela Gutierrez, associate project analyst, South Asia Department, provided administrative and logistic support, and Kimberly Fullerton, consultant, provided editorial support.

Cheolsu Kim
South Asia Department

I. Introduction

As part of an effort to control escalating civil service pension costs, the Government of India closed its defined benefit scheme (DBS) for pensions to new entrants on 1 January 2004. Civil employees hired on that day or after were and will be enrolled in a defined contribution scheme, the New Pension Scheme (NPS). Under this new scheme, the government and the civil servant each contribute 10% of the employee's basic pay to a retirement fund, which is invested. At retirement, the balance of the employee's retirement account, consisting of 20% of wages and all interest that accrued during the employee's civil service career, is available to support the employee.[1]

Employees hired before the NPS was included in notification letters of new employees remain in the existing DBS. Hence, the government is still liable for all payments to current pensioners and for the pensions and other DBS benefits of pre-NPS employees. Most such employees will retire within 30 years. However, pensions to survivors and certain disability pensions will continue to be paid well beyond that.

The government has encouraged states to follow its lead by closing their traditional DBSs to new entrants and by adopting defined contribution schemes like the NPS. Many states did move quickly to adopt defined contribution schemes; by the end of 2005, 15 had done so. However, little thought appears to have been given to the full implications of implementing a defined contribution scheme. Records need to be kept centrally and investments centrally managed according to enrollees' choices; further, states are required to make all necessary information transfers regarding these investments as well as assign all contributions identifying information. States also did not appreciate the financial implications of the long-term phasing out of their DBSs. They did not realize how quickly and how high annual payouts under their DBSs are likely to grow as more civil servants move into retirement. Early studies indicated that costs could become alarmingly high before beginning to decline rapidly as the final cohorts of DBS retirees begin to die.

At the request of the government, the Asian Development Bank (ADB) agreed to assist a small group of states in estimating their DBS liabilities and in

[1] Defined contribution schemes collect contributions, deposit these in individual retirement accounts, invest account balances, and credit back returns. The pension at retirement is determined by the amount of annuity that the final balance of the account can purchase. In contrast, DBSs provide pensions by granting a percentage of wages for each year of service, subject to limitations defined in the pension scheme rules.

implementing their new defined contribution schemes.[2] These states included Assam, Bihar, Chhattisgarh, Jharkhand, Kerala, and Madhya Pradesh.

ADB provided financial support for a small group of experts to advise the states on construction of databases required to project current DBS pension liabilities. After meeting with these experts, five of six states accepted ADB's offer of assistance in developing two databases required for projecting annual DBS pension outlays over the next 25 years and beyond.[3] One of the databases would contain data on each current civil servant covered under the state DBS. The second would contain information on current pensioners.

ADB also agreed to advise states on implementing their new defined contribution pension schemes. Implementing these schemes requires collecting and recording monthly contributions for each participant, matching employees with state contributions, and ultimately developing a system that can seamlessly pass electronic records of NPS contributions to a central records agency and transfer information on enrollees' investment choices to pension fund managers.

Finally, ADB financed the development of models to project DBS outlays on an annual basis and to provide insight into potential tools for managing DBS costs. These also measured the impacts of various DBS reforms if these became necessary to avoid severe fiscal burdens during the period when DBSs would be phasing out.

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[2] ADB. 2004. *Technical Assistance to India for State-Level Pension Reform.* Manila (TA 4548-IND, $750,000 approved on 23 December 2004, implemented through The Aries Group, Ltd.).

[3] One state, Kerala, chose not to project its DBS liabilities, as the state had no plans to adopt the NPS or to make revisions to its existing pension schemes for civil servants.

II. Constructing Sustainable State Employee Databases

Estimating future pension liabilities and their associated annual cash payouts requires complete information for each civil servant on a small number of demographic characteristics and the various components of compensation. Date of birth is necessary to compute age and to estimate year of retirement, date of employment to calculate duration of service and associated pension eligibility, and pensionable components of wages (including basic pay and dearness[4]) to estimate retirement benefits. Other data, such as presence and age of spouse as well as days of unused leave, increase the precision of the projections if the model can effectively utilize such details.

The first and major challenge facing a state desiring useful defined benefit scheme (DBS) liability projections is constructing a computerized database of its civil servants covered under its DBS on a given date. If the state would like to update its projections periodically, a second and more rigorous challenge is implementing procedures for updating the employee database at any desired time with minimal cost and effort.

A. Current Record-Keeping Practices

Under current practices in India, the career history of each civil servant is manually recorded in a hard-copy service book. This paper notebook contains a handwritten record of all information pertinent to the civil servant's employment, such as his or her sex, date of birth, date of hire, pay scale (i.e., rank) at hire, grade within the pay scale, and each change in rank and grade. Also recorded are leave allowances, dates and amount of leave taken, deputations to other departments or to the central government, and sabbaticals. Such service books are held by drawing and disbursing officers (DDOs), who are responsible for receiving approval and distributing monthly compensation to the worker.

DDOs are required to file monthly paybills with their district treasuries. Paybills list employees under each DDO's jurisdiction along with their hours of service

[4] Dearness is roughly equivalent to the international concept of cost-of-living adjustments. They may be ad hoc, and the states are not obligated to grant dearness at the same rate as the central government.

and the amount of wages to be disbursed. District treasury approval is required before disbursing wages to each employee. In the past, paybills were always in hard copy, but increasingly, district treasuries are requiring paybills in soft copy. Even when a soft copy is provided, however, treasuries in many states continue to require a hard copy.

Each state maintains a general provident fund (GPF) to which the civil servant contributes.[5] In addition to maintaining service books and making disbursements, DDOs are responsible for filing reporting forms with the appropriate governmental authority for contributions by the employee to the GPF. States use various authorities for managing their GPFs; traditionally, DDOs file GPF contribution forms with the State Office of the Accountant General. These offices are arms of the central government housed in each state that perform ongoing audits of state expenditures and assist the states in areas where state capability is lacking. As state finance secretariats have been strengthened over the years, states have begun internalizing GPF record keeping, reporting only aggregate contributions to the State Office of the Accountant General. In addition, some states have created a separate GPF directorate with district offices within their finance secretariats. District GPF offices are usually located close to or in the same compound as district treasuries.

B. State Case Studies

In October 2005, two experts working on behalf of ADB under the guidance of the state finance secretariats evaluated the status of state computerization and employee record keeping in the five Indian states. The experts noted scattered computerization and dispersion of tasks and a mix of paper-based and computerized record keeping. As in Indian states generally, there was little to no systematic computerization, although two states had began serious work toward this goal. In early 2007, three of the states—Assam, Bihar, and Jharkhand—had only a few computers and little automation within their respective treasuries and finance secretariats. Connectivity among districts and the central treasury was nonexistent. Two of the states, Chhattisgarh and Madhya Pradesh, had much more developed automation within their finance and treasury operations, and both states had previously attempted to construct

[5] The 1960 General Provident Fund (Central Services) Rules describes the general provident fund (GPF) as follows. In each state, the structure is the same. Permanent government servants are eligible to subscribe to the fund. At time of joining, a subscriber is required to nominate one or more persons to receive the amount that may stand to his or her credit in the GPF in the event of his or her death. Rates of subscription shall not be less than 6% of designated wages and not more than the total designated wages. The rate of interest on GPF accumulations is set administratively and compounded annually. The Rules also provide for withdrawal of advances from the GPF for specific purposes.

updatable computerized employee databases although neither had met with full success.[6]

1. Assam

When initially evaluated, there were only two possible sources of employee data that could be used to construct a computerized database adequate for DBS pension projections. One was the Office of the Accountant General, which was responsible for maintaining records for the GPF. The office had a computerized GPF register of account numbers and demographic information (e.g., sex and date of first contribution) for all subscribers. New subscribers were entered into the computerized database, and a unique GPF identification number was assigned to each. Once entered, records of old subscribers did not need to be updated since all data are noncurrent (e.g., date of birth, date of service, and identification data). Records of account closure, although prepared manually, were entered into the computerized register from time to time so that these could be identified.

Some fields had significant data that were frequently missing, such as date of birth. The missing entries could be filled in by requiring DDOs to submit the information to district treasuries. However, this would be difficult and costly since different data were missing for different employees and items. Information on current compensation is not required for GPF record keeping and was not included in the database.

The Office of the Accountant General also had a computerized employee enumeration program that used paybills for recording current details on an employee's pay grade, basic pay, gross pay, and designation. However, data were available only for a small fraction of employees, since the database was only used for audits requested by specific departments. The office indicated that all state civil service employees could be included if computers and data entry personnel were made available. The resulting database would then only include current identification and wage information from paybills. To complete the computerized database adequate for DBS pension projections, it could be matched with the computerized GPF master file to obtain noncurrent data, such as dates of appointment and of birth.

Within the finance secretariat and treasuries, automated record keeping of employee data was all but nonexistent. The finance secretariat had plans to fully automate districts and the central treasury as evidenced by boxes of

[6] Finance secretariats are directed by a secretary appointed from the ranks of the Indian Administrative Service. The central administration of the department is the finance secretariat. The central treasury is under the finance secretariat and oversees the district treasuries. DDOs receive authorization for disbursements from their respective district treasuries.

unopened desktop computers. To this end, the state had contracted in 2005 with Tata Consultancy Services (TCS) for the computerization.

When the technical assistance team met with finance secretariat management in early 2007, the situation had changed little, although some activity on the part of TCS was evident. By that time, the finance secretariat had also corresponded with the Office of the Accountant General, and after several months, the finance secretariat concluded that using the office's GPF data as originally planned would be too cumbersome. There were also financing issues, and the office's material could not leave its premises for further data entry.

Thus, the finance secretariat decided to create a new employee database from scratch. The data was to be collected for every employee using a datasheet designed especially for the purpose. Employees were to fill in their datasheets, which would then be verified by DDOs and appropriate heads of offices. Digitizing and consolidating data were to be supervised and guided by the National Informatics Centre (NIC), a facility of the central government provided free of charge to state governments. The NIC, composed of information technology specialists, has at least one staff officer and usually more in each state. The process was completed in June 2008. Of the estimated 445,092 Assam state government employees, 439,313 appeared in the consolidated database.

Independent experts analyzed the data using consistency and logical checks. Issues uncovered included records of 35,405 workers found not to be entitled to DBS pensions because they were contractual or daily wage employees. Another set of 4,169 workers, defined as employees under age 35 years who were appointed after February 2005, consisted of those deemed to be covered under the NPS. A process to rectify records was agreed upon, and the state government then put the mechanism in place. After all exclusions, including a few duplicate records, DBS-covered employees in Assam numbered 399,053 as of the end of 2007.

At the completion of the electronic employee database, full computerization of the finance secretariat and treasuries was still not complete. However, a central computing center for the finance secretariat was completed, and connectivity of district treasuries to the center was achieved. However, a comprehensive management information system for all treasury and finance secretariat operations was not entirely in place that would allow DDOs and district treasuries to update employee records as part of automated paybill processing. Since continuous updating of the employee database was not fully automated, the finance secretariat decided to discontinue any updating of the existing database on the grounds that it would be easier to create an entirely new database when all DDOs were connected with the computerized system rather than to continue to update the existing database manually. As of August 2009, a fully automated, continuously updated employee database has not yet been established.

2. Bihar

In Bihar, like Assam, the finance secretariat and treasuries had little to no computer infrastructure, little hardware, and software that was obsolete. Hence, in 2005, it appeared that an electronic employee database could most easily be constructed by building on an electronic 2003 master register of GPF accounts compiled by NIC. The register contained the GPF identification numbers, employee name, nomination details, date of birth, date of first contribution, and date of account closure, which permitted eliminating civil servants who had left the Bihar civil service. However, it had not been updated for new GPF accounts, account transfers, or account closings since 2003. The database could, though, be updated using manual registers maintained in district GPF offices assigned to administer the GPF. Each district office maintains a manual index of all GPF accounts opened in its district and a register of accounts transferred in and out of the district.

To bring the 2003 computerized data up to date, the state estimated that 82,800 entries from manual registers had to be computerized from three separate manual registers on transfers in and out, account closings, and new entrants. Following updating, all records on the completed database had to have current basic pay and dearness data added from district treasury paybills for a specific recent reference date. The paybills included GPF account numbers to accommodate matching with the updated 2003 database. This process would provide an employee database of all records that could be matched on the basis of the GPF identification number.

In 2007, work was scheduled to begin on constructing the computerized employee database for pension projections. At that time, the state decided that updating the 2003 database had too many pitfalls, most significantly successfully matching the five databases derived from different data sources, four of which were recently constructed from manual handwritten accounting registers. Further, although the state had begun negotiations with TCS to computerize the entire financial transactions of the finance secretariat and treasuries, negotiations had not been finalized, and no contract was yet in place. Hence, the date of expected completion was uncertain, and it was still possible that the project could fail.

Finally, the state decided to undertake a massive exercise to collect required data for an employee database in a prescribed format from all DDOs for a single reference month. Accordingly, the finance commissioner issued an order to all treasuries to collect DDO hard-copy data as of November 2007. DDOs were to provide the information, with due verification, that was to be authenticated by the district treasuries prior to forwarding these to the central office in Patna, the state capital. To guarantee that the commissioner's order was followed, the state government used coercive measures like withholding salaries for DDOs not submitting the data.

These efforts led to data for all state government employees being received from all treasuries except three, all located in or near Patna. The state government hired Beltron, a data entry firm, to enter the data electronically using a data entry program in Microsoft Access developed specifically for the task by independent information technology experts. The program could retrieve data from the GPF database and allowed the user to enter the GPF account number to retrieve as many fields as possible. This program resulted in faster, more reliable entry, as well as an additional level of validation. Entry and control totals by batches were additionally implemented. The experts who designed the program trained the data entry staff, but in the course of data entry, it became necessary to resolve issues of inadequate human resources/personnel, improper hardware, and virus protection.

The electronic database was made available to the state in August 2009 after protracted confusion over the state payment of the data entry firm. It contained data on 328,000 employees.

TCS was then entrusted with computerizing the finance secretariat and installed a comprehensive treasury management and financial information management system. The system was fully deployed by early 2010. All district treasuries were computerized, and connectivity was established. With the TCS management information system completely deployed, Bihar is now in a position to require electronic paybills and, through payroll automation, update its employee database for monthly pay and demographic changes.

3. Chhattisgarh

Chhattisgarh is a leading state in the computerization of treasuries and in the building of a financial information management system. By early 2007, its treasuries and subtreasuries were computerized and linked to a central server at the finance secretariat at Raipur, the state capital. The Treasury Management System was installed entirely at the state's initiative in collaboration with NIC.

Although computerization and connectivity was completed within the finance secretariat and treasuries, the state had not yet succeeded in constructing an electronic employee database. The finance secretariat attempted to create such a database in fiscal year 2004. In June 2003, it issued instructions to state government departments followed by detailed forms to be filled in by head of offices with each department. Each state government department was given responsibility for collecting the forms from its heads of office. The forms were then forwarded to a contractor for data entry. However, there was a major dispute between the finance secretariat and the contractor, and the database effort was abandoned in 2005 because the data had become outdated and were no longer worth computerizing.

In 2006, the finance secretariat again attempted to create an employee database. This time, the approach was to use the district treasuries rather than state government departments. A form was designed with the relevant fields; forms were to be filled in and signed by each individual employee and concerned head of office. NIC also designed software for office heads to arrange for inputting the completed forms electronically. The electronic files were to be handed over to concerned district treasuries on floppy or compact discs. Heads of offices with no access to computers were to physically go to their district treasuries and input the data there. The data provided to treasuries were then uploaded to the state data center.

As the electronic database was being developed, procedures were also being put in place to continuously update it. To accomplish this, the finance secretariat made it compulsory for DDOs to present paybills electronically. Initially, it was difficult for all DDOs to comply, because desktop computers were lacking or the skills to use them had yet to be developed. By August 2009, however, compliance was close to 100%. The electronic monthly paybill data are cross-checked with this employee database. Once received, pay-related information is updated in the central database by uploading the monthly paybills. Many DDOs regularly upload the data to the central computer themselves, which eliminates this step from the workload of district treasury employees once the paybill is approved.

With the database in place, focus was placed on verification by cross-checking data through separate electronic processes. For matching, it was required that the unique employee information stored in the employee database also be stored in the pay data records. The state and NIC took up the work, and experts provided through ADB developed programs to support validation. The experts provided the state with detailed lists highlighting identified errors and dubious data, in reaction to which an agreed rectification process was put in place by the state. Iteration of corrections led to continuous improvements in quality and coverage of the data.

Unfortunately, the database remains awkward to use for pension projections because it contains non-civil service employees, such as contract and work-charged employees, who were not initially identified as such. This occurred on account of not clearly defining “employee” for DDOs, who originally provided the data.

In August 2009, a final updated version of the database was delivered to the pension experts who would project pension liabilities. The database included 192,680 employees in Chhattisgarh covered under the DBS as of the end of July 2009.

4. Jharkhand

In early 2007, record keeping and computerization in Jharkhand mirrored that in Bihar, from which it was bifurcated in November 2000. As in Bihar, Jharkhand administers the GPF through district GPF offices. Each office maintains a manual index of all GPF accounts opened in its district and a register of accounts transferred in and out of the district. The registers can be keyed into separate computer files and reconciled to construct an up-to-date file of employees identified by a GPF account number. However, payroll data needed to be added.

Although using the GPF manual accounting registers was theoretically possible, the approach was rejected. Instead, the state adopted the approach of having the DDOs collect the data manually. When attempts to collect the data manually and have it entered into the computer as a separate operation did not work well, the state tried to get the data from the DDOs on compact discs delivered to district treasuries and, then, to compile the discs into a state-level database at Ranchi, the state capital. Despite considerable effort, these processes proved inefficient and slow, and created considerable data comparability problems. Moreover, only partial data were collected.

After much frustration, the finance secretariat finally adopted a strategy based on a networking project that had been started independently. The project was focusing on networking the state government bureaucracy by installing the Jharkhand State Information and Communication Network (JharNet), and all of the state's treasuries were connected to JharNet by late summer 2007. In September 2007, the state government instructed DDOs to key in demographic employee data in JharNet. The process of submitting an electronic paybill was started in 2008. By November 2008, the process resulted in the collection of an employee dataset taken from two sources, demographic data from service books maintained by DDOs for each employee in their pay jurisdiction and the electronically submitted paybill. At that time, about half of the employees' pay was being drawn through electronic paybills.

In June 2009, Jharkhand completed a set of employee and payroll databases for use in pension liability estimation. All the treasuries had by then switched over to receiving monthly paybills through the computerized system. Furthermore, DDOs were required to update the employee information on a regular basis. This requirement ensured that the employee database with current payroll information will be regularly updated and ready for use in pension liability estimations in future years.

The June 2009 database contained 177,340 employees in Jharkhand covered under the DBS.

5. Madhya Pradesh

The central treasury and district treasuries were largely computerized when ADB experts met with the state in early 2007. Moreover, during 2002–2004, the state government created an employee database that was both pioneering and ambitious. It was designed to store a major portion of the information in the service book of each employee, which included basic demographic information; current post and history of all previous posts; transfers; past, current, and future basic pay; and history of leave. It took over 3 years to collect and enter the data into the database system.

The database was available in Bhopal, the state capital. However, the data were not validated, and procedures were not designed for updating existing data in the system, entering data on new employees, and flagging employees leaving the service. Data on new employees could only be entered at the central office in Bhopal. Thus, the process was not working satisfactorily. It was cumbersome, time-consuming, and resource- and personnel-intensive. Further, the database was becoming outdated and rapidly losing its potential as a tool for human resources accounting, internal controls, budgeting, and pension liability assessment.

The state determined that the best approach would be to complete and update the existing database in terms of pay data. This would require instituting electronic submission of paybills and that DDOs be required to update selected data fields in the database using the service books.

To implement the approach, the state requested that Computer Maintenance Corporation, the developers of the original database software, district treasury software, and server configuration, rapidly implement electronic paybills. This would lead to a sustainable system within which the updating of demographic data could be carried out. Consequently, every month, specific DDOs were required to update details of employees whose salaries they were disbursing. By February 2008, about 1,000 of the 8,000 DDOs had updated their electronic records, and the original employee database had grown to 515,846 records, a large number of which (over 40,000) were duplicates. The database also included records of many who had retired by then as well as records that were otherwise invalid.

The process of switching DDO and treasury pay disbursements to electronic means and the inputting of updated and additional database details for employees continued vigorously in 2008. After substantial pay data had been collected, the state began preparing extracts from the employee database and pay files for analysis of data quality. Between September 2008 and January 2009, the state examined detailed lists of employees with highlighted errors and

dubious data. Each iteration and successive round of corrections improved the quality and coverage of the database.

A final extract for projections was received in June 2009. The database contained 431,471 employees in Madhya Pradesh covered under the DBS.

C. Conclusions from Case Studies

States attempted several different approaches for constructing employee databases. Although nearly all tried to take advantage of pre-existing computerized data, most efforts proved overly cumbersome or failed completely. Existing computerized data was only useful for validating data from other sources. Further, regardless of whether a state has a paper-based or computerized payroll system and connectively between DDOs and either district treasuries or a central finance secretariat server, DDOs are key to constructing employee databases. They hold all data on all types of current employees.

The most straightforward approach to collecting employee demographic and economic data for pension projections is to have DDOs fill out forms with the required information and then, depending upon the level of automation and skills of the DDOs, forward a hard or soft copy to the appropriate district treasuries or a central location for data entry or consolidation.

However, this process needs to be carefully executed and should be done in consultation with outside experts. It would also be prudent to meet with several states, such as the ones discussed in the case studies, to hear their experiences and vet the plan being considered by the state constructing the new database. All steps in the process should be enumerated, and all forms, formats, fields, and utility software should be designed prior to the start of the database construction. This includes carefully designing any necessary data entry. The importance of defining formats and making collection formation conform cannot be overemphasized, as an issue encountered in multiple states was collecting data in nonstandardized formats. This made data entry almost impossible and led to repeating data collections. Another related issue was having data keyed in without appropriate controls on formatting. This problem was overcome by developing software programs that did not permit out-of-range values, rejecting dates not keyed in the proper format, and imposing other controls. In one instance, one set of data had to be rejected because it was not keyed in a standard format, used inconsistent conventions for dates and missing data codes, and had high error rates on many variables. Mistakes in a massive database construction are almost always costly and can extend deadlines by many months.

If the completed database is to be sustainable (i.e., is to be kept current), the state must have a specific procedure by which it plans to update each data item before data collection begins. This means automation is requisite. Sustainability is not possible with paper-based record keeping, because the entire collection process needs to be repeated each time. This is resource-intensive and time-consuming.

Continuous updating can be achieved in several ways. One is to maintain data electronically at the DDO level. DDOs could revise their data as changes occur and always be prepared to forward updated information whenever requested to do so. The only additional expense and time involved in this option would be that required for the uploading and consolidation of the hundreds—and in most states, thousands—of DDO data files. Two serious concerns with this approach are quality assurance and that highly decentralized storage of data would discourage their use for a wide range of applications and, in particular, annual budgeting.[7]

In the experience of the five states in this study, the only efficient solution was a monthly updating of data as part of the payroll process. In this scenario, each DDO submits updated information with the monthly paybill submitted to the district treasury for approval. The paybill is rejected if the information does not meet the updating criteria. For example, the paybill may be incomplete, contain inconsistencies between job classification and pay, or list a job for which no job posting exists in the central employment database.

Finally, a state needs a process for adding new employees and deleting employees who have left active government service. Accomplishing this may require an entirely different and additional program of modernization of personnel practices and coordination. Thus, computerization of personnel actions is highly desirable and will facilitate arrivals and departures of employees, while providing for the crucial updating of information for the employee database. Ideally, personnel offices would enter new employee data directly onto an Oracle screen that would feed the data into the database in the appropriate format. However, it may be necessary to add intermediaries in the process to protect the integrity of the database.

The next step is promptly removing employees who leave active service. These revisions may not be simple in a dynamic labor force that is geographically dispersed, housed in many different state government departments and areas of service, and highly mobile among locations. In the five states, the high month-to-month difference in the number of names appearing on DDOs'

[7] Maximum use of electronic data occurs most readily when data are easily assessable at a single central location. However, as far as can be determined, all states in India continue to use the old department-based method of preparing budget estimates of labor costs. This practice seems to persist even in the few states that now have the capacity to use employee databases.

paybills was unexpected. For it to be fully updated, the database needs to be checked against an independent database of active employees that is maintained separately from the payroll process.

The experience of the five states yielded three other notable observations. First, not defining the type of employees to be included in the employee database and failing to include a field designating the type of employee were problems in multiple instances. If these issues had not been identified and fixed in one state, the projections would have included over 40,000 temporary and casual workers. These workers are not covered under the state DBS but would have been granted pensions. In another case, New Pension Scheme (NPS) workers were included without specifically identifying them. The reverse side of this issue is not including some workers who are covered under a DBS.

Second, it is of paramount importance that the exact use of each variable to be included in the database is specified in advance of data collection. For example, in 2002–2003, one of the states began constructing a comprehensive employee database. The Oracle design for the database contained tables that linked information of various types to be coded and then keyed in from employee service books. The data fields included

(i) demographic data such as the employee's name, father's or husband's name, class, sex, date of birth, domicile, and unique employee number (to be allotted by department);

(ii) details of first appointment including designation, class of post, type of post, joining date, pay scale, administrative department, code of administrative department, appointment order number and date, appointing officer and address of his/her office, and order details on the post;

(iii) current posting details such as designation, class of post, type of post, pay scale, administrative department, code of administrative department, name and address of office, DDO with address, code of DDO, and name of concerned treasury;

(iv) details of employment of spouse, including his or her name, where employed, designation, department, name of office and address, and employee code if allotted by department;

(v) details on service history including promotions and selection scale, details of special or advance increments, breaks in service (days that not only do not count but also invalidate the previous service for pension purposes), unauthorized leave in excess of 120 days, child employment, unregularized service, suspension period not counted for service, details of punishments imposed, and details of foreign service; and

(vi) other detailed data including details of employee insurance scheme; details of family nominations for the GPF, gratuity, and commutation; details of loans taken for house building, scooter, motorcycle, or computer; and details of loan payments and loans recovered.

In addition, the database captured pay record information as follows:

(i) details of pay and allowances, such as name of employee, unique employee code, designation, unique post code, account head for pay, grade of pay, basic pay, personal pay, date of next increment, dearness and other allowances, details on suspensions, and class of government house, if allotted;

(ii) details on GPF accounts, such as GPF number, balance as of 31 March 2002 as per passbook, balance as per last slip issued by the Office of the Accountant General, amount of loans given, number of installments for recovery of GPF loans given, amount of recovery installment, amount recovered to date, balance to be recovered, and balance number of installments;

(iii) other deductions including income tax, profession tax, general insurance, vehicle rent amount, and license fee for government house; and

(iv) details of pay advances such as amount advanced, principal repaid, interest repaid, amount of installments, serial number of present installments or total installments for salary advance, house building advance, scooter advance, car advance, computer advance, contingency advance, travel advance, and others.

This pioneering project achieved limited results because the focus was on the completeness of the input, which overshadowed the more important consideration of justifying the value and use of each item in the database and the means by which each item would be updated. To avoid collecting data that later prove of little value, it is necessary to limit the data items to only those that have a specific use. Again, if the data need to be up-to-date, a procedure for updating the data item needs to be specified in advance.

A final problem is the inability to match records from different sources. The best protection against encountering this problem in the current record-keeping environment is to include multiple identification codes and additional identifying information, such as date of birth. This is almost mandatory if there is to be any attempt to match records from different sources. Although this may help, it is unlikely to solve the problem fully. An added obstacle to merging data is that identification conventions have changed over time in most states, even within the same department or agency. Unless it is the only affordable alternative,

match-merging should be avoided. Every time one of the states tried this, it was highly problematic or failed entirely.

Only two states have fully instituted the continuous updating of their employee databases—Chhattisgarh and Jharkhand. Madhya Pradesh is very close to this as well. The other two states need to move quickly to put updating procedures in place. Otherwise, their employee databases will soon become one-time data collections that can only be updated at high cost and effort. Moreover, all states need to focus on reliability in adding new employees to their databases and eliminating those that leave. All states should initiate and continue to update these valuable databases whose uses will become increasing obvious over the next few years.

III. Constructing Sustainable State Pensioner Databases

A. Current Practices for Granting and Paying Pensions

Under current practices, an employee nearing retirement submits a pension application to the appropriate authority, which varies among departments and states. The application initiates the processing of a pension payment order (PPO), which includes all information pertinent to the computation of the pension (i.e., lump-sum commutation payments and associated monthly pension reductions, encashments,[8] and gratuities). In the past, state offices of the accountant general, which is an agency of the central government, have processed PPOs since states had limited capacity to do so. As states have started gaining capacity, they have begun processing PPOs in state treasuries and pension departments.

Once processed and sanctioned, the state treasury or pension department forwards the PPO to the appropriate district treasury, which then makes the first monthly pension payment to the pensioner at the district treasury payment window. At that time, the pensioner has the option to have subsequent payments made at the district treasury payment window or to request payment through a bank authorized under the Reserve Bank of India's payment of pensions program. If the pensioner opts for payment through an authorized bank, the district treasury forwards the pensioner's PPO to the bank, which retains possession of the document. Each month, the bank reports the pension payment to the district treasury from which it received the PPO.

[8] Encashment is payment for unused leave when an employee leaves the active civil service for any reason, including retirement. Under current rules, the central government and nearly all states pay encashment for unused leave up to 300 days.

In the past, the information on each pensioner was provided to district treasuries in hard-copy listings, known as pensioner scrolls. The hard copies of the scrolls were forwarded to the Office of the Accountant General, where they were not put to any use, except to compile aggregate pension payments. Recently, states have begun to request the monthly pension payment information from the authorized banks through electronic media; although by August 2009, only the State Bank of India (SBI) was fully compliant. SBI, the major authorized bank, has recently completed the automation of its entire PPO database and pension payment operations.

In addition to paying monthly pensions and providing pensioner scrolls to district treasuries, authorized banks can accept responsibility for pension administration. These banks (i) increase dearness, usually quarterly, per state finance secretariat instructions; (ii) certify annually that the pensioner has not died; (iii) convert service pensions to family pensions upon the death of the service pensioner; (iv) reduce enhanced family pension amounts received upon the death of the service pensioner to ordinary pension amounts after a maximum of 7 years as appropriate; (v) reinstate full basic pensions to service pensioners at the completion of the commutation reduction period (10–12 years in most states); and (vi) terminate all payments when no eligible survivor remains.

In addition to regular increases in dearness, pensions are adjusted when wage scales are raised for active workers.[9] When wage scales change, the state recalls PPOs from the authorized banks. The wage scale adjustments are computed and applied either through district treasuries or offices of the accountant general, depending upon the administrative arrangement in the state. In cases where the Office of the Accountant General issues PPOs, these are recalled to the pertinent Office of the Accountant General. In cases where the state issues PPOs, district treasuries or pension departments recompute pensions. In the few cases where the state both issues PPOs and makes all payments, PPOs are not recalled.

[9] Internationally, countries usually do not increase pensions to account for changes in both cost of living and wages, with pensioners being protected only against changes in the cost of living. This protects value of the pension and the pensioner's standard of living throughout retirement. Wage increases represent increases in productivity and, therefore, should be granted only to active workers. Some countries, however, do increase pensions by average wage increases, rather than increases in cost of living, on the grounds that pensioners contributed to increases in productivity throughout their work lives and deserve to share in such increases after they retire.

The most recent change in wage scales, recommended by the Sixth Pay Commission, is still being implemented.[10] In fact, in some states, the adjustment in pensions is expected to take years. With the change in wage scales, states have the option to have banks adjust pensions using a table. If the state opts for the tabular increases, PPOs do not need to be recalled from the banks.

There are two trends that have emerged in the pension payment process. First, more states are taking direct control of PPO processing. Removing the Office of the Accountant General from the process facilitates pension automation by eliminating an outside party over which finance secretariats have no direct control. As indicated in the case studies that follow, even though offices of the accountant general were generally willing and cooperative in sharing their PPO data, obtaining and using the data proved inefficient, inconvenient, and sometimes unmanageable.

The second trend has states implementing the entire pension payment operation internally. In this model of pension administration, the role of banks is to disburse to pensioners or to deposit into pensioners' bank accounts pension payments authorized directly by the state. Two states, Uttar Pradesh and Uttarakhand, have adopted this model, thus taking full control of defined benefit scheme (DBS) pension administration. This model places all pensioner and pension payment data within the same department under direct control of the finance secretariat.

This model has advantages for both pension administration and pensioner database construction and maintenance. Administratively, PPOs will not have to be recalled from banks to make adjustments resulting from changes in wage scales. This makes pension administration more efficient, because recalling PPOs is cumbersome, especially as many PPOs are still archived on paper. The state also eliminates the monthly pensioner scrolls. The payment data will already have been recorded within the state system at district treasuries and eventually, in many states, at the central treasury. Housing all pensioner data in one location makes having sustainable, current pensioner databases easier and more efficient. It is worth noting that both Uttarakhand and Uttar Pradesh have demographic as well as complete payment databases of pensioners.

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[10] Every 10 years, the central government establishes a pay commission to consider compensation, including DBS retirement benefits, of central government employees. The DBS recommendations that the central government adopts for its employees are widely adopted by states. In fact, it is the policy of some states to have the provisions of their DBSs exactly match those of the central government. The Sixth Pay Commission was set up by the Government of India via Resolution No. 5/2/2006-E.III(a) dated 5 October 2006. On 24 March 2008, the Sixth Pay Commission submitted its report, and the recommendations as accepted by the central government appear in Government of India, Sixth Pay Commission. 2008. *Gazette of India: Extraordinary.* Part 1, Section 1, No. 304. Delhi, 29 August.

The one obvious disadvantage of the state conducting all pension payment operations internally is the costs that the state will assume. Currently, states are not charged for pension administration provided through the authorized banks. Instead, the central government pays fees as agreed between itself and authorized banks.

B. Creating Sustainable Databases for Defined Benefit Pension Schemes

Creating sustainable pensioner databases for periodically projecting pension liabilities, budgeting, and implementing better financial controls requires databases that are continuously updated or could be periodically updated quickly at little cost. Updating requires (i) adding new pensioners as they retire, (ii) detecting and recording changes in status from service to family pensioner, (iii) eliminating records of pensions with no remaining survivors, and (iv) adding most recent pension and dearness payments.

As a practical matter in the current administrative and record-keeping environment, creating a pensioner database is difficult at best and almost impossible at worst. The records are recorded by various agencies in various formats with various identifiers, and are housed in multiple locations. Some agencies producing records are not controlled by the state government (e.g., the authorized banks and offices of the accountant general), and, even when the states do control agencies, these agencies may have little interest in retraining and updating information on finance secretariat concerns.

When all obstacles are overcome and a database is created, updating procedures pose greater challenges than employee databases. The information needed for this purpose may be almost as disparate as the data needed to create the database, and the same challenges encountered in creating the database may have to be faced each month when pensioner scroll entries and PPOs must be matched. Furthermore, detecting changes in the type of pensioner requires determining which pensioners are still living at the year's end. The problems states face in creating and updating pensioner databases become more obvious when reviewing the pension systems of the five states that worked with the technical assistance team.

C. State Case Studies

1. Assam

Assam had no pensioner database until 2006. Before that, the Directorate of Pensions issued PPOs for teachers, and the Office of the Accountant General issued and diligently maintained a manual registry of PPOs for other civil employees. The Office of the Accountant General had initiated issuing computerized PPOs, but no database was maintained. SBI paid 90% of monthly pensions, with the remaining 10% being paid through other authorized banks and district treasuries.

The obvious approach to create a pensioner database was to key in PPOs, collect payment data from banks electronically, construct two databases, and merge them. Information technology experts on the technical assistance team would create an electronic interface for the merger and then refine it for subsequent use in the monthly updating of pension payments and changes in pension status.

The Directorate of Pensions successfully entered more than 60,000 PPOs into an electronic database. Also, the Office of the Accountant General keyed in its PPOs but did not consult beforehand with the information technology experts. Thus, these data did not conform to standard protocol and had a high error rate. They were ultimately unusable.

By mid-2008, SBI had completed keying into an electronic database PPO data for all pensioners it serviced. It was decided that the district treasuries would provide electronic data for pensioners who were paid directly, and other authorized banks would be asked to do the same. To construct a comprehensive database of pensioners, these data would be combined with those of SBI.

State officials met with these authorized banks and, through continued contact, insisted that they follow the SBI lead. However, no bank delivered electronic data. Thus, SBI data alone became the basis of pension liability estimates and projections for Assam.

There are 90,498 pensioners in the database that SBI delivered to the state. Assam pensioners are estimated to total 106,468.

2. Bihar

In Bihar, the Office of the Accountant General issued and maintained all PPOs. In 1996, it initiated the issuance of computer-generated PPOs and had all PPOs between 1986 and 1996 computerized. An attempt to computerize PPOs going back to 1950 failed.

The state decided to outsource adding current pension payment data to the computerized database of PPOs issued after 1996, accounting for most living pensioners. Data on other pensioners would be added later. Six months later, the state entered into a contract with a data entry firm to complete this task.

SBI and other authorized banks were also requested to provide electronic files for their monthly pension payments. SBI soon completed the computerization of its PPO and payment data for Bihar, but little progress was being achieved by the data entry firm contracted by the state. Therefore, the state proposed the use of SBI demographic and payment data, which included all data items required to project DBS liabilities for current pensioners rather than continue in an unproductive relationship with the data entry firm.

SBI had agreed on a format in which it would deliver data to the states. However, there were problems with the comprehensiveness and content of the data, plus delays in deliveries. The first computer files that the bank delivered contained data for only a subset of Bihar pensioners whom SBI administered. A corrected database was ordered. After a long delay, the state received new data in May 2010. During the quality check on these data, it was discovered that the basic pension and dearness fields were not captured; however, SBI had included these in the databases that it submitted to other states. In the short term, a decision was made to compute the average basic pension and average dearness for all current pensioners using state administrative data on aggregate pension payments. The average pension payment would be used to approximate DBS pension liabilities. The state would obtain the complete set of SBI data items for a later round of projections to be carried out at a future time.

The SBI database contained 181,567 records. Bihar had an estimated 353,000 pensioners on the SBI reference date of July 2009.

3. Chhattisgarh

The pensioner database in Chhattisgarh needed to be created from the ground up. Unlike in other states, pension authorization in this state was entrusted to the Office of the Joint Directors within the finance secretariat. That office had computerized PPOs for new pensioners over the past 5 years; however, it did not create a pensioner database. Pension payments relied on the authorized bank system using SBI and other banks and worked as it did elsewhere. The banks provided district treasuries pensioner scrolls monthly for each pension payment that the bank disbursed. When the finance secretariat embarked on its massive treasury computerization project that connected all district treasuries to each other and a centralized server, the state did not envisage the inclusion of computerized pension data.

To incorporate this data beginning in early 2007, it was necessary for the Office of the Joint Directors to recall PPOs from the authorized banks and to enter their data into the PPO authorization software. Data related to current pensions, dearness, and commutations needed to be keyed in separately from the monthly pensioner scrolls provided to district treasuries and from treasury records for pensioners paid by treasuries. The PPO and payment datasets would then be merged. Since all treasuries are electronically linked, the completed district-level databases could be uploaded to centralized servers at the Office of the Director, Treasuries and Pensions, within the finance secretariat.

The state began immediately on the first task. Officials collected PPO data from the Office of the Joint Directors and brought PPO files from pertinent banks to the district treasuries. This database was completed by early 2008. From 2007 to 2008, SBI officials collected pension payment data from the authorized banks. By late spring 2008, SBI handed over its PPO data, and the state, in turn, incorporated these into its PPO database. The SBI database contained 49,642 pension records, while the state PPO database had 39,000. In April 2009, the centralized pensioner database provided aggregate data, indicating that SBI paid only 40,129 pensioners in Chhattisgarh.

Other authorized banks presented bigger challenges, as none, including the Central Bank of India, which was disbursing pensions to over 7,000 Chhattisgarh pensioners, had computerized their pension payment systems. Many of these banks still processed transactions using internal paper records of pension data. Consequently, these banks were mostly unable to provide electronic pensioner scrolls. Moreover, enormous difficulty was encountered during attempts to merge the electronic pensioner scrolls provided by one or two banks into the PPO database. The solution was to develop a small computer program that these other banks could use to input their pensioners' data, thus enabling them to provide data to state officials in the agreed format.

After securing proper authorization from state officials, SBI provided pension data in September 2009 for pension payments ending in July 2009. Moreover, Chhattisgarh accomplished what no other state had yet been able to do—it secured monthly electronic scrolls for pension payments from authorized banks other than SBI, including Allahabad Bank, Bank of India, Bank of Maharashtra, Central Bank of India, Dena Bank, Punjab National Bank, State Bank of Indore, UCO Bank, and Union Bank.

State officials thereafter merged all data provided by SBI and other banks with those in its possession and built a comprehensive pensioner database. From 2009 and 2010, the pensioner database was refined and placed on the internet using a system developed by NIC. Chhattisgarh's comprehensive pensioner database was the first such database and is notable for its completeness and qualitative soundness.

The database for the pension projections was received for pension liability projections in May 2010. It contained 74,605 records, which, in the judgment of the state, were those of the actual population of Chhattisgarh pensioners as of April 2010.

4. Jharkhand

Following elections in 2005, senior positions in the state's finance secretariat were vacant, and day-to-day functioning of the office was barely adequate. A year later, it was staffed to deal only with primary issues—and constructing a pensioner database was viewed as a secondary priority. Although the finance secretariat welcomed expert assistance in constructing a pensioner database for projecting DBS liabilities, its senior officers were not up to the challenge of another project that required serious focus and would draw on scarce human resources.

In Jharkhand, as in Bihar, the Office of the Accountant General issues PPOs for all classes of state employees. Pension cases come back to the office for revision whenever pay, on the basis of which pensions are sanctioned, is adjusted. As late as 2008, PPO procedures were completely paper-based. As in other states, the authorized bank system was in place, and many pensioners opted to have SBI service their pensions.

Again, because the pensioner database needed to be constructed, the logical starting point for a pensioner database in Jharkhand was the Office of the Accountant General, which maintained all pensioner files and the scrolls received from the authorized banks through district treasuries. State officials agreed that the state would outsource the keying in of PPO and payment data to create a pensioner database.

State officials took many months to finalize a contract with a data entry agency. Yet the work of inputting the data never began. Ultimately, the state decided that the database should be constructed using SBI pension data and data from any other authorized bank willing to provide them. A data entry program was developed by NIC that enabled other banks to key in the monthly pension amounts that they disbursed. Unfortunately, no bank earnestly took up the program.

SBI provided a demographic and pension payment database in January 2010. It contained the records of 49,796 active pensioners as of July 2009. The estimated total number of pensioners in Jharkhand is 82,952.

5. Madhya Pradesh

Pension disbursements were decentralized to district treasuries, except in Bhopal, where disbursements were managed by the joint director of pensions. The finance secretariat issued PPOs itself rather than through the Office of the Accountant General. In 2005, computerization was initiated, and by early 2007 all PPOs, past and present, had been entered into computerized records.

State officials advised that there were two major limitations with their pensioner databases. First, they were established and maintained only at district treasuries. No centralized state-level pensioner database was available. Second, the pensioner databases did not record current pension payment data, meaning that the databases could not be used for the verification and reconciliation of pension payments administered by banks, especially banks that continued to provide paper-based monthly pensioner scrolls.

To address these limitations, software was developed to extract the pensioner databases from district treasuries and to build a comprehensive centralized database that included pension payments to each pensioner. Then, the state planned to link pension payment data with the individual PPO pension records, which it had already computerized.

Data collected in early 2007, using this software, indicated that there were about 304,000 pensioners in Madhya Pradesh. From 2007 to 2009, the state government worked to collect pension payment data electronically from the authorized banks. In 2008, SBI handed over electronic scrolls of pension payments (PPO data were not yet computerized) for a single month. However, none of the other banks had computerized pension payment systems, including the State Bank of Indore, which was servicing over 60,000 pensioners. The finance secretariat agreed to undertake the data entry of all manual scrolls for a given month for all pensioners not served by SBI. Accordingly, scrolls for July 2008 were obtained, and data were entered.

At the same time, an attempt was made to merge the district treasury PPO data that contained the requisite demographic data with SBI electronic pension payment scrolls. This exercise presented huge challenges. PPO numbers assigned by the states and bank did not follow the same conventions, with the names of pensioners entered in different formats, and there were few common parameters. Because merging the data presented such major problems and SBI had, by then, completed its PPO database for the state, the SBI database with both PPO and payment data was collected. This database completed the database of pensioners whose pensions were disbursed by SBI and had 137,464 active pension records.

The ability to match data from different sources being limited, it was decided that the only workable solution for the other authorized banks was to collect and merge data at the district treasuries. The state's pension staff with assistance from ADB information technology experts developed software for automating all district treasury data, including monthly pensioner scrolls. The resulting database did not require match merging. Unfortunately, implementing this new capability and performing the work would have taken longer than the time available before DBS pension projections were to be completed.

To supplement the SBI database, the information technology experts provided through ADB matched the state PPO database containing almost 300,000 records with the 176,026 other bank pension payment records that the finance secretariat had already keyed into a database. Of the potential 176,026 matches, the experts were able to match 98,246. These were combined with SBI records to construct a database of 137,156 records for estimating pension liabilities in Madhya Pradesh. It is estimated that the state has 340,952 pensioners.

D. Conclusions from Case Studies

In the attempts of the five states to construct pensioner databases, four points stand out. First, when a state uses the Office of the Accountant General as issuer of PPOs, its files are generally of little use in constructing and maintaining the databases. The primary usefulness of such files is the verification of PPOs from other sources, such as district treasuries and authorized banks. The only state that was able to construct a complete pensioner database and establish regular updating procedures processed their PPOs internally within their finance secretariats.

When PPOs were not fully computerized within the Office of the Accountant General, achieving Office of the Accountant General–finance secretariat cooperation proved difficult. Unlike banks that are accustomed to having PPOs recalled by district treasuries, the offices of the accountant general were unwilling to release PPOs from their premises. Hence, space constraints alone generally made cooperation impossible.

SBI is clearly the best source of pensioner data. Even if computer-generated, the Office of the Accountant General PPO files are missing data on current pension payments. The outcome of merging computerized Office of the Accountant General PPOs with electronic bank scrolls is uncertain, if matching is possible at all, since there are no unique identifiers to match. Authorized banks, such as SBI, hold both the pensioners' PPOs and the pensioners' payment information, and the two are linked. Although limited to pensioners whom they service, their records are complete.

A second point is that the more consolidated pension record keeping is, the easier it is to undertake the initial construction of pensioner databases and the more feasible regular updating becomes. This makes the state–state administrative model, where the finance secretariat both processes PPOs and pays all DBS benefits directly, attractive. All pension demographic and payment data are in the possession of the state, and a comprehensive, updated pensioner database exists by default. States that rely heavily on authorized banks are also in a good position to receive both demographic and payment data from a single source in a combined form. States that rely on offices of the accountant general for issuing PPOs or have separate issuing agencies for employee groups are in the most difficult position, as are states having large numbers of pensioners serviced by noncomputerized banks. In some states, single banks that service as many as 60,000 pensioners still use paper-based records for making monthly pension payments.

A third point is that data entry appears to be a problem for many states. In a country that is shifting from paper-based to automated systems, outsourcing services for data entry should be common. However, states appear to have particular difficulties in hiring and using these services. For example, an issue with a data entry contractor derailed an early attempt at creating an employee database in Chhattisgarh. In addition, the simple act of hiring and paying a data entry contractor delayed the construction of the employee database for 8 months in Bihar, and, had it not been for SBI, there would be no pensioner data for the state because data entry outsourcing posed such a problem.

The final point is that common and unique identifiers are, with rare exceptions, lacking. This single fact practically ensures that records from separate sources, even within the same organization, can either not be matched or, if so, are of the quality that makes matching uncertain. Even if a state has fully computerized PPO data and electronic pensioner scrolls, it is not possible to construct a comprehensive pensioner database. Based on experience in Madhya Pradesh, less than 25%–30% of records were certain matches of the same pensioner.

Not having unique identifiers was one of the most serious problems encountered. The lack of a single unique personal identification number across all agencies—or even within the same department—made record matching impossible. One state planned to create a program that would provide an automated link between electronic bank scrolls with personal monthly payment and demographic data from PPOs. This time-saving endeavor had to be abandoned because there were no unique identifiers, names appeared in different formats, and there was little common data on demographic files and bank scrolls to use as secondary matching criterion.

In Chhattisgarh, the value of the state personal identification number was clearly demonstrated in the validation of the employee database. The state had

the foresight to attach a unique employee code to employee database records. Once this same code was attached to pay data, validation was possible. Without it, matching the two data sources would not have been possible for more than half of the records. In Madhya Pradesh, matching PPO data and pension payment scrolls had to be abandoned due to the absence of unique or even closely related identification codes. This problem also arises in the context of NPS where the permanent requirement account numbers (PRANs) from the central record-keeping and accounting agency and the state identification numbers on NPS records differ.

Many of the observations noted in the chapter on employee databases also apply to pensioner database development. The fields to be included need to be defined and justified in advance, and the definitions need to be made clear to all involved in the actual collection of data items. All formats for data to be collected need to be clearly specified in advance and strictly adhered to in all parts of the data collection and for data from all sources.

E. Role of Banks in Pension Administration

Currently, authorized banks are critical to the administration of state pensions. In fact, SBI is almost certainly the largest administrator of state DBS pensions in India. With such banks—and SBI in particular—playing such a central role in DBS pension administration, effective communication and cooperation are critical to state monitoring of their pension costs and the treatment of their individual pensioners and their survivors. It is essential that the central government and state officials responsible for pensions have confidence in the quality of bank operations and treatment of pensioners. To strengthen pension administration and state oversight, ADB experts suggest the following.

First, authorized banks should be required to provide district treasuries monthly pension payment scrolls in an electronic format for each pensioner whom they service. Further, any bank that cannot provide data in an electronic format should not be permitted to service civil service pensioners and their surviving family members. It is the responsibility of the states to protect both the integrity of their pension programs and their pensioners. Paper-based scrolls are insufficient for these tasks, and the means are readily available to provide electronic data. SBI has computerized the records of all state pensioners it services. The value of its work was amply demonstrated in the data provided for pension projections. Without SBI data, there would have been insufficient pension data for the liability projections for three of the states.

As an example, ADB experts reviewed pension operations in a bank that continued to use paper-based record keeping. Although the records were well kept on paper, it seemed clear that making changes in family pension

levels from enhanced to ordinary benefit levels after 7 years of receipt was not an operation that was likely to be adequately performed. When using paper-based records, each accountant or clerk involved must understand the pension scheme rules to ensure the payment of the proper pension amount. It is doubtful that all, or even most, clerks and accountants working with these records fully understand the pension scheme's rules, especially since the rules may vary somewhat among states.

Second, an outside team should evaluate SBI administration of state pensions. With the computerization of SBI PPO data and a complete computerized administrative and payments database, SBI procedures should be easily checked through an independent assessor. The reason for having an independent assessment by is not to criticize SBI for their excellent efforts as an administrator. Rather, it is to (i) identify problems, to the extent these exist so the bank can correct them; and (ii) reassure the states that the rules of their DBSs are being properly administered. Having a single study should allay state fears and avoid having individual states provide for their own assessments, which could become burdensome for SBI.

To undertake this assessment, a team of three consultants would probably be sufficient. The audit would not be of all states but rather of a selection of states, with those with the most exceptions from the central government scheme being chosen. It is the exceptions that are most likely to have errors in computer processes. Again, the SBI databases that were provided to states for the purpose of projecting pensions were impressive. As the largest pension administrator in the country, SBI is to be complimented for centralizing and modernizing all of its administrative processes.

However, two states asserted that their experience indicated SBI did an unsatisfactory job of administering DBS pensions and had high error rates. This was not the experience of the experts who used many fields from the SBI databases in projecting state DBS pension liabilities. Nonetheless, these claims deserve to be investigated and should be given high priority for the sake of pensioners as well as fiscal responsibility in the use of state pension funds.

Third, SBI and the central government, who reimburses authorized banks for services, need to establish procedures for state use of their pensioner data held by banks. It took serious lobbying to obtain the release of SBI data. Preparing the data for release was clearly uncompensated work for the bank, and immediate prospects for profit did not exist. By providing the data, SBI was also exposing itself to potential criticism if there were errors in its database. Handing the data over to the states also posed some risk that the state might consider bringing the pension payment operation in-house after SBI had invested substantial sums in computerizing its databases and bringing the computations and data-keeping operations under central supervision in Mumbai. This may not be

a significant threat since the central government pays SBI for its administrative services. If a state brings full administration in-house, the state would have to bear the administrative cost. One final risk was that states would begin to raise questions about pension payments. This was not an issue in the past because checking individual pension payments would have been too labor-intensive to be practical. If states began to question individual payments based on computerized checks, it would be an additional burden and a potentially large cost for SBI.

IV. Managing Defined Benefit Scheme Legacy Costs

Civil service employees hired in states after the notification date of the New Pension Scheme (NPS) are excluded from the defined benefit schemes (DBSs). Those hired prior to notification are covered under a DBS, which will continue to cover vast numbers of state employees and to operate until the last eligible survivor dies. Unlike with the NPS, in which current issues are largely administrative, DBS issues are purely financial.

Initiating the NPS contributory pension schemes for new employees had no immediate effect on DBS costs. At the same time, the state incurs additional pension costs equivalent to 10% of the wages of new employees hired to replace those covered under the DBSs. Not only will there be no immediate savings for the state, there may be no savings for a decade or more.

How high will DBS costs go before they begin to decline when deaths outstrip new DBS retirements? How soon will costs begin to fall? Will DBS outlays reach levels that interfere with other critical state priorities—expenditures on education, health, social protection, security, or infrastructure development? If fiscal burdens become excessive, what are the options and how much is each likely to save? How quickly must rules be changed to have time to generate the needed savings? And, finally, will states face similar cost issues during the winding down of DBSs so that they can share experience and learn from each other?

These are the questions the projections herein are designed to examine and that states will need to reexamine as events unfold over the next decade and longer. These questions would be impossible to answer without proper databases and appropriate analytic tools.

A. Developing Tools

1. Broad Methodological Approach

Management of emerging pension liabilities requires firm estimates of the liabilities to be managed. The first step toward informed expectations and well-grounded management plans is to develop tools to project costs over

shorter and longer periods. These tools include (i) detailed data on the current pensioners and employees, (ii) detailed specification of the pension rules that will generate future costs, (iii) a framework (i.e., model) for aging current covered workers and pensioners, and (iv) procedures for annually updating characteristics critical to determining pensions at retirement and adjustments after retirement. To these tools must be added expectations about exogenous trends. These are trends outside of the reach of the pension scheme that effect both pension liabilities and the ability of a state to pay them.

The databases, model, details of pension rules, and assumptions are interdependent. The input of data limits or expands the sophistication of the methodology that is possible. Methodology and data determine the level of detail with which pension rules can be incorporated. Combined, these dictate the implicit assumptions embedded in the projections. During the transition, the issue is managing liabilities by keeping them within a reasonable fiscal envelope with the lowest number of unmet expectations of the scheme's participants. Decision makers need to be able to isolate periods of heaviest budget outlay, and they need reliable measures of the budgetary implications of changes in each provision of the scheme—not just major provisions such as a change in retirement age.

Projections aimed at managing costs during the transition require more rigorous methodologies than those used to examine the effect of broad-based pension reform. Transition models need to examine influences on cost ratios in more detail, focusing both on the level of cost ratios and the timing of changes. In the past, models measuring the effect of smaller changes to DBSs have not been available for developing countries. These projections offered a unique opportunity to develop and use such a model.

As described earlier, each state constructed a database with records containing wage and demographic data for each civil servant. The record for each employee included all basic data required to compute pensions at retirement including date of birth, date of joining the civil service, basic wage, wage scale, and salary grade.

The pensioner data required was more extensive. There are two major beneficiary categories, retired civil servants (i.e., service pensioners) and their survivors (i.e., family pensioners). Different benefit provisions apply to each. Furthermore, three types of one-time cash lump sums are available at retirement—commutations, gratuities, and leave encashments. Since the State Bank of India (SBI) acts as the administrator for the pensioners on these databases, all variables necessary to update pensions are included in each pensioner's record, including those necessary to convert a service pension to a family pension at the death of a retiree.

The databases had another attribute that was critical to detailed pension modeling. Because data were provided for individual workers, the full distribution of each critical pension variable and the precise relationship of its value to every other variable were available for each employee. The modeler did not have to assume how wages, years of service, and age were related. Similarly, approximations of the underlying wage distribution were unnecessary. All variables and their relationships were perfectly represented by the individual records in the database. This had important implications for the precision and range of the policy uses of the model.

For example, exactly who qualifies for a minimum pension was known. More importantly, if the minimum was changed, exactly how many more retirees and pensioners would qualify—and the exact cost—was also known. When using aggregated data with average wages for age–sex subgroups, only the crudest estimation could be made of the impact of changing the minimum benefit. The average benefit of the age–sex subgroup, which was the only benefit available, was either above or below the minimum, although some members of the subgroup might have had individual benefits above the minimum. The extent of the increase in precision from personified records could only be fully appreciated by a professional modeler. The additional advantages were the ease in adding new pension provisions and the ability to readily incorporate new findings and research.

2. Defined Benefit Scheme Rules

The core of any pension model is the rules governing the granting and calculation of pensions and other termination benefits at retirement or death. The combination of data and methodology used permitted the detailed programming of the pension provisions with few omissions.[11]

Of the five states, four (i.e., Assam, Bihar, Chhattisgarh, and Jharkhand) conform to central government rules, including centrally granted dearness. Madhya Pradesh often grants increases in dearness pay at as high a level as the central government, but it delays making such increases and sometimes chooses not to make them at all. The state is also slow in granting wage scale adjustments recommended by the central government decennial pay commissions or adopts more modest wage scale adjustments. Further, Madhya Pradesh discourages commutations. While the central government and the four other states permit 40% of monthly pensions to be commuted, Madhya Pradesh permits only 33%. The state also uses lower commutation factors, meaning that every Indian rupee (Rs) of monthly pension forfeited adds less to the immediate lump sum paid. In the other states, at age 60 years, the commutation factor

[11] The entire cadre of rules is not outlined here. See Pensioners' Portal. http://pensionersportal.gov.in

is Rs99.44 per Rs1.00 reduced in monthly pension. In Madhya Pradesh, it is Rs63.00, or 36% less.

Madhya Pradesh also uses different rules for leave encashment. At the central government level, leave encashment at withdrawal from service through death or retirement is computed using 300 days as the multiplier. In Madhya Pradesh, when a worker uses annual encashment leave, it is deducted from the 300 days that could otherwise be available at retirement.

3. Assumptions

To apply the pension rules, all characteristics of the employee necessary to determine eligibility and to compute the pension must be updated annually. Updating some characteristics, such as age and duration of service, requires no assumptions. The dates of birth and of joining do not change. Other characteristics, meanwhile, require "weak" assumptions. Although the date of joining does not change, the duration of service may be affected by extended leaves and deputations. These fairly modest adjustments can be ignored, as they were in this study, or can be incorporated by applying adjustment coefficients when an employee's initial pension is calculated.

For some determinations, "strong" assumptions are required. Two of the most important are age at retirement and mortality.

(i) Age at retirement. For the projections, the rates of retirement by age were based on observed behavior. Using the input database for each state, the number of active employees was compared with the number of retirees of the same age. The ratios of retirees to the total were used as the retirement rates. Observed retirements for each state indicated that 80% or more of retirements occur within a narrow, easily predicted age range. Using ratios of active workers to retirees in younger age ranges filled in the probabilities for the few disability and involuntary and voluntary retirements outside of the age range of regular service retirements.

(ii) Mortality. Mortality rates were unavailable for state civil service populations. Rates by age and sex for all-India urban dwellers were available from census studies. However, mortality rates are almost certainly lower for civil servants, who are employed—indicating better-than-average health—and working in reasonably protected environments. The projections in this book used the census age–sex-specific urban mortality rates divided by half.

Survivorship rates. To compute observed survivorship rates requires data that continue to track individual workers and retirees for at least one recording period after their deaths. Otherwise, those without survivors cannot be counted. The record for a deceased civil servant or pensioner without survivors

does not appear on data collected at a single point in time because the record has already been removed. Hence, the number with no survivors cannot be counted.

Given the long list of eligible survivors for civil servants, survivorship for deaths in service is a near certainty. Ninety-eight percent of civil employees who die between the ages of 35 and 60 years are assumed to have a survivor eligible for a family pension. Eligible survivors are less likely at older ages. Between ages 60 and 70 years, the probability of an eligible survivor falls to 80%. By age 75 years, it is 55%; at 80, it is 20%. The probability of having an eligible survivor falls to 0 at age 90 years. The same rates are used for both male and female civil servants. These rates are not based on research; it would be useful to attempt a small study on survivorship.

Wage trends. All pension projections require economic assumptions. The most important of these are growth rates of wages, pensions, and tax revenue. Civil service wages are assumed to grow at an annual rate of 5%, which is somewhat higher than the recent increases recommended by the Sixth Pay Commission. In the projections, wage adjustments were added to wages annually rather than through wage scale adjustments at 10-year intervals. Since wage scale adjustments are passed to pensioners, pensions are increased annually at the same rate that wage scales increase.

Inflation. In pension projections, inflation is irrelevant for two reasons. First, trends in pension costs are affected by the difference between the real rates of growth. Excluding inflation forces the analyst to focus on real rates and, hence, the driving force underlying the impact of economic trends. Second, it is easier to observe trends and interpret their meaning if they are in constant Indian rupees at today's prices. Even at moderate rates, inflation generates alarmingly large numbers. Two trends may be rising at distinctly different real rates. However, when a 10% inflation rate is added to each, a critical 2-percentage-point difference in real growth rates can be difficult to discern and can easily be trivialized. It is even possible that, although all trends are rising, one or more may actually be declining in real terms. Here again, an important result may be overlooked. The projections presented in this chapter are in constant 2009 Indian rupees.

Trends in own state revenue. Pension costs 10, 15, or 20 years hence have little meaning unless placed within a meaningful economic context. Here, that context is the own tax revenue (OTR) of the state, which was selected because it was used in reports of the Thirteenth Finance Commission.[12]

[12] The Thirteenth Finance Commission was created by the President of India on 13 November 2007 to present recommendations on central–state fiscal relations. Among the data studied in preparation for the recommendations was the financial status of states, including state tax revenue. The commission filed its report in December 2009.

Throughout this chapter, the measure of pension costs is a cost rate defined as the ratio of DBS outlays (and NPS contributions when appropriate) to the OTR of the state. DBS outlays include payments of regular monthly pensions plus lump sums for commutations, gratuities, and leave encashments. Leave encashments are not provided for under a DBS, as these are a separate benefit paid when a civil servant leaves service. Since nearly all departures are through retirement or death, leave encashments are an inherent cost of all retirements and all deaths in service and are thus included in DBS pension costs. The payment of pension arrears was excluded from the projections. All future pensions and associated lump sums were assumed paid when due.[13]

The rate of growth of state revenues was based on recent experience and widely held future expectations. Over the past 10 years, India's economy grew in real terms at an average annual rate of 8%. This rate is reflected in the growth of state and central government revenues and is expected to continue for the next 10 years and probably the next 20 years. Thus, the projections in all states assumed 8% economic growth. The rate could be varied based on expected trends in gross state domestic product and the ratio of state taxes to gross state domestic product.

As in other civil service systems, states follow a fairly regimented approach to increasing pay in-grade. In the projections, pay in-grade was increased by 5% at 5-year intervals. The intervals were staggered so that all workers did not receive increases in the same year. In addition, employees were granted between one and three promotions during their careers, depending on their age in 2009. The promotions occurred at 10, 20, and 30 years of service and resulted in average increases in basic pay of 20%. In the lower grades, promotions were more restricted, and those in the five lowest grades at retirement received the recently established minimum pension of Rs3,500.

Adjustments to minimums and maximums. Some minimums and maximums were expressed as percentages. For example, the highest service pension cannot exceed 50% of highest government basic pay. Percentage maximums and minimums were maintained at current levels throughout the projection period and were expressed in absolute Indian rupee amounts as adjusted to reflect across-the-board changes in pensions or wages, as appropriate. Under current DBS rules, changes in wage scales are passed on to pensioners. Hence, a 5% across-the-board increase in wages results in a 5% increase in

[13] Retiring current arrears falls outside of the purview of outlays to finance future liabilities as these become due. Sizable existing arrears require separate financial planning and should not be permitted to occur in the future. Certain arrears, however, will be unavoidable, such as those associated with retroactive changes in pension provisions, as was the case with certain Sixth Pay Commission recommendations. Most pension schemes maintain an arrears subaccount for unclaimed benefits and occasional delays in initial pension payments. These outlays are inconsequential.

pensions, which, in the projections, triggered a 5% increase in the absolute values of pension minimums and maximums. This approach seems reasonable in light of the recently accepted Sixth Pay Commission recommendations (i.e., the central government approved increasing minimum pensions from Rs1,275 to Rs3,500, and maximums on lump-sum distributions at retirement were increased from Rs350,000 to Rs1 million).

4. Compensating for Database Shortcomings

Data quality and comprehensiveness are as important as the level of detail in pension rules. The quality of individual items in the databases was discussed at length earlier and in separate reports to the states. For the projections, a final adjustment was required to compensate for shortfalls in coverage of each database. Pension costs varied directly with the ratios of workers and current pensioners to totals included in each database. If only half of all pensioners were present on a pensioner database, then a weight of 2 had to be applied to each pensioner's record to weight the 50% sample of pensioners in the database up to the total number of actual pensioners covered under the DBS.

Compensating for undercoverage. The databases were intended to include all current state employees and all pensioners covered under each state DBS as of the reference month. Table 1 shows an estimate of persons in the total population, number appearing in each database, and resulting weight (ratio of expected to actual records) used.

Table 1 Derivation of Weights for State Databases, Participating States

State	Number of Defined Benefit Scheme Employees			Number of Defined Benefit Scheme Pensioners		
	Estimated	In database	Weight	Estimated	In database	Weight
Assam	439,617	398,796	1.1024	106,468	90,498	1.1765
Bihar	317,421	306,915	1.0342	362,886	181,443	2.0000
Chhattisgarh	156,611	156,611	1.0000	66,131	65,476	1.0100
Jharkhand	163,953	163,953	1.0000	82,952	49,771	1.6667
Madhya Pradesh	428,544	425,737	1.0066	340,952	137,156	2.4859

Note: The weight is the number of employees or pensioners represented by each record on the database.

Source: The database numbers are the actual employees and pensioners appearing on the databases discussed in earlier chapters. The estimated total number of employees and pensioners were provided by the states in consultation with the technical assistance team, but the team independently adjusted some estimates.

States successfully captured data on most DBS employees. However, Assam booked slightly varying numbers at different times. This was not surprising since the state was in the process of computerizing its finance secretariat and treasuries. The estimate of DBS employees used here was 439,617, 10% higher than the Assam employee database. Further, Bihar was missing data on employees from eight district treasury offices in Patna.

The technical assistance team estimated that 3% of the total was not included in the database. The Chhattisgarh and Jharkhand databases, in contrast, were comprehensive. Madhya Pradesh had fewer than 3,000 missing employees from over 400,000.

Pensioner databases were more difficult to construct, and only one state, Chhattisgarh, succeeded in capturing nearly all pensioners. That state was only missing pensioners from a few of the smaller authorized banks that were unable to book electronically. Madhya Pradesh was able to provide a count of its pensioners from its records.

Bihar and Jharkhand could not provide an estimate of the total number of their pensioners. The modelers estimated the number of pensioners in Bihar and Jharkhand by comparing the size of recent retirement cohorts included in the SBI database with the number of employees in the cohorts of active workers that will retire over the next 2 years. On this basis, SBI pensioners represented about 60% of all Jharkhand pensioners. Using similar logic, SBI serviced at least 40%—and more probably 50%—of Bihar pensioners. Fifty percent was used to compute the weight.

Officials in Assam estimated that SBI services 90% of its pensioners. Hence, Assam should have had about 100,500 pensioners, but earlier data indicated 106,468. Given the low ratio of pensioners to DBS employees in Assam, the higher number was used.

Imputing pension amounts for current Bihar pensioners. The Bihar database from SBI was missing current pension payments. Each pensioner was assigned the average pension based on the aggregate pension outlay reported by the Thirteenth Finance Commission.[14] In July 2009, the average pension was estimated at Rs5,427.[15]

5. Benchmarking Administrative Data

An attempt was made to establish a benchmark of actual pension payments in FY2010 against which first year projection results could be compared. However, the effort was not fruitful. Although in August 2009 the finance secretariats of the five states ranked among the top seven or eight best automated in all of India, even this elite group was some distance from international standards on the availability and timeliness of administrative data, especially on pensioners.

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[14] Government of India, Thirteenth Finance Commission. 2009. *Report of the Thirteenth Finance Commission, 2010–2015.* Vol. II. annex 7.7, paragraph 7.90, Delhi, annex 7.7, para. 7.90.

[15] To the extent that older pensioners have lower average pensions, assigning everyone the same pension would cause pension payouts for current pensioners to fall more quickly than if actual pensions had been available. The annual pension costs associated with current DBS employees when they retire would not bias the pattern of pension costs.

As noted previously, two states could not even provide an estimate of pensioners under their DBSs.

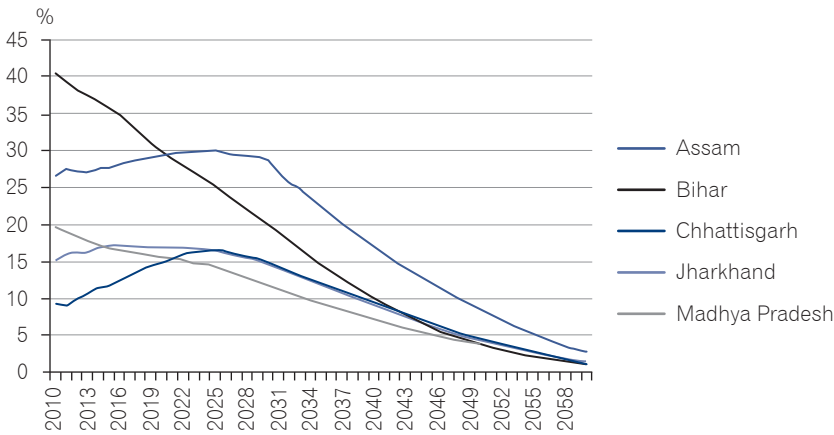
The states could provide data on pension expenditures as recorded in their state accounting systems under 2,071 heads of account, as Jharkhand and Assam did. These data's usefulness, however, was limited because the information could not be sufficiently disaggregated to isolate particular types and categories of pension spending. If a state were sufficiently interested, the 2,071 heads of account could be broken down into a larger, more useful set of categories.

Data on pension expenditures were also available from the Reserve Bank of India and the report of the Thirteenth Finance Commission. Here again, however, usefulness was limited. The FY2010 estimates were far off the mark when compared with the data that Assam and Jharkhand provided from their own accounts.

B. Baseline Projections

Figure 1 shows projected cost rates for each state using the constructed databases and tools developed as part of the modeling. Cost rates were annual DBS outlays as a percentage of state OTR. Annual DBS outlays included regular monthly pensions plus lump sums paid for commutations, gratuities, and leave encashments when workers retire or die.

Figure 1 Cost Rates per Participating State, 2010–2060



Source: India's state pension model as calibrated for the states shown.

Two features stand out from this figure: the large differences in initial cost rates among the states and the wide variations in cost curves over time. With a cost rate four times that of Chhattisgarh, Bihar has the highest initial cost. Assam is second-highest, with a cost rate well below that of Bihar.

The differences in patterns of cost rates as liabilities evolve over time are also striking. The cost rates of Bihar and Madhya Pradesh fall consistently throughout the entire rundown of DBS liabilities. Hence, it appears that these two states will never be worse off than they are today. The cost rates of two other states, Assam and Jharkhand, are projected to increase modestly over the next 15 years and fall thereafter. Assam's costs will fall fairly rapidly and Jharkhand's more gradually. Chhattisgarh, meanwhile, follows the classic pattern expected when a DBS is closed to new entrants. Costs rise significantly before reaching a peak and then begin to fall. Chhattisgarh's cost rates rise nearly 70% between 2010 and 2022 and stay near their peak for 5 years. Thereafter they fall steadily, returning to their current level in 2040, when savings begin to emerge for the first time since Chhattisgarh closed its DBS to new entrants in 2005.

This first set of projections increases current knowledge immensely. For the first time, some of the questions about the transition that are of crucial importance to states and to the central government can be answered.

How high will costs rise before they begin to fall? For two of the five states, the peak has already been reached, and cost rates are expected to fall continuously. These states will become consistently better off by the switch to a contributory pension scheme. For two other states, DBS costs are near their peak. If projected trends in wages and revenues persist, costs in these two states will not rise much further. These states may not realize savings for several years, but even greater increases in DBS costs have been avoided because the DBS has been closed to new entrants.

One of the states, Chhattisgarh, will experience significant increases in cost rates, which will not return to current levels for 30 years. However, if the DBS scheme had not been closed to new entrants, cost rates at the peak—or even higher rates—would have persisted indefinitely.

Will states have similar experiences during the transition? No, they will not. For these five states, costs will follow three distinctly different patterns. Hence, cost management during the winding down of DBSs will differ. Two states may require no cost management efforts beyond those already in place. Other states may require special measures to manage the cost levels as these emerge over the remaining life of DBSs.

C. Alternative Scenario

The projections above were based on the core assumptions described earlier; these assumptions represent a continuation of the status quo. Rates of wage, pension, and revenue growth were fixed, as were pension rules, mortality rates, and average ages at retirement.

Mortality rates are reasonably favorable and not likely to improve very much over the next 20–30 years. However, given the expected rate of economic growth and associated improvements in living standards, small improvements in mortality rates may occur.

The rate of economic growth might not continue to be as strong as expected. Any slowing of economic growth within the next 2 decades would narrow the differential between rates of growth in state revenue and civil service wages. This would exert upward pressure on cost rates. A 3-percentage-point difference between the growth of civil service wages and average revenue is exceptional for a period spanning several decades.

A trend toward earlier retirement in the civil service seems unlikely, although it is too early to assess the impact of recent changes in retirement provisions. Based on the recommendations of the Sixth Pay Commission, the central government reduced the retirement age. Prior to the change, civil servants could retire with a full pension upon completing 33 years of service. Now, a civil servant with the minimum service of 20 years qualifies for a full pension equal to 50% of pensionable compensation. Additional service does not increase the 50% replacement rate. Based on international experience, reducing the full pension retirement age by 13 years would cause an immediate increase in retirements followed by permanent increases in retirement rates at earlier ages. This change in behavior is not expected in India.

As verified by the state databases, civil servants usually do not retire before the accepted normal retirement age (i.e., 58–62 years) even though many complete 33 years of service at younger ages. It is believed workers continue working because their pensions are so low. By continuing to work, they receive full wages plus dearness and other allowances. Moreover, if their compensation increases, they will receive a higher pension later even with a fixed 50% replacement rate.

A second set of projections were prepared that introduced slight mortality rate improvements, a trend toward earlier retirement beginning in 2016, and a downward drift in the rate of revenue growth. The specific changes incorporated into the projections were as follows.

(i) Mortality rates remain fixed until 2015 and then begin improving in increments of 0.01% a year, reaching 0.05% in 2020. Thereafter, mortality rates continue to improve by 0.05% annually.

(ii) A reduction in retirement age is introduced in two stages:

(a) over the 8-year period from 2016 to 2023, retirement rates increase in equal increments from 3% at each age to 15% at each age for civil servants ages 57–59 years; and

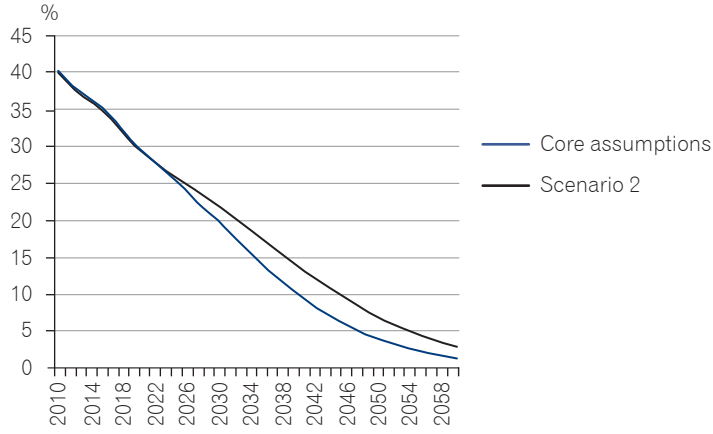
(b) over the 8-year period from 2020 to 2027, retirement rates increase in equal increments from 2% at each age to 10% at each age for civil servants ages 54–56 years.

(iii) Over the 8 years from 2020 to 2027, the rate of growth of state OTR falls from 8% to 6% (i.e., 25 basis points per year) and remains at 6% for years after 2027.

These are modest changes, hardly a worse-case scenario or even a pessimistic one. The effect of these changes on cost rates are shown for each state in the figures below. Each figure compares the cost rates projected using the core assumptions with projections under the modified scenario (scenario 2).

Bihar, with 40% of its OTR currently devoted to annual DBS payments, is the state with the heaviest current cost burden among the five states (Figure 2). Under the less favorable assumptions of scenario 2, Bihar will experience consistent improvements in its DBS cost rates immediately. The only difference is that Bihar's cost rate will fall somewhat more slowly. Under the core assumptions,

Figure 2 Comparison of Cost Rates under Two Scenarios, Bihar, 2010–2060

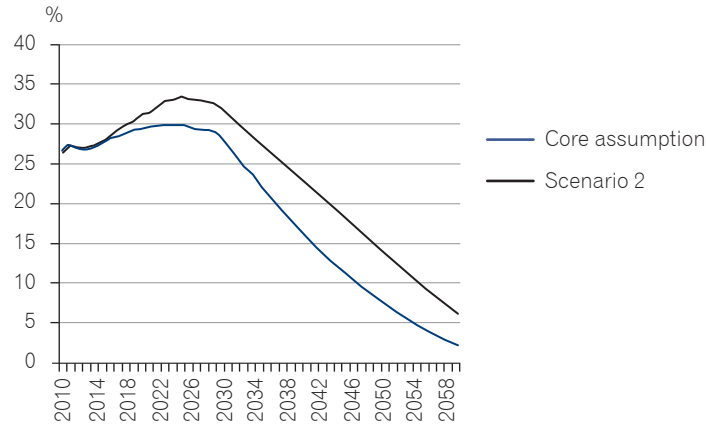


Source: India's state pension model as calibrated for the state shown.

Bihar's cost rate falls to 20% by 2030. Under the less favorable scenario 2 assumptions, it falls to 20% in 2033 3 years later. Under scenario 2, the cost rate drops 5 percentage points every 5 years through 2045, the year it reaches 10%.

Among the five states, Assam is most affected by the less favorable assumptions (Figure 3). The increase in cost rates from 27% to 30% under the core assumptions becomes an increase of 27% to 33% under scenario 2. In 2020, Assam's cost burden will be above that of Bihar, and Assam will spend over 15 years (2015–2032) at higher cost rates than projected under core assumptions. Under scenario 2, Assam will have to use more of its total state revenue to pay off terminal DBS liabilities. NPS contributions for workers replacing DBS retirees will add to the cost.

Figure 3 Comparison of Cost Rates under Two Scenarios, Assam, 2010–2060



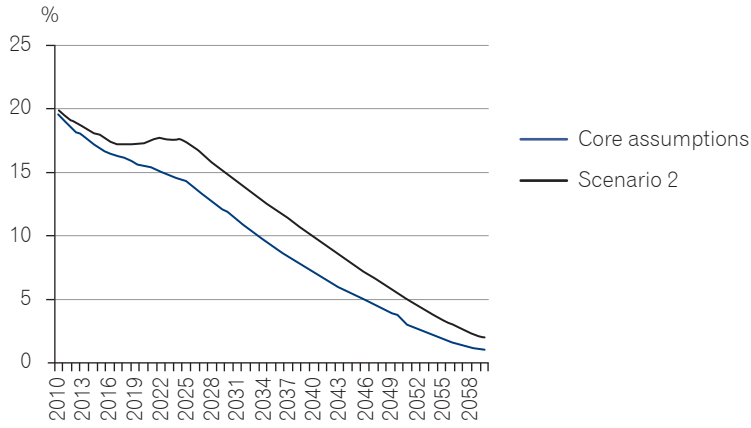
Source: India's state pension model as calibrated for the state shown.

Madhya Pradesh is mid-range in DBS cost rates among the states (Figure 4). With costs at 20% of OTR, it is less burdened than either Bihar or Assam, and under the core assumptions it can expect its DBS cost rate to fall throughout the entire transition. The modest changes in assumptions under scenario 2 will cause a bulge in state costs rates beginning in 2016 when the retirement age begins falling for workers aged 57–59 years. The trend continues increasing slightly each year until 2023. In 2020, an 8-year trend toward earlier retirement of 54- to 56-year-olds begins pushing rates a little higher. When earlier retirement stabilizes at new rates, cost rates no longer rise and continue on their path of consistent decline.

This is an interesting demonstration of how a change in retirement age can disrupt the trend in cost rates. Without projections, decision makers can easily

overlook the reason for the shift in cost rates. There would be no way for a state to determine the strength of the action required or whether a permanent, temporary, or no remedy was appropriate.

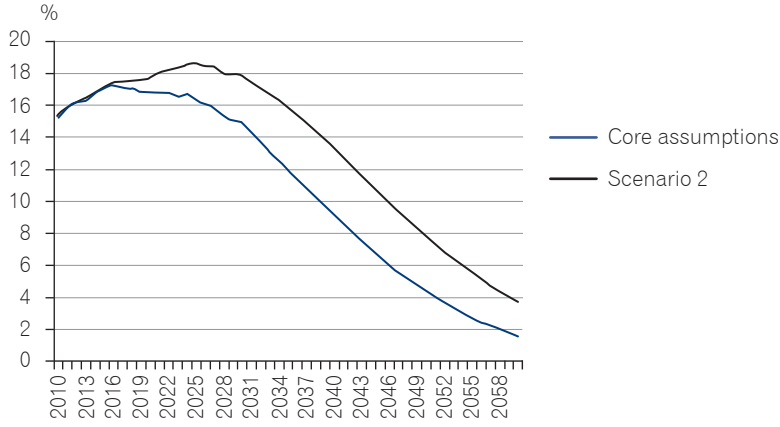
Figure 4 Comparison of Cost Rates under Two Scenarios, Madhya Pradesh, 2010–2060



Source: India's state pension model as calibrated for the state shown.

The less favorable conditions under scenario 2 shift Jharkhand's cost curve upward and to the right (Figure 5). The upward shift in cost rates is due to the trend toward earlier retirement. The marked shift in cost rates is due to the narrowing of the difference between rates of growth of pension costs and revenue. Revenue growth falls from 8% to 6% between 2020 and 2027. Under scenario 2, the rightward shift of the cost curve is observed for all states.

Figure 5 Comparison of Cost Rates under Two Scenarios, Jharkhand, 2010–2060

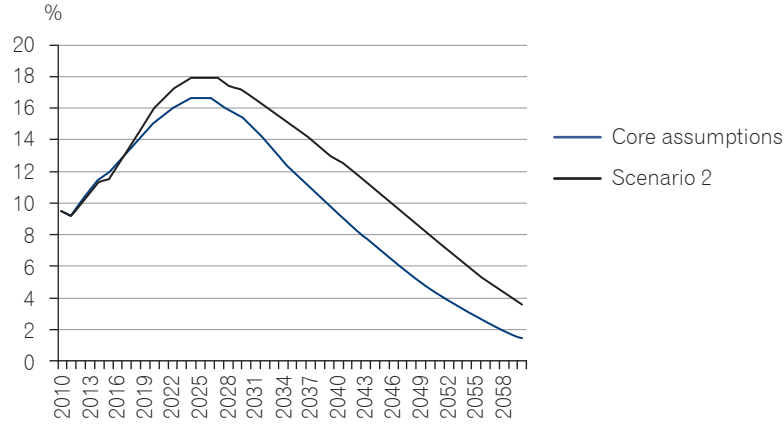


Source: India's state pension model as calibrated for the state shown.

Under scenario 2, Jharkhand's costs, which now stand at about 15% of OTR, are projected to slowly rise to 19% of OTR over the next 15 years. Beginning around 2025, its cost rate will begin falling but will not reach 15% of OTR again until the mid-2030s. Even though it will have to wait 25 years before experiencing real savings in DBS costs, Jharkhand's cost burden is not expected to rise by more than about 3 percentage points before beginning its long descent as the state retires more of its DBS liabilities.

For Chhattisgarh, the shape of the cost curve does not change under scenario 2 (Figure 6). Costs simply become higher. Also under scenario 2, Chhattisgarh's cost rate will double in the 15 years between 2010 and 2025. Thereafter, it will fall consistently. In 2040, the cost rate will return to its 2010 level of 9.5%. Although Chhattisgarh has the lowest cost rate of the five states today, at mid-transition, its DBS cost burden will match the mid-transition burden of Jharkhand and Madhya Pradesh.

Figure 6 Comparison of Cost Rates under Two Scenarios, Chhattisgarh, 2010–2060



Source: India's state pension model as calibrated for the states shown.

The comparison between costs under core assumptions and scenario 2 provides two insights. First, even modest shifts in trends can have a significant impact on cost rates during the transition. Second, the changes in cost rates observed are the results of only modest changes in assumptions. There are other reasonable sets of assumptions whose effects could be studied. However, projections cannot include all possibilities. Speculation quickly becomes unproductive, and each successive set of assumptions adds less information to the policy process. The lesson is that, although two or even three scenarios may be instructive, it is in the best interest of sound policy development to limit the number of scenarios and assumptions that are varied. The most productive approach is to (i) focus on the one or two scenarios that

are most likely to proximate the next 20 years of the transition, (ii) judiciously monitor those events to which costs are most sensitive, and (iii) prepare new projections as frequently as circumstances require.

D. Exogenous Influences on Cost Rates

Many of the variables that influence pension costs are under the control of both central and state decision makers, including the rules governing pensions and the granting of pension increases. Other variables, referred as exogenous variables, are less subject to the control of these decision makers. The most recognized of these among pension experts are (i) mortality rates, which directly determine the likelihood that a worker will reach retirement age and the life expectancy of those who do; (ii) retirement age, a variable over which decision makers can have influence but often choose to treat passively; and (iii) the rate of growth of state revenue over which states have limited control that they would not choose to exercise solely on account of pension costs.

This section examines the effect of the major exogenous variables on DBS cost rates and trends in these rates during the transition to the NPS. The static scenario is used as the baseline against which the impact of exogenous variables is measured. The static projections were selected because they are not confounded by shifting trends in the exogenous variables being studied.

1. Changes in Life Expectancy

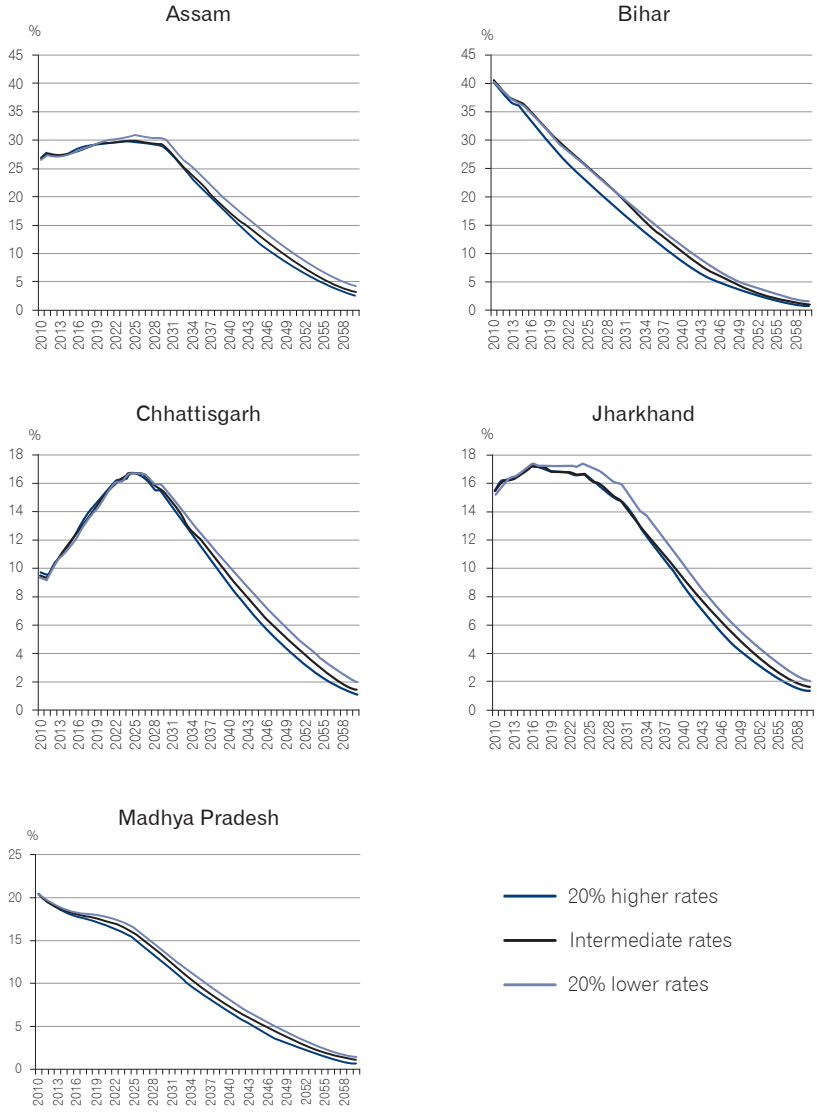
Analysts usually view mortality improvement as a slow, steady trend. In actuality, large shifts in mortality can and do occur in relatively short periods of time, and there can be long periods with almost no improvement. Bhutan is an example. In the late 1990s, penicillin became widely available in rural Bhutan for the first time. Life expectancy increased rapidly, and the government was forced to reconsider a planned pension because it was likely to become too costly. Likewise, the longer the time period before significant DBS cost savings begin to emerge, the greater the risk that a shift in mortality rates could prolong the transition and increase its cost to states.

The mortality rates in these projections had an even more fundamental risk—their level could have been wrong. Age-specific mortality rates were not available for Indian civil servants; as a proxy, the age–sex-specific rates for the all-India urban population reduced by one-half were used. Under this approach, male civil servants had life expectancies of 22.9 years at age 60 years and 15.6 years at age 70 years. Females had somewhat longer life expectancies. These rates compared favorably with many developed countries and should provide protection against overstating costs due to the understatement of life expectancies. At the same time, the rates that were selected were not the

lowest observed internationally. If mortality rates for Indian civil servants are even lower than assumed, then pension costs will be higher than those shown in the baseline using core assumptions (Figure 1).

Figure 7 examines the impact of even longer life expectancies, using mortality rates 20% lower than the core rates of one-half of all-India urban rates. State projections were also run using mortality rates 20% higher than the core rates.

Figure 7 Effects of Mortality on Defined Benefit Scheme Cost Rates, 2010–2060



Source: India's state pension model as calibrated for the states shown.

The only finding of note is for Jharkhand. If mortality rates are lower than in the core projection, the cost rate, after rising to its peak, which is only 2 percentage points higher than its initial cost rate of 15%, will remain on a plateau for 10 years before beginning to fall again. This finding appears in other contexts later in the chapter.

Errors in assumed mortality rates do matter. If realized mortality rates are lower than assumed, cost rates are higher. If realized mortality rates are higher than assumed, costs rates are lower. However, the impact on costs is never more than 1 or 2 percentage points. Hence, the assumed level of mortality is not of paramount concern. If understated by 20%, it is not likely to add more than 1 percentage point to cost rates. Similarly, if overstated by 20%, the reduction in cost rates during the transition will also be small.

2. Trends in Retirement Age

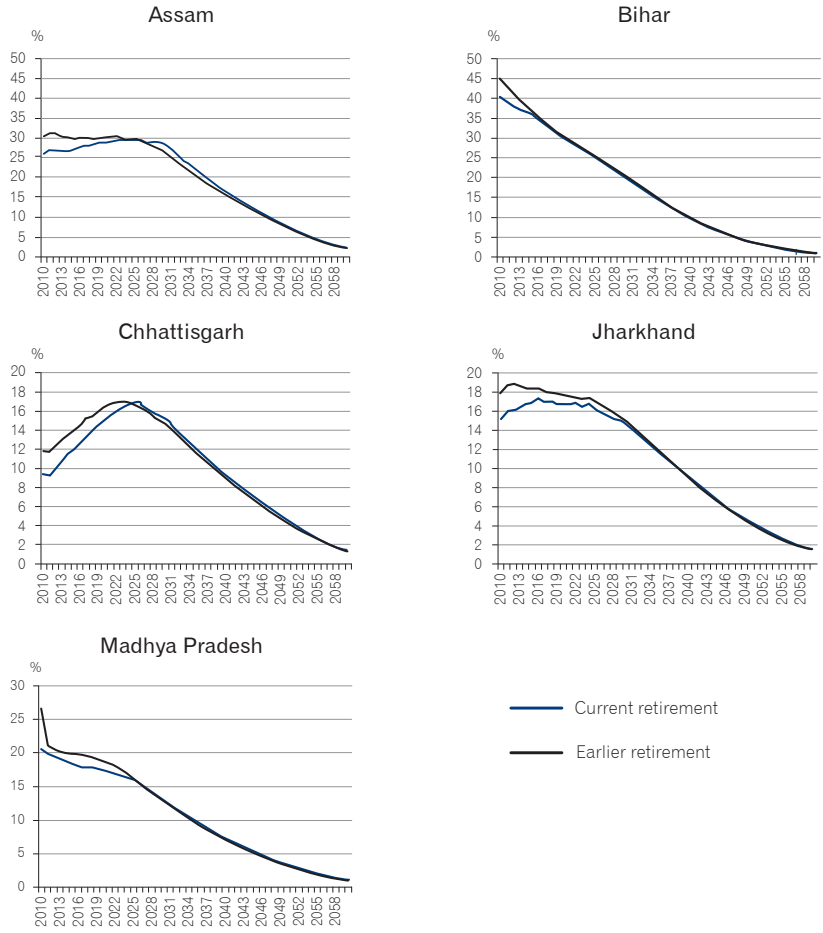
Age at retirement is not entirely outside of the control of state decision makers. Rules can be devised that force workers to delay retirement or that encourage workers to retire at younger ages. Nonetheless, states tend to treat retirement age as largely exogenous. Compulsory retirement ages have been raised to encourage workers to work longer. At the same time, the age at which a full pension can be received has been substantially lowered by the central government, and this is being followed by states. Interestingly, the liberalization of the requirement for a full pension was adopted with the notion that it would have no effect on retirement age, or its effect was not considered.

Figure 8 illustrates the impact on cost rates if workers disappoint expectations and choose to retire an average of 12–18 months earlier than they do now.

If tomorrow workers choose to begin retiring 1 year earlier, all states would experience an immediate increase in cost rates. However, the size of the increase and its persistence would vary. For an 18-month decrease in average retirement age, initial increases in cost rates varied among the states, from a high of nearly 5.0 percentage points (Bihar) to a low of 2.5 percentage points (Chhattisgarh and Jharkhand). The increase in the cost rate of Assam amounted to 4.5 percentage points.

The initial effect of earlier retirement on cost rates depends upon the number coming into retirement versus the number already retired. The larger the total number of retirees relative to those retiring each year, the smaller the increase in cost rate. This partly explains the disappearance of the impact on costs after a few years. In three of the five states, the effect on cost rates disappears within 13 years.

Figure 8 Effects of Retirement Age on Defined Benefit Scheme Cost Rates, 2010–2060



Source: India's state pension model as calibrated for the states shown.

Earlier retirement is not a major concern if the average retirement age does not fall by more than 18 months. Given current opinions and observed behavior, retirement age may remain at the present levels indefinitely, although any major change in opportunities to work full- or part-time after retirement could change this.

Nonetheless, it would be wise to monitor retirement age. As illustrated, any sudden change would cause a bulge in the cost curve that could cause temporary fiscal stress. In addition to raising retirement costs in the short term, early retirements have a multiplier effect because they increase demand for new hires to fill gaps created by retiring workers. The state concerned pays 50% of the retiring worker's wages as a pension as well as the full-time wages of any new employee required.

3. Growth in State Revenues

The discussion on inflation in section A of this chapter pointed out that it is not the rate of growth of revenues that drives cost rates but the difference between the rate of growth of revenues and the rate of growth of pensions. If the rate of growth of revenues (i.e., the denominator of the cost rate) is faster than the rate of growth of pension outlays (i.e., the numerator), the cost rate falls, and more revenues are available for other uses.

In DBSs, pension growth is linked directly to wage growth. Any increase in wage scales is passed on to pensioners according to their rank at retirement. In pension terminology, pensions are indexed to wages. In the projections under the core assumptions, wages are growing at 5% per year and state revenues at 8%. Figure 9 illustrates the impact of decreasing the spread between revenues and pension outlays from 3 to 1 percentage points.

The figures highlight the substantial influence of the difference between the rates of pension increases and revenues. Narrowing the difference to 1 percentage point markedly increases the fiscal burden, ratcheting up cost rates by 25 percentage points or more in all states. In the worst-hit state, Chhattisgarh, the average cost rate increases by more than 50%.

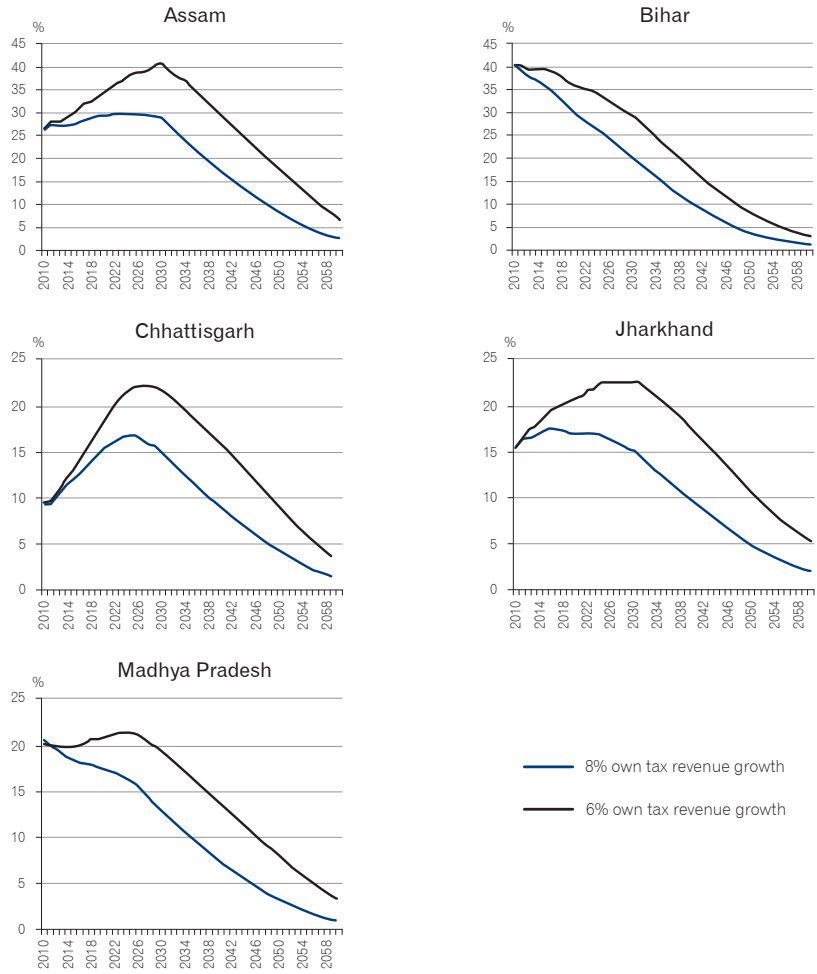
An equally striking result is the transpositions of the cost curves. The shift in the curve is particularly conspicuous for Assam and Jharkhand. In Assam, the moderate increase in cost rates before these begin to decline is transformed into a steady, sharp increase lasting 20 years. The cost rate, at its peak, is 25% higher than in the core projection.

The cost curve for Jharkhand is transformed from very moderate cost rate increases followed by declining rates into a curve with a distinct peak that is reached only after 20 years of steadily increasing costs. At the peak, costs are almost 25% higher than the highest cost projected using core assumptions.

For Chhattisgarh, slower revenue growth with no change in pension or wage growth causes already rising cost rates to climb much more steeply, with rates doubling (9.4% to 18.9%) over the next 11 years and continuing to grow until peaking at 22% in 2026. Bihar remains in the enviable position of having constantly declining costs, although at a slower rate.

For Madhya Pradesh, the decline in revenue growth transforms its transition from one with continuously falling cost rates to one with modest but persistently rising cost rates for 14 years. At the peak, the state is spending 8% more of its revenues on DBS outlays than under the core assumptions.

Figure 9 Effects of Lower Rates of Revenue Growth on Defined Benefit Scheme Cost Rates, 2010–2060



Source: India's state pension model as calibrated for the states shown.

The figure underscores the importance of economic growth and its impact on state revenues. The effect of economic growth on revenues is of paramount value to governments. Economic growth can literally grow a state out of long-term liabilities such as those created by DBS pensions. At the same time, the additional new revenues can provide the means to facilitate continued economic growth. However, the successful use of growing revenues requires discipline and political and bureaucratic will. If pensions are increased in line with economic or revenue growth, the value of strong economic growth in easing the fiscal burden of DBSs will be lost.

Finally, the figure also underscores the importance of tracking those factors affecting revenue growth and anticipating any change in trends. If there are signs that revenue rates have begun to slow, or will begin to slow, new pension projections may be needed to anticipate the likely increases in cost rates and to develop a program of cost-cutting measures to avoid excessive cost rate increases.

4. Establishing a Baseline for Financial Planning

The remainder of this book uses the core assumptions with one modification: between 2020 and 2030, the rate of growth of state revenues will be decreased from 8.0% per year to 6.5%. The adjustment will be in equal increments of 15 basis points (i.e., 0.15 percentage points) per year. Lower revenue growth increased cost rates in the out years and protected the projections against being too optimistic. The decline in revenue growth is far enough in the future and phased in over a long enough period that there will be sufficient time to update projections if required.

E. Government New Pension Scheme Contributions

A small but significant part of transition costs is the government contribution of 10% of wages to the retirement accounts of NPS workers. As the DBS civil servants exit service, new NPS workers will fill the vacancies created in the ranks of the civil service. The NPS contributions for these workers are an additional cost that adds to the revenues that need to be raised to finance the transition from a DBS to the NPS.

Projecting NPS contributions requires an estimate of the number of NPS workers in each future year and the amount of their wages.

1. Average Wages of New Pension Scheme Enrollees

During the projection period, average NPS wages depended upon a number of factors. Paramount are the skill levels required of newly hired civil servants. With increases in technology and in the demand for higher-quality state services in health and education, the average incoming worker may have wages on hire that are higher than the wages of many DBS retirees. A credible estimate of average entry wages and past and expected trends would require state-specific studies.

The modelers took a straightforward approach to estimating the average wage of new entrants to state civil service. After experimenting with trending average

NPS wages from a proportion of the DBS average to the full DBS wages over the course of the projection, a decision was made to use the same average wage for NPS civil servants as the average wage of DBS civil servants. This approach overstated the average NPS wage and NPS contributions in the early years of the projections. However, the number of NPS workers is sufficiently low in the early years that a 25% error in NPS cost rates would not seriously distort overall cost rates.

2. Number of Civil Servants Covered by the New Pension Scheme

To compute NPS contributions, the average wage of NPS enrollees must be multiplied by the number of NPS workers to obtain the total NPS wage bill. In estimating transition costs, the relevant number of NPS workers are those needed to replace the departing DBS workers. This does not imply that states will not increase the sizes of their civil services. Several states have labor shortages in health, education, and public safety, and adding to the civil service ranks will include adding 10% of wages for NPS contributions. However, the pension costs for these additional workers are not transition costs.

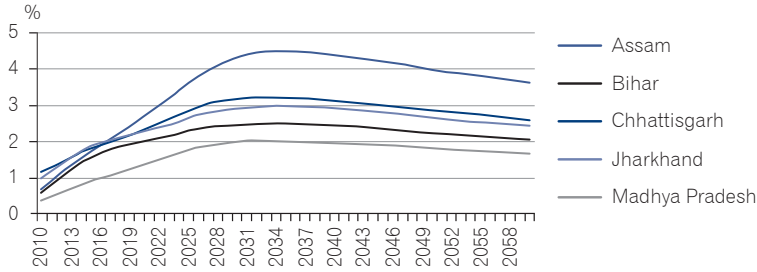
If the departing DBS workers must be replaced to maintain the current level of government services, 10% of the pension costs of these workers is a fiscal burden associated with the pension reform. Additions to the civil service are discretionary. NPS pension contributions are a direct component of monthly compensation that directly affects the cost of increasing the size of the workforce. However, the addition of NPS contributions is not different from any other permanent wage increase. The state has no choice except to consider full wages when determining the budget requirements for expanding the size of the civil service. When recent wage scale adjustments increased wages, the state had to hire based on the higher wages. The same is true for the most recent increases in dearness and for the NPS. If the state opts to expand its civil service labor force, it will do so based on its ability to pay the required wages, which are higher because of recent wage scale increases, dearness increases, and addition of NPS contributions. However, NPS contributions for additions to the size of the civil service are not transition costs; these are part of the cost of expanding the size of the civil service.

3. Cost Rates from New Pension Scheme Contributions

Figure 10 shows cost rates generated by the state portion of NPS contributions.

Most striking in this figure is the low percentage of revenue required to finance the NPS. At current enrollment levels, NPS cost rates for the five states fall between 0.7% and 1.2% of states' OTR. Cost rates will rise as larger proportions of state employees come under the NPS. They will eventually add 2.0%–4.5% to OTR, depending upon the state.

Figure 10 Ratio of New Pension Scheme Contributions to State's Own Tax Revenue, 2010–2060



Source: India's state pension model as calibrated for the states shown.

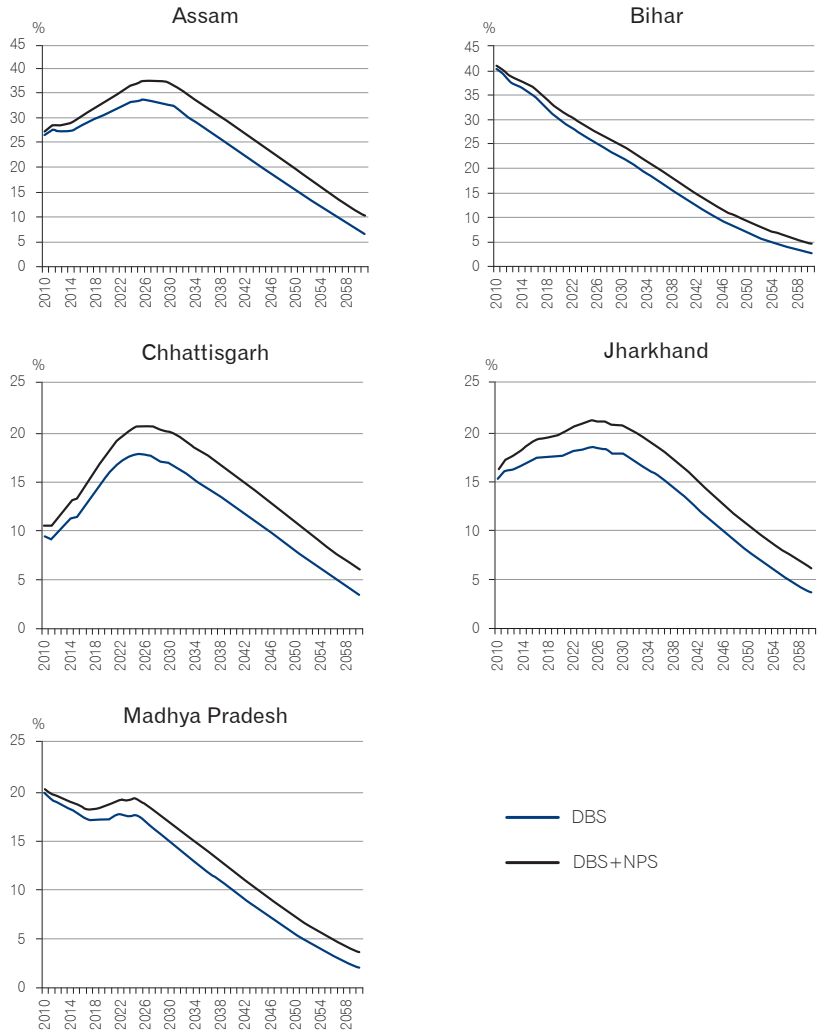
Consolidated cost rates for DBS outlays plus government NPS contributions are shown in Figure 11 for each state.

NPS contributions have two effects on cost. They shift the cost curve up by the NPS cost rate and move the curve outward, extending the transition and delaying real cost savings. In Assam, for example, the time when cost rates return to current levels and create the first real savings is moved from 2036 to 2041. For Madhya Pradesh, cost rates begin falling immediately as these do in the absence of additional NPS contribution costs. However, the time to achieve any given level of savings is extended by 3 years during the decade of 2010 and 4 years thereafter.

The NPS cost rate is of interest only because it adds to costs. If there are serious cost concerns regarding DBS liabilities, the NPS cost rate heightens them and may indicate a need for stronger measures to control DBS cost rates. However, there is little that can be done to manage NPS cost rates. The government can (i) downsize the civil service, (ii) reduce its NPS contribution rate, or (iii) shift a part of its own contribution rate to NPS enrollees. It would seem unwise to make either of the last two changes this early in the implementation of the NPS. Workers need to see the NPS in operation and gain confidence in it before the government makes any change that would reduce benefits or add to the cost paid by workers.

As a practical matter, decision makers will probably pay little attention to the NPS cost rate during transition. The entire focus will be on the costs of DBSs since these are amenable to manipulation.

Figure 11 Cost Rates with New Pension Scheme Contributions Added to Defined Benefit Scheme Outlays, 2010–2060



DBS = defined benefit scheme, NPS = New Pension Scheme.
Source: India's state pension model as calibrated for the states shown.

F. Managing Emerging Liabilities

Pension outlays can be increased immediately, but reducing pension outlays takes much longer. In 2 years, reductions usually are only marginally possible. Larger reductions may take 5 years or longer, even when bold action is taken.[16]

Controlling pension costs takes skill, knowledge, and good timing. Pension projections bring invaluable information, which cannot come from other sources, on the process. Without projections, the extent of the problem cannot be fully known, and the effectiveness of particular cost management strategies cannot be evaluated.

Cost savings are possible by manipulating any feature of a pension scheme. Among the features commonly considered most useful for cost management are (i) lump sums paid at retirement, (ii) age of retirement, and (iii) adjustments to pension amounts after retirement. Costs can also be managed by encouraging workers to switch from a DBS to the NPS.

1. Lump Sums

As previously stated, three types of lump sums are available to DBS employees: commutations, gratuities, and leave encashments. Commutations are forfeitures of part of the monthly pension for immediate cash. At the worker's option, these are available at retirement. Meanwhile, gratuities are one-time bonuses paid for various lengths of service. These are paid at retirement or when a DBS worker dies in service. Leave encashments are paid whenever an employee leaves the service, including at retirement or death in service. A change that reduces any of these lump sums will reduce pension costs.[17]

In schemes that permit them, commutations are usually a good source of cost savings. In most countries, workers commute as much of their monthly pension as rules permit. When commutations are reduced or eliminated, pension costs are redistributed from large single amounts at retirement to much smaller monthly amounts paid over the entire life of the retiree in the form of an unreduced pension. Reducing or eliminating commutations levels out pension outlays and reduces cost rates at their peak.

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[16] The 2004 decision to convert civil service pensions from DBSs to contributory schemes was a bold, forward-looking action. It will not reduce pension costs for over 20 years, and before savings are realized, pension costs will increase.

[17] Leave encashment is not governed under DBS rules. It falls under leave rules and applies to all civil service workers. Changes examined herein are only intended to affect DBS retirees or DBS workers dying in service.

In four of the five states, civil servants can convert up to 40% of their pensions into immediate cash. In Madhya Pradesh, the limit is 30%. The amount of the lump sum is computed based on a table of factors that converts Rs1 of pension reduction into a number of Indian rupees of immediate cash. The factors vary by age. In other countries, commutations result in lifetime reductions in monthly pensions. In India, the reduction is for 15 years, after which the full pension is reinstated. In effect, the commutation is treated as if it were an interest-free loan.

According to the pensioner databases, commutations are far less popular in India than among civil servants elsewhere. The state with the highest commutation rate was Jharkhand, where 54% of workers who had been retired for 10 or fewer years had commutation reductions recorded on their pension records. The average ratio of monthly pension commuted was 21% of the whole pension. Assam was the next highest, with its data indicating that 31% of retirees commuted an average of 30% of their pensions. Commutation data were not available for Bihar.

Compared with other participating states, Madhya Pradesh uses commutation factors that provide considerably lower lump sums for any given percent of monthly pension commuted. Only 6% of pensioners retiring in the past 10 years had commutation reductions on their pension records. The average commutation was 29% of the full pension. The data from Chhattisgarh indicated that slightly less than 6% of workers commuted a portion of their pensions. The amount commuted in the state could not be verified.

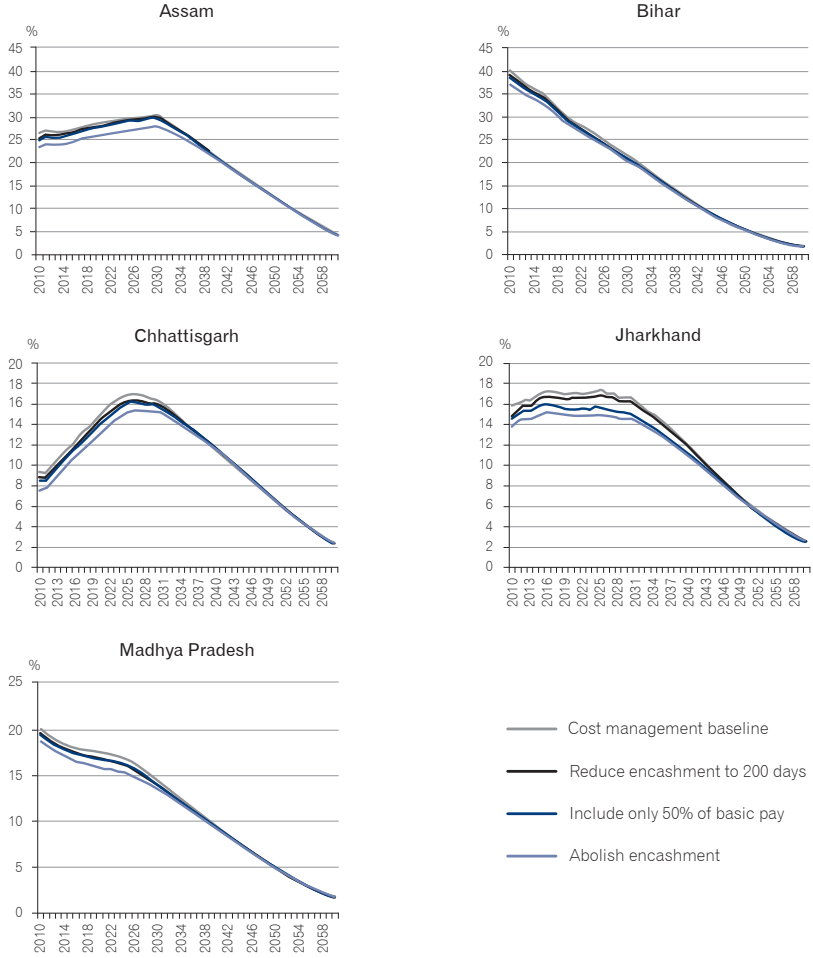
With commutations being limited in number, the savings to be gained by further discouraging commutations would be worth little. Any state that would like to discourage commutation can successfully do so by following the lead of Madhya Pradesh.

Gratuities and leave encashments are larger annual expenditures and, hence, have better potential as a source of pension savings. Leave encashment is paid on a maximum of 300 days, and most workers leaving the service are at or near that number. The basis of the payment is basic pay.

Three alternative proposals were tested for their effectiveness in lowering cost rates. The first reduced encashment days to 200. The second reduced the amount of pay included in the basis for cash enhancements from 100% of basic pay to 50%. The final option was to abolish leave encashment entirely. This last option provides information on the maximum cost savings available and the range of adjustment that might be considered. Figure 12 shows the effect of each option on cost rates.

The impact of leave encashment on cost rates is quite small unless cuts are deep. Even a 50% reduction has a marginal impact in all states except Jharkhand. Moreover, the effect is only a temporary one. By the mid-2030s, the

Figure 12 Effects of Reductions in Leave Encashments on Defined Benefit Scheme Cost Rates, 2010–2060



Source: India's state pension model as calibrated for the states shown.

vast majority of DBS participants will be retired. At that point, leave encashments will be too few to have any impact on cost rates. There may be other reasons to reduce or to eliminate leave encashments, but these offer little opportunity for cost reduction unless they are severely cut back or eliminated. Their only use as a cost reduction tool might be as a piece of a large package of smaller cost reduction measures.

Gratuities include both basic pay and dearness and offer 1 month of half pay for up to 33 months. These constitute a larger DBS outlay than encashments. Here

again, three options were examined. The most modest reduced the maximum years of service from 33 to 30 for all states except Madhya Pradesh where gratuities are already lower. The second reduced from 33 years to 20 years the maximum number of years required for a full pension. The final option eliminated gratuities altogether and is not recommended but was included as it indicates how much savings would be possible if extreme measures are required. Figure 13 presents the results of the three options.

Figure 13 Effects of Options for Reducing Gratuities on Defined Benefit Scheme Cost Rates—Assam, Bihar, Chhattisgarh, and Jharkhand, 2010–2060

Source: India's state pension model calibrated for states shown.

The impact of using gratuities as a tool for influencing DBS cost rates parallel those of leave encashments. Like encashments, modest changes in rules governing gratuities have little effect. Moderate changes, such as reducing the maximum years in the formula to 20, have a moderate effect in all states except Bihar. The states could reduce the gratuities maximum to 20 years as part of a larger package of changes. The downside of a reduction in years of service is that it would eliminate the incentive to continue working past 20 years of service, the point at which a full pension will become available in the future.

While modifying lump-sum payments provides reasonable savings in many countries, these provide few opportunities for significant cost reduction in Indian states.

2. Post-Retirement Adjustments

Another method for containing costs is to reduce dearness increases in pensions or to provide pensioners with less than the full wage scale adjustments given active workers. Civil service pension schemes in nearly all countries provide for periodic dearness increases. In addition to these increases, DBS pensions are increased whenever wage scales are adjusted. Under a DBS, a pensioner receives the same percentage increase to the pension as received by workers in the highest rank and grade that the pensioner attained while in active service.

In most countries, pension adjustments either preserve the pensioners' standard of living through dearness increases or provide pensioners the same increases in cost of living standards that workers receive through wage scale adjustments. Pension experts refer to adjusting pensions for both cost of living (i.e., price) and wage increases as double indexing. Removing the link between wage and pension increases is called decoupling.

Having no link between wage and pension increases is standard international practice. It is fully acceptable to link pension increases to wage increases if there are no dearness increases. However, linking pension increases to both wage and price increases is not an acceptable international practice. In this particular instance, where the pension scheme is being wound down and has a history of double indexing, India's state governments may not, at this point, feel any need to adhere to international standards. Nonetheless, the proposed reforms in DBSs are not about long-term pension reform but are focused on managing costs to ensure they do not unduly interfere with spending on other priorities. There is a wide range of options for revising DBS post-retirement adjustments to contain or to reduce costs, and some decoupling would certainly be appropriate.

To gain a clear sense of the value of decoupling in managing costs, cost rates were projected under three decoupling options: (i) increasing pensions by 90% of any increase in wages, (ii) increasing pensions by only half of any increase in wages, and (iii) making pension increases completely independent of increases in wages. These options involved a range of decoupling, from very modest decoupling of wage and pension increases to full decoupling. The specifications for operationalizing options for the projections were

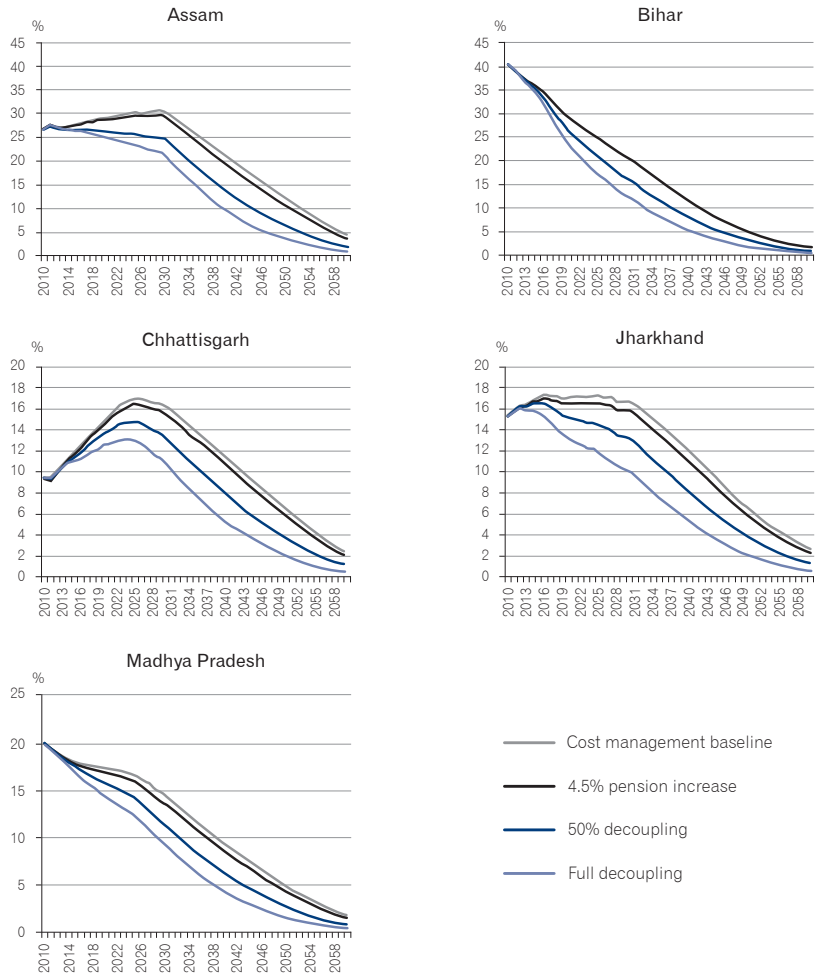
(a) modest decoupling, which involves reducing the annual 5.0% increase in pensions due to annualized wage scale increases to 4.5% in all years, beginning with the first projection year;

(b) 50% decoupling, which mandates that beginning in 2012, the 5.0% per year pension increase is decreased by 50 basis points (0.5 percentage points) each year until it is reduced to 2.5% per year in 2016 and years thereafter; and

(c) full decoupling, which provides that beginning in 2012, the 5% per year increase is reduced by 100 basis points (1%) per year until it reaches 0% in 2016 and remains at 0.

The results of the projections for each state are shown in Figure 14.

Figure 14 Effects of Decoupling Wage and Pension Increases on Cost Rates, 2010–2060



Source: India's state pension model calibrated for states shown.

With full double indexing of civil service pensions, decoupling is an excellent tool for managing future cost rates. Even a modest 10% decoupling (i.e., decreasing pension increases from 5.0% to 4.5% per year) permanently lowers costs. As a medium- and longer-term option, decoupling is ideal. Reductions in cost rates emerge quickly with a visible effect by the end of the 5-year phase-in period.

Assam is an excellent example. Even though not fully in force until 2016, the 50% decoupling completely offsets rising cost rates beginning in 2012, the first year of the 5-year phase-in. Holding pension increases to 50% of wage scale adjustments would completely transform Assam's cost rate curve. If the state is to phase out full wage indexing of pensions over the next 5 years, Assam would experience consistently falling cost rates beginning immediately. The decline is modest at first, and it is not until 2028 that the current rate of 27% falls to 25%. During that period of time, the NPS cost rate would more than offset the declines. Nonetheless, Assam would be in a much better position than it is today.

Moreover, a 50% decoupling might be especially useful to Chhattisgarh. Although the state has a low cost rate today, its rate could easily double by 2025. One-third of that increase would disappear if Chhattisgarh partially decouples wage and pension increases. Jharkhand, like Assam, would be helped enormously by a 50% decoupling. Under current conditions, it can expect cost rates to plateau at around 17% and stay at that level for almost 2 decades. With a 50% decoupling fully phased in by 2016, Jharkhand should begin to see its cost rates begin to decline 8 years from now. The decline would be sustained and rapid.

Complete decoupling is the option with the largest reduction in cost rates. Under this option, wage increases have no effect on pensions. Although it may seem extreme, this option would give the states great flexibility in managing their DBS liabilities during the wind down. It would also give the states flexibility in granting and timing additional pension increases beyond dearness, which would remain in place. States could grant across-the-board pension increases, increases in minimum pensions only, increases for aged pensioners only, or progressive increases that gives somewhat higher increases to pensioners with the lowest pensions.

In most administrative settings, decoupling wage and pension increases is straightforward—it only takes political will. The situation, however, is different in India because of the decennial pattern of increasing wage scales and because the pay commission cycle is at its beginning rather than near the end, when revisions are made.

The revised Sixth Pay Commission wage scales are already in place in most states, and pensions should also have been increased. In most cases, the pension increase was nearly 40% and, in some cases, more. To decouple going forward means waiting roughly 8 years until the Seventh Pay Commission

makes its recommendations. If a decision were to be taken to decouple to manage DBS transition costs, 8 years would be a long delay. In the meantime, until the upper and lower limits of wage scales are adjusted, decoupling would be of no use as a cost management tool. The only way decoupling could produce near-term savings is to roll back pension increases based on the pay scale adjustments recommended in 2008.

Pension increases, once granted, cannot be rescinded. Thus, the means of rolling back past wage scale increases in pensions are to reduce pension increases going forward. One means of accomplishing this would be to withhold increases in dearness. The policy of suspending dearness increases eventually would offset all or part (at the state's discretion) of recent pension increases due to wage scale adjustments. Once the desired rollback is achieved, dearness increases can be reinstated. The state could explain to pensioners that going forward, pensions would be protected against erosion due to price inflation by increases in dearness. Within the period during which dearness would be withheld, pensioners would need to be told that this was because of the recent large increases in pensions resulting from wage scale adjustments and that dearness would be reinstated as soon as affordable. The state could also give a specific date for when dearness increases would again be awarded. To make the transition to decoupling less harsh, partial dearness increases could be paid throughout the roll-back period. This would slow the transition to decoupling but would help preserve goodwill and reduce controversy.

Cost containment is not the only reason for considering the decoupling of wage and pension increases. Under the NPS, the options for indexing pensions for dearness increases will be limited, and indexing NPS pensions for wage scale increases will be impossible. If the central government continues to provide generous double indexing for DBS pensioners, early NPS retirement cohorts will have a strong incentive to press for guaranteed indexing of NPS pensions as well. If the government yields, the NPS would begin acquiring unfunded liabilities similar to DBSs even before all DBS-unfunded liabilities are paid off. Now would be a good time for the central government to consider decoupling for its civil servants.

3. Increasing the Average Retirement Age

Increasing the average retirement age is a standard tool for managing cost rates in all countries with increasing life expectancies and falling birthrates. India's civil service, however, probably does not qualify for either of these conditionalities. The usual additional costs of increases in life expectancy have been eliminated by introducing the NPS. Moreover, with the NPS, there is no issue associated with increasing the long-term size of civil service. Nonetheless, manipulating the retirement age may be useful for states that will face high cost rates at some time during the transition.

The primary difficulty with attempting to raise the retirement age is the recent change in the rules in response to the recommendations of the Sixth Pay Commission. The commission recommended that the link between the minimum 20 years of service as a condition for the receipt of a pension and the required 33 years of service for the receipt of a full pension be invalidated. In the future, civil servants will receive a full pension any time after serving the minimum required 20 years.

The new rule has two important implications for controlling retirement age. First, the earliest retirement age with a full pension is at 20 years of service. A person entering service at age 18 years will be eligible for a full pension at age 38 years. Even a postgraduate entry at age 24 years would be able to retire with a full pension at age 44 years. Second, even if civil servants continue to choose to retire at the currently accepted retirement ages (58, 60, or 62 years depending upon state and job classification), there is now no legal mandate or financial incentive in DBS for retiring after reaching a specific age. In effect, there is no minimum retirement age.

When a state adopts the NPS, it grants workers the option to choose the retirement age that most suits their situation. To an outsider, it would therefore seem most objectionable to rescind this privilege by now imposing a minimum retirement age higher than the current voluntarily accepted retirement ages. On one hand, the state would be saying a full pension will be granted after 20 years of service. On the other, the state would require the worker to work until age 60 to receive a full pension. In combination, the two rules would not make sense.

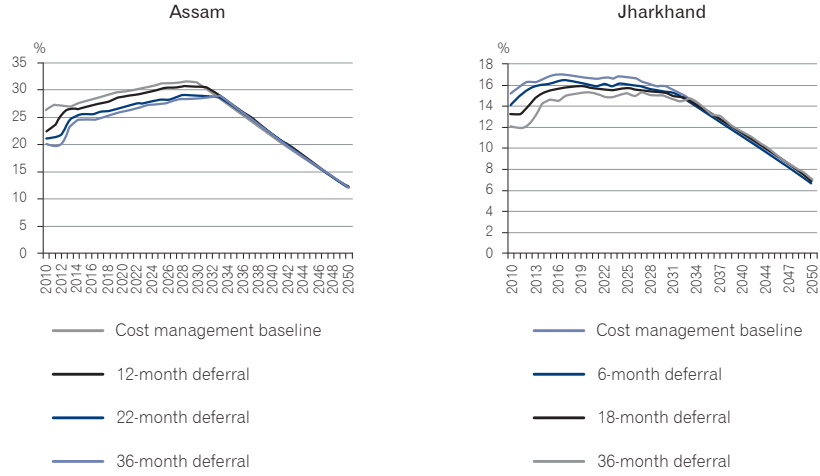
With no normal or minimum retirement age to manipulate, the only means of encouraging later retirement is to use economic incentives. Experience indicates that effective economic incentives cost nearly as much as they save.

Before trying to resolve this dilemma, it is worth the effort to investigate the effect of delayed retirement on cost rates. If the savings is great enough, it may be worth seeking ways to resolve the dilemma through economic incentives or by phasing in a new age requirement over a period of many years.

Figure 15 shows cost rates at current retirement rates and for various lengths of delayed retirement (months of deferral). Only two states, Assam and Jharkhand, have been used. It is not worth looking at all states unless raising the retirement age has great potential to lower peak cost rates or redistribute costs over time.

Since the DBS is being phased out, any retirement age policy can only have an effect until the last active worker retires or until there are no longer enough active workers to affect costs. This would be in about 2035.

Figure 15 Effects of Delayed Retirement on Defined Benefit Scheme Cost Rates, Assam and Jharkhand, 2010–2050



Source: India's state pension model calibrated for states shown.

Lowering the retirement age has an immediate effect on cost rates. In the projections, the retirement rates were adjusted in full in the first year of the projection, which also turns out to be the year of maximum impact. If an increase in retirement age were implemented in a real setting, any new rule would be phased in. It is contrary to generally accepted pension practice to change the retirement age by more than a few months for workers who are within 3 or 4 years of retirement. Hence, the impact would be spread over several years. Nonetheless, in each year during the phase-in period, cost rates would fall or rise more slowly than otherwise.

To say that cost rates fall immediately means the cost rate is lower than it would be in the absence of policy change. It is obvious that, very often, policies do not cause the cost rate to fall immediately, if at all. The objective then is to keep costs within a reasonable fiscal envelope. Cost rates must not be allowed to become too high.

Delaying retirement is a tool that can be used to achieve lower cost rates, but only in the near term. The maximum impact is up front, and within 20 years, there will no longer be an impact. Furthermore, the effect observed in the first 5 years of the projection could be produced at a later point in the earlier years of the transition. After 2025, the change would not be effective.

Using the retirement age to help manage costs in the current situation has challenges beyond the obvious contradiction in current pension rules. First, it would be hard to predict the impact of any particular new rule. The projections

indicate that a reasonably long postponement in retirement age would be needed to obtain a substantial impact—at least 12 months and preferably longer. Second, this is not a tool that can be used frequently. Finally, the minimum full pension retirement age should not be changed for workers within 5 years of retirement.

Attempts to raise the retirement age are probably not worth pursuing. However, it would seem a good idea for states to continue to increase the mandatory retirement age. If, as many think, civil servants have a strong preference to continue receiving a full income as long as possible, then some increase in the average retirement age is possible by simply permitting work until a later age.

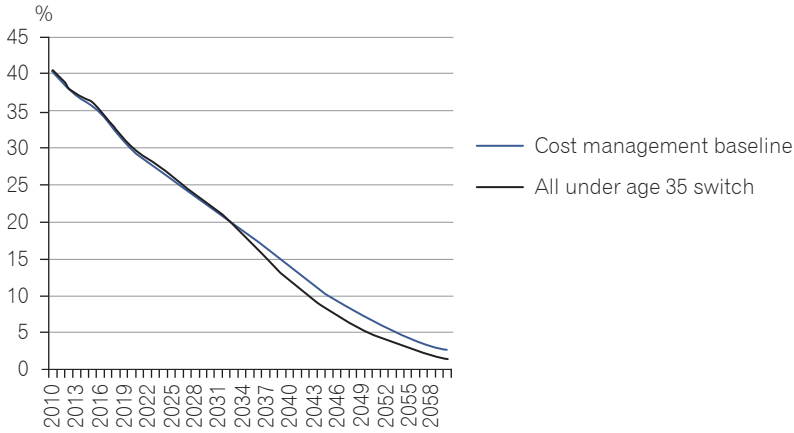
4. Transferring Defined Benefit Scheme Employees to the New Pension Scheme

Often, when newly hired employees are enrolled in a contributory pension scheme, previously hired employees are given the option to switch from the pre-existing DBS to the new one. In some cases, incentives are even offered to encourage employees to switch.

The five states closed their DBSs to new employees between 5 and 6 years ago. Hence, many workers who might have considered moving to the NPS are now too old for it to be a viable alternative. Workers should not be encouraged to switch to the NPS unless it is likely to produce a pension at least as high as their DBS one when they retire. This means workers who switch should preferably be age 30 years or younger and should definitely not be older than age 35 years.

A number of projections were made to gauge the potential savings from having workers under age 35 years switch to NPS. Jharkhand and Bihar were selected for the simulations because they had the highest proportion of DBS workers under age 34 years in their DBS workforces. For Jharkhand, projections were made for three options. The first was to offer workers under age 30 years the option to switch. With a 50% take-up rate, there was no discernable change in DBS cost rates. If the option were open to all DBS workers under age 35 years and 25% of workers age 30–34 years opted in, there would be some very small savings. Finally, projections assumed all DBS workers under age 35 years switched to the NPS. This option offered the maximum savings that could be derived from switching. It was applied to projections for Bihar, Chhattisgarh, and Jharkhand. Only Bihar, which had the largest number of DBS workers under age 35 years, showed any discernable effect. When it was assumed that only those under age 30 years switched, there was no discernable change in cost rates even for Bihar. Workers under age 35 years in Bihar totaled 12,837. The cost rates are shown in Figure 16 for Bihar when all DBS workers under age 35 years switched to a DBS.

Figure 16 Effects of Young Defined Benefit Scheme Participants Transferring to the New Pension Scheme on Defined Benefit Scheme Cost Rates, Bihar, 2010–2060



Source: India's state pension model calibrated for states shown.

Thus, encouraging or even requiring young DBS employees to switch to the NPS is not worth pursuing as a cost management strategy. Any small savings would be offset by NPS contributions that the government would have to pay. Nonetheless, states could offer the option of switching to workers under age 30 years as a goodwill gesture.

G. Need for State Action

The need for action to control DBS costs during the transition to full NPS coverage varies substantially among states. For Assam, the time for action is now, and the best option is decoupling. As described above, this would most probably place cost rates on an affordable track for the entire 50-year transition. Bihar has the option of acting whenever or never. It will experience falling cost rates under all but the most extreme conditions.

For Chhattisgarh, taking action soon would be best. Its cost rate is low now. However, it will rise soon, and, over the next 15 years, it is likely to double. Chhattisgarh is a good candidate for major (perhaps 100%) decoupling of wage and pension increases.

Jharkhand, meanwhile, has to decide whether to implement polices to push down costs very soon or to permit cost rates to drift to 16% and decrease hardly at all for 20 years before starting to decline rapidly. Madhya Pradesh does not need to take any action. However, its cost rates are fairly high and,

although these are expected to fall between now and 2020, the state should monitor them closely.

States now have the information needed to take action to control future DBS cost rates. However, before taking action, they will need help formulating the implementation details of the options that they choose. They will also need assistance in developing methods for tracking results.

H. Conclusions

The projections presented in this chapter are based on sound data and solid modeling. However, the strength of a projection does not guarantee that it will be borne out. If a projection indicates that cost rates will fall continuously, this may not, in fact, happen. At some point, cost rates may begin to increase. If there is no change in fundamentals, these should begin drifting back to their lower long-term trend in a short time. However, any deviation in costs from the projected trend will have to be promptly and carefully studied to ensure that there has not been a permanent upward shift in costs due to government action or a shift in an underlying trend.

One of the strongest points illustrated by the five sets of state projections is that the only real source of information on the cost rate curve for a particular state is a projection designed specifically for that state. States cannot rely on their own past trends. The states with the highest costs today are not necessarily the ones that will face the greatest fiscal burdens from the payment of DBS liabilities 5–10 years from now. Cost rates can change quickly. Projections using gross trends have a very high probability of being misleading or simply wrong. They miss crucial turning points in cost rates and can easily lead to incorrect policy conclusions.

Similarly, it is not possible, on the basis of the projections, for these five states to anticipate the fate of any other state or group of states. Each state needs its own projections. This work will not be difficult or extremely lengthy for states with reasonably comprehensive, automated employee databases and a reasonably large number of state pensioners serviced through SBI. For states without automated payrolls and employee databases, DBS pension projections will necessitate prior automation, be costly, and take considerable time, perhaps years, to complete.

Just as the experience of one or a few states cannot be generalized, neither can international experience. International experience is often relied upon as a source of wisdom on the effects of various cost-containment strategies. However, as shown by the behavior of Indian civil servants toward availability of commutations, India is not inclined toward computation of their pensions to

immediate payable lump sums. In fact, the difference in behavior is so great that international experience would have led to the incorrect conclusion that limiting lump sums would be a good avenue for reducing cost rates.

State projections showed that, when changed simultaneously, even modest shifts in trends can have a significant impact on cost rates during transition. States need to make a conscientious effort to track trends in variables that affect pension cost rates. The focus should be on the two major trends—revenue growth and pension costs. States need to establish a process to track at least these two major drivers of cost rates.

Pension projections provide invaluable information that cannot come from any other source. Without well-grounded projections, the extent of the problems facing each state could not be fully known. The best cost-containment tools available to address the specific problems could not be isolated and tested for effectiveness. In addition, without projections, there would be no way to judge the success of the cost-containment strategy adopted. Further, there would be no means for comparing cost rates resulting from cost containment with the cost rates in the absence of state action.

There are no shortcuts if states want to know the level and pattern of their transition costs and be able to manage them. Customized databases and a model that can fully utilize the data are required.

V. Implementation of the New Pension Scheme

A. State Participation Nationwide

The Government of India introduced a defined contributory pension scheme, the New Pension Scheme (NPS), effective 1 April 2004, which covers all new entrants to government service. The Pension Fund Regulatory and Development Authority (PFRDA) completed the institutional architecture of the NPS, and National Securities Depository Limited (NSDL) was selected as the central record-keeping and accounting agency. Three pension fund managers, a custodian, and a trustee bank were also appointed.

With central government encouragement, states were quick to notify and began excluding newly hired civil employees from their existing defined benefit schemes (DBSs). Twenty-three have notified to date. Of these, 15 notified before the end of October 2005. Nonetheless, NPS implementation has been slow.

1. Status of State Implementation Nationwide

Less than half of the states that have notified their intention to implement the NPS have issued individual account numbers to their employees. Most have begun deducting NPS contributions, and some have issued NPS statements to employees. However, eight have not yet begun deducting individual contributions from the effective date, leading to backlogs in information and contributions of up to 6 years. Many states continue to face administrative difficulties. Some still struggle to identify eligible NPS employees, and many are making little progress in implementing a payroll-linked arrangement for the periodic transfer of individual and government contributions to the NSDL and other service providers. Most states making deductions are channeling contributions to state public deposit accounts.

Three to five years after notification, few states had begun transferring individual employee data and NPS contributions to NSDL. Only 12 states have executed agreements with the agency, and even fewer—eight—have entered into agreements with the NPS trust. Most continue to indicate that

they require technical assistance for their effective migration to the national NPS administrative system.

2. Status of Implementation in the Participating States

In October 2005, the five states working with ADB experts all had notified their NPS participation, but none had electronically based record-keeping systems for the NPS. By August 2010, however, these five states presented quite a different picture. Chhattisgarh, Jharkhand, and Madhya Pradesh had been seamlessly transferring their NPS records and contributions to NSDL and had even transferred the old legacy data for their early NPS years after NPS notification. Bihar had recently started transferring data from a few district treasuries and was expecting all of its treasuries to be transferring data by the end of the fiscal year. Assam was the sole outlying state. It had yet to begin in earnest record keeping for the NPS and had not begun deducting employee contributions despite having been one of the states that notified early in 2005.

The case studies below describe where each state stood with NPS implementation in early 2007, the approach it used to move forward, and where it stands today.

B. State Case Studies

1. Assam

Notification. The state expressed its intention to introduce a contributory pension scheme for all government employees appointed on or after 1 February 2005. In a letter dated 25 January 2005 to all secretaries, deputy commissioners, and heads of departments, the finance secretary advised that the following was to be inserted in all advertisements and all appointment letters issued on or after 1 February 2005:

> Government servants joining the service of the State Government on or after 1 February 2005 shall not be governed by the existing Assam Services (Pension) Rules, 1969 and orders issued there-under from time to time. So far as their pension and other retirement benefits are concerned, they will be governed by a new set of Pension Rules, which are being formulated in line with the Contributory Pension Scheme announced by Government of India recently.

Pension rules, which grant defined benefit pensions to state employees, are not applicable to new employees appointed after 1 February 2005. However, these rules were never amended to make clear this exclusion. It was also understood that the general provident fund (GPF) rules are not applicable to government employees appointed on or after 1 February 2005. Yet, the above communication does not explicitly mention this.

Since 1 February 2005, over 1,000 employees have joined the state government service, largely in police-armed battalions. These employees are not being subjected to any GPF deductions, nor are any contributions to the new scheme being deducted from their salaries. It is expected that many more armed members of the police force as well as teachers will be recruited in the near future, and it is not known whether the appointment letters of these employees contain language that excludes them from the DBS and GPF schemes. There may be legal disputes also about the applicability of the new contributory pension scheme, in the absence of any notification of the new scheme and with existing pension and GPF rules not being amended appropriately. The ADB experts urged Assam to begin keeping records as soon as possible and pointed out the critical dangers of not beginning to track employees that would be covered under the new contributory pension scheme as they were hired.

However, no interim arrangements had been made even as late as 2009. There seems to be no possibility of the Office of the Accountant General maintaining records either. With fully computerized treasuries and full connectivity to central servers, the job of isolating contributory pension scheme members will be eased. However, the legacy work dating back to 2005 will undoubtedly prove difficult even after all new entrants issued letters of appointment after 1 February 2005 have been identified.

Current status. Assam has about 30,000 employees who are covered under the contributory pension scheme. As of August 2009, the government had not deposited the principal or interest of contributions in the state public account for any of these employees. The government also had not registered a single employee with NSDL, either electronically or through hard copies. Hence, NSDL had not issued any permanent requirement account numbers (PRANs) to employees of Assam and the trustee bank could not accept contributions even if the state chose to begin collecting them.

There has been no consolidation of old data, even internally. In August 2009, the concerned officials indicated that the state is registering nodal, drawing and disbursing officer (DDO), and other officers with the agency. However, no subscribers have been registered so far. The government plans to send hard copies of registration forms to NSDL over the next 6 months. When the technical assistance team last contacted Assam, the plans of the finance secretariat were not completely clear. A committee had been appointed to work on the many issues related to the installation of a record-keeping system within the new computerized framework.

Assam's decision not to immediately begin updating its employee database is unfortunate. It is not clear how 5 years of arrears in employee contributions can now be collected.

2. Bihar

Notification. The state applied the Bihar Government Servants Contributory Pension Scheme 2005 to all state government employees appointed on or after 1 September 2005, except those who were appointed on contract, those on deputation from public enterprises and local bodies, daily wage employees, and persons who had left active civil service employment and been reemployed. The resolution of government adopting the new scheme was notified on 31 August 2005. This order excludes new employees, as specified above, from the benefits of the Bihar DBS and GPF pension schemes. The order further provides for a deduction of 10% of basic pay and applicable dearness allowances for employees and a contribution of equal amount by the government. The order provides for maintaining the contributions in the public account of the state.

As of late October 2005, the state had drafted the rules for operationalizing the contributory pension scheme and forwarded these to the governor. These rules provide for the maintenance of the accounts under the new scheme by district general provident fund officers (DGPFOs) and the allotment of a PRAN to each subscriber. GPF accounts in the state, unlike many other states, are maintained by the DGPFOs, which consist of officers of the state government. The state had taken over the maintenance of GPF accounts for all its employees from the Office of the Accountant General effective at the end of March 1981. Offices of DGPFOs were created on 1 April 1986 and, since then, have been maintaining GPF records. The state thus has an institutional mechanism to keep individual records.

In late 2005, the following interim arrangements were made for operating the NPS until such time that the PFRDA-approved system is implemented.

(i) A 12-digit PRAN was established, with the first four digits representing the year contributions began, one digit for the class of the employee (e.g., civil), two digits being the code of the provident fund office, and five digits for a running serial of employees.

(ii) A separate schedule, in the same format presently being used for the GPF, was established. The new schedule was attached to the paybill presented by DDOs to district treasuries who, in turn, forward it to the DGPFOs.

(iii) Each new civil servant was to file information on a prescribed form immediately upon taking his or her post. The form detailed his or her name, father's or husband's name, designation, department or office, date of birth, date of appointment to government service, pay scale, basic pay, and nomination. Concerned heads of offices were to be responsible for providing this information monthly to the DGPFO for all new employees.

(iv) No interest rate was specifically notified, but it appeared that the GPF administratively determined interest rate would be used when the individual accounts start being maintained.

The state government intended to switch to the central NPS administer once it was established. In the interim, the state decided to use the state DGPFOs for operating the new contributory pension scheme.

Current status. Bihar has achieved 100% computerization of treasuries, which are linked to a central server by a wide area network. However, it still does not have a central database of its employees. Thus, paybills are prepared as manual bills based on electronic data at the DDO level. There exists a monthly mechanism to reconcile pensions paid by authorized banks and pensions as authorized by the treasury.

Bihar has signed a contract with NSDL. It has about 26,000 employees under the NPS, has been collecting these employees' contributions as well as those of government, and has been transferring the amounts to the state public depository. However, it has not been able to issue PRANs because data on all employees have not yet been submitted. Moreover, it has not been able to deliver data on individual employees covered by the NPS along with employee and state contributions to NSDL immediately as and when these become available. Hence, it has not been able to deposit the principal or the interest amounts of the contributions.

Nonetheless, Bihar has made considerable progress on fresh transactions. Information on regular contributions have started flowing from a few treasuries, and all other treasuries are expected to start sending regular contribution data within the next 6 months or, at the latest, by the end of this fiscal year. The treasuries transmit both data and contributions.

3. Chhattisgarh

Notification. The state issued orders on 27 October 2004 that all new employees recruited after 1 November 2004 were to become members of the newly introduced contributory pension scheme. These orders also stated that members of the scheme were not entitled to becoming members of the GPF. The order further provided for a contribution of 10% of monthly basic pay, dearness allowance, and a matching contribution by the state government.

The Office of the Accountant General was to allot index numbers for employees joining on receipt of application from the relevant head of office. The order provided that the office would maintain the accounts for the contributory pension scheme, while PFRDA would regulate the fund. Further rules would be issued after consultation with the accountant general of Chhattisgarh and PFRDA.

Chhattisgarh was definite in its decision that the Office of the Accountant General should be the focus of the administration of the scheme until records could be transferred to NSDL. The accountant general was less certain that this was the correct approach and raised several issues in writing. Some of the issues relate to the utility of the office maintaining accounts when the funds are to be remitted by the government to fund managers, the interim arrangements for transferring the funds until PFRDA appoints fund managers, the role of the accountant general when the pension annuity becomes payable, the responsibility and process for crediting interest if there is a delay in remitting funds or there are missing entries, and the responsible agency for the allotment of the account numbers. Several other procedural issues were also raised.

While protracted discussions continued with the accountant general, the state appointed over 5,000 employees who would fall under the contributory pension scheme. In the absence of an agreement with the accountant general, no account numbers were being allotted, and no deductions were made. The state is also expected to make many more new appointments.

Seeing the operational paralysis, the ADB experts took the following strong position with the state. The state government must immediately make interim arrangements for operating the contributory pension scheme. As NPS accounts and investments are to be operated by the state government only until a PFRDA-regulated central record-keeping and accounting agency and pension fund managers take over, it is not necessary to involve the Office of the Accountant General at all. The state can easily establish and maintain contributory pension scheme accounts since state treasuries are linked in real time with the state server, thus allowing for the integration of scheme accounts at the state level. A form can be filled out by the employee and furnished to the district treasury. The district treasury can complete the details electronically, and the director of treasury and pension can allot a unique identification number to each employee. Individual contributions can be received using a schedule attached to the paybill and can be posted monthly in scheme accounts in the treasury. The director of treasury can debit the government account for the government's contribution and post all contributions electronically to individuals' accounts. He or she could credit interest annually at the government-prescribed rate. Funds can then be transferred to pension fund managers when the PFRDA appoints a central record-keeping and accounting agency and pension fund managers.

Delaying the operationalization of a contributory pension scheme will create major complications in the face of substantial new recruitment. The state is capable of maintaining accounts in the interim and doing so will eliminate further negotiations with the accountant general. The state is determined to proceed accordingly.

Current status. The government has resolved the issue of legacy data and accounts; all principal and interest amounts have been deposited into individual accounts. The government has also issued single opening balances to NSDL as of 1 April 2009, rather than the annual balance issued by Chhattisgarh. Similarly, interest calculations and closing balances have been transferred as of the same date.

Chhattisgarh, as mentioned earlier, has a centralized payroll system in place where almost 67% of DDOs are registered online with NSDL, with the director of treasury as the nodal officer. All officials and other subscribers have been registered, and all soft copies of the subscribers' records have been sent to the agency for registration. As a consequence, the agency has issued PRANs to 100% of subscribers who have all have been issued account statements as of 31 March 2010. Data for the last 6 months of regular contributions have been seamlessly transferred online. There is a centralized single transaction method under which the data and contributions are transferred by the director of the treasury.

4. Jharkhand

Notification. The state applied a contributory pension scheme for all government employees appointed on or after 1 December 2004, except for contract service employers, persons on deputation from public undertakings or autonomous organizations, casual workers, part-time and ad-hoc appointees, and employees reappointed after retirement. The resolution of government adopting the new scheme was notified on 9 December 2004 with the order mirroring that of Bihar. It excludes employees from the benefits of GPF and the Bihar DBS, which is applicable to the Jharkhand employees as well. It provides for a 10% deduction from basic pay and dearness, and the same amount as the government contribution. As in Bihar, accounts under the new scheme will be maintained by the state central directorate of the DGPFOs who will allot account numbers. Contributions will be maintained in the public account of the state. The state's interim operational procedures are the same as those in Bihar.

The state government was recruiting many new employees and was keen to transfer funds to pension fund managers without waiting for PFRDA to license the central record-keeping and accounting agency and pension fund managers. It invited proposals from two banks for a scheme to manage and invest the contributions of employees and government in individual accounts. This was intended as an exercise to ascertain the availability of fund investment services. It was to be followed up with a regular tender for the provision of pension fund manager services. However, to the knowledge of the ADB experts, no bid documents were ever prepared.

To facilitate the administration of the NPS, the state requested the National Informatics Centre (NIC) to develop new software for entering GPF deductions

from the schedules in the treasuries. As the treasuries were being linked across the state, it was possible for the GPF module in the treasury software to be modified for the scheme. When the treasuries were linked electronically, it would then be possible to upload the data from the treasuries.

Current status. About 38,000 employees have been enrolled in the state NPS. All records of these employees are up to date, and 100% of the subscribers have been registered by NSDL. The hard copies of more than 50% of employees and the soft copies of the records of all employees have been handed over to this agency. As a consequence, it has been able to issue PRANs to all NPS employees. All past amounts have also been transferred to the agency, including full principal as well as interest. The legacy data opening balances of all of the years, including the principal and interest, have likewise been reconciled and transferred to the agency.

Jharkhand has a centralized payroll system where 100% of NPS subscribers are registered. The central database of all NPS employees is located at the GPF directorate of NIC and is maintained at district treasuries. The data are also updated at a decentralized location at the treasuries on a real-time basis. Fund transfers are affected through a centralized single transaction by the director of the treasury. All regular contributions have been transferred seamlessly online to NSDL for more than 1 year. Account statements have been issued as of 31 March 2010.

5. Madhya Pradesh

Notification. By amending Madhya Pradesh Civil Services (Pension) Rules, 1976 and Madhya Pradesh General Provident Fund Rules on 2 April 2005, the state excluded both temporary and permanent government employees appointed on or after 1 January 2005 from the DBS and mandatory GPF. New employees were to be enrolled in the new contributory pension scheme, which is what the NPS is referred to in the state. The state issued interim orders on 13 April 2005 for the contributory pension scheme to begin receiving contributions from employees, for state contributions to be deposited, and employees' individual retirement accounts to be maintained. In July 2005, the state drafted the rules for operationalizing the contributory pension scheme.

By the interim orders of April 2005, DDOs were directed to deduct 10% of monthly pay and dearness allowances and to send the details of these collections along with salary bills to district treasury officers. The contributions were to be held in the public account of the state. A new interim schedule was prescribed for DDOs to provide information on the serial number, name, designation, and contribution of the employee. The schedule was attached to the paybill presented by the DDO to the district treasury officer.

The state initially preferred that the Office of Accountant General maintain the pension scheme accounts since it had maintained GPF accounts. However, while the maintenance of individual accounts was being discussed with the accountant general, employee contributions were not recorded in individual accounts. Also, employer contributions were budgeted but not drawn on and deposited in the public account. Furthermore, no interest rate was officially specified, although it appeared that the GPF interest rate would be used until Madhya Pradesh plugged into NSDL and the NPS contributions were actually invested through fund managers.

The ADB experts discouraged the state from using the Office of Accountant General for maintaining contributory pension scheme accounts. The state had a well-developed, fully computerized treasury accounting system. District treasuries had begun to report monthly contributory pension scheme deductions for each covered worker and could easily computerize the reports. Furthermore, a smooth transition to central NPS record keeping would be easier if accounts were maintained within the finance secretariat. The finance secretariat ultimately retained contributory pension scheme record keeping. It appears that the Office of the Accountant General was not responsive to the finance secretariat's request to transfer interim NPS administration to the accountant general.

Current status. As of August 2010, there were about 40,000 employees under the contributory pension scheme. The principal amounts of their contributions, including government contributions, had been deposited with pension fund managers. The interest amount had yet to be deposited.

The state has a central database of contributory pension scheme employees, which is located at a central location. However, the database gets updated only at the DDO locations. This database is also available on the internet. It is updated as and when a new employee joins the service. The monthly deductions are also being captured in the treasury server on a daily basis. The treasuries at decentralized locations maintain the details of transactions and deductions. The state has annual opening balances for members, although interest calculations and the issuance of closing balances are still in process.

Madhya Pradesh has adopted a model of decentralized payroll with centralized expenditure. Its enrollment forms, in soft copy for 100% of subscribers, have been sent to NSDL. However, only 20% of the hard copies have been sent. Individual account numbers (i.e., PRANs) have been issued to all subscribers. Old data (i.e., prior to the transfer of fresh contributions) are 80% ready and have been sent to NSDL as well. Data from 2005–2009 have also been sent on a principal opening account balance basis. As of 31 March 2010, account statements have been issued, and, for the last 6 months, contribution information have been sent seamlessly online with the transaction files being uploaded by treasuries and contributions transferred by the director of the treasury.

C. Administrative Weaknesses

Three of the states—Chhattisgarh, Jharkhand, and Madhya Pradesh—are impeccably transferring information and funds to NSDL and the trust bank. Bihar, with considerable effort, may be able to join these states within the next year. Assam's prospects for success remain tenuous. It is unclear how it will resolve its substantial issues on the lack of legacy records, employee contributions from NPS participants for up to 5 years, and a clear provision for record keeping within its newly installed computerized accounting and financial management system for treasuries and its finance secretariat.

Even in the three states where the systems are working quite smoothly, it is not completely certain that the required administrative structure has been put in place to ensure proper record keeping. The work on NPS has been implemented under great pressure, with more attention focused on making legacy and fresh transfers to NSDL rather than on the details of longer-term administration. Direct contributory pension schemes require timely, precise recording of contribution deductions and transfers, and there is no promised pension under such a scheme. The final pension depends completely on the time lines and accuracy of contributions to guarantee maximum investment returns and the largest possible account balance at retirement.

D. Impediments to New Pension Scheme Implementation

Below is a list of some of the most challenging issues states have faced in connecting to NSDL and other parts of the central architecture.

Limited knowledge of the operational aspects of the network. While NSDL has designed and developed a web-based platform, through which states could conduct various transactions (e.g., uploading of data and statement generation), the states are having difficulty in using the platform due to inadequate training provided by the agency. The states are yet to understand how exactly the system operates. Understanding this process is necessary for the states to understand the NPS process flows and broad architecture.

Lack of a data exchange mechanism and uniform data formats. The states have designed and developed their own databases (i.e., employee and payroll) with the states' interests and predisposition being the determining factors. Few states (e.g., Chhattisgarh, Jharkhand, and Madhya Pradesh) have been able to meet their objectives of having such databases. However, the key challenges for the states have been to provide the data formats as

Box 1 Suggested State Administrative Framework for the New Pension Scheme

A designated nodal office is responsible for

(i) monitoring the performance of pay and accounts officers and drawing and disbursing officers (DDOs) in discharging their responsibilities toward the subscribers in the central record-keeping and accounting agency, National Securities Depository Limited (NSDL);

(ii) making necessary actions to ensure compliance by pay and account officers and DDOs with the operational procedures of NSDL;

(iii) consolidating the pay and account officer registration forms and forwarding these to NSDL for registration; and

(iv) monitoring the resolution of grievances raised against the pay and accounts officers.

The pay and accounts officers are responsible for

(i) consolidating DDO registration forms and forwarding these to NSDL for registration;

(ii) facilitating the registration of subscribers by consolidating the applications for allotment of permanent requirement account numbers received from the concerned DDO, and forwarding these to the agency facilitation center;

(iii) uploading subscriber contribution files to the new pensions scheme contributory account network system; and

(iv) depositing contributions in the trustee bank as per the subscriber contribution file, a file detailing contributions of each subscriber that must be uploaded to the central system.

DDOs are responsible for

(i) recording contributions when submitting the paybill,

(ii) passing to payment and accounts officers all materials properly formatted and filled in as per above, and

(iii) performing all duties related to the New Pension Scheme within specified time frames.

It is the supervisory rank, especially the nodal office and nodal officers, that may not have their duties fully defined and approved by superiors. These offices and officers may not be fully functional in providing proper oversight over pay and account officers and, especially, DDOs, who carry much of the burden of ensuring the precise and timely accounting and of data transfers.

Source: ADB.

required by the network platform, which requires all states to provide the same sequence of data fields and formats, for which the state databases will require either customization or redesigning of their backend database to meet NSDL's request.

Determining an employee's uniqueness. Each state maintains its own unique identification number for its employees. The format and procedure for assigning numbers to employees are limited to approaches adopted by individual states, which are not uniform across the states. The numbers assigned by states are either random numbers or combinations of a few other parameters, which cannot be unique unless the employee is verified and validated through other parameters. For instance, in some states, an employee is considered unique if his or her name, address, data of birth, and appointment date matches, while other states have assumed other different combinations of attributes as indicative of an employee's uniqueness. Technically, the chances of not being unique stand higher unless verified and validated using industry standard practices such as fingerprint verification. Determining a minimum set of data for measuring uniqueness for an employee would help states and NSDL tackle, to a large extent, data duplication issues. For instance, each state could adopt a minimum set of attributes for identifying an employee if his or her name, date of birth, father's name, and permanent district are unique. However, states should be allowed to add more criteria if necessary.

Mapping with multiple unique identification numbers. The states require customization in their systems to accommodate multiple identification numbers, which employees ultimately have. Multiple numbers will appear as states provide datasets to NSDL, which will issue a unique PRAN to each individual employee registered with it. This PRAN would eventually need to be mapped with a state's database if the state wishes to integrate with the network in the future. Moreover, in the likely event that a national identification number will be issued to each citizen of India, the provision for accommodating such useful information requires an appropriate level of sophistication in the design of state databases.

Technical and resource constraints for customization and enhancements. Some states require a considerable amount of customization and functionality upgrade in their respective databases if they are to map their databases to conform to network specifications. However, due to resource constraints, these states are compelled to adopt manual approaches for meeting regular dataset needs of the network.

Limited role of the central record-keeping and account agency. A considerable gap between the actual users (e.g., treasury officers, DDOs, and state employees) and the network architect was observed. The gap was primarily at the operational level and could be the result of the limited knowledge and training being provided to the states prior to using the system. It is unknown whether providing training and support to end users are within the scope of NSDL's current mandate. While the agency has developed user guides and training materials and has expected end users to follow the instructions as described in the user manuals, the users prefer to be walked through the couple of transactions made through the network.

E. Providing Future Assistance to States for New Pension Scheme Implementation

To assist in designing its record-keeping system for NPS enrollees, representatives of one state visited Chhattisgarh, a state that had a well-integrated, automated system in place. The interstate study tour was a success. It helped the states determine the method that they would use for maintaining NPS records. Thus, study tours may be very useful for states lagging behind in their NPS administration. Representatives from these states could visit states that were similarly situated in the recent past but are now connected to the NSDL central records administration. The participants in the study tour should be from several divisions and include all relevant tiers of civil employees.

A similar but more powerful approach would be partnering between states. Under this approach, staff members from states with completed employee and pensioner databases and NPS connectivity would be deputized to states just beginning these tasks. The deputized staff would work side by side with their counterparts, assisting in the work and, at the same time, providing invaluable training. This might be particularly useful for district treasuries but could work at all levels. Having states share expertise could supplement consulting technical assistance projects or replace them entirely if partnering results in good outcomes.

VI. Recommendations

The experience of the five participating states—Assam, Bihar, Chhattisgarh, Jharkhand, and Madhya Pradesh—with employee and pensioner database construction as well as projections of defined benefit scheme (DBS) pension liabilities, and interaction with the states on the New Pension Scheme (NPS) implementation, suggest the following recommendations.

The NPS must be implemented immediately. Defined contributory pension plans require impeccable record keeping, timely transfers of information and funds, and immediate (i.e., end-of-business-day) investment of new contributions. Some NPS participants are facing a 5-year lag in the investment of their contributions and the government's matching contributions. Ultimately, each participant's account balance is his or her retirement income. Losses to date of investment returns on uncollected and uninvested contributions could reduce the percent of income replaced at retirement by up to 5 percentage points of income replaced at retirement. Losses could be larger for the earliest NPS participants hired. There has yet to be a proper understanding among civil servants and those charged with the administration of the NPS of the urgency of prompt investment of contributions.

Chapter V describes the progress of states in implementing NPS and the problems they have encountered. Three of the five states are leaders in this area, having almost completed transferring their NPS legacy data and regularizing transfer of fresh data, which is flowing seamlessly between the state and the central NPS infrastructure. Of the two remaining states, one is hopeful of completing transfers and regularizing all NPS operations by fiscal year-end.

In August 2009, the last of the five states did not yet have a fully operational NPS record-keeping system. The state had also been withholding NPS contributions from wages for only a few months. No NPS contributions had been withheld for NPS employees prior to 2009, and pre-2009 payroll records for this state are paper-based. With over 30,000 NPS employees, constructing payroll histories from paper records will be resource-intensive and time-consuming. The task will be made even more difficult because the paper records are for all employees, not just NPS employees. Moreover, not all NPS employees had been identified by the end of this technical assistance project. According to a June 2009 study for the Thirteenth Finance Commission, many states are almost in this same position. The need to act is thus urgent.

The ADB experts had the opportunity to observe developments in the central government and in states other than those discussed here. It appears that the central government has passed the task of assisting states on to the Pension Fund Regulatory and Development Authority (PFRDA). It should not have done so. The central government is the only entity with sufficient influence to create a sense of urgency and provide sufficient resources to assist where need is greatest.

The states need to see visible action from the government to begin to act with urgency on NPS implementation. The government should take advantage of recent bids on a request for proposal that the Department of Economic Affairs issued for the evaluation of the capacity of states to implement the NPS. Once funded, work under this request could provide states with blueprints for short- and medium-term action, help them determine the exact outcomes required, and assist them in establishing realistic work plans. Many states may require financial assistance. The government should consider providing such assistance on an incentive- and performance-based basis.

The government needs to assist states in developing policies on the construction and use of pensioner databases. It seemed clear that the five states were inclined to accept their DBS pension costs passively and, as a general rule, showed much less interest in having a pensioner database than in other human resources databases. At least three states viewed pension costs as outside of state and finance secretariat control. This could be an acceptable attitude if projections indicate costs are manageable without state action during the phaseout period. In this case, it might not matter that two of the states did not know how many pensioners they had and could not find out without undertaking a separate project. A third state probably did not know how many pensioners it has although it provided an estimate.

There are reasons other than managing total pension costs for maintaining a pensioner database. These have to do with monitoring the quality of the pension system's administration and protecting the rights of state pensioners by ensuring that the authorized banks make changes promptly and correctly when instructed to do so by finance secretariats. Pensioner databases also facilitate studies of the distribution of pensions among pensioners of different types and different ages and disparities that may arise due to peculiarities in the rules or their uneven application. Databases can be used to locate "ghost" pensioners, double and triple pension payments to the same pensioner, and pensions that are above range but continue to be paid. Below range pensions can also be identified. Pensioner databases would likewise permit much improved budgeting for pensions, especially when combined with information from employee databases.

Although a decision needs to be made on whether pensioner databases will be constructed and maintained, there is no obvious answer in the particular situation of states in India since the DBSs are being wound down over the next 40-plus years. If a decision is made to construct and use pensioner databases, then current administrative arrangements need to be reconsidered. If the states are to develop pensioner databases, the pension administration model that uses offices of the accountant general to issue pension payment orders (PPOs) has outlived its usefulness. States that do not have the capacity to issue PPOs through their own finance secretariats should develop such capacity going forward, preferably within the next 2–3 years.

The government needs to decide whether high priority should be placed on development of pensioner databases. Constructing pensioner databases is a costly endeavor and continuously updating them is more difficult. A proper cost–benefit analysis should specify the full range of uses of pensioner databases and weigh those uses against the costs.

Models using personalized databases should be adopted for all states. The direct advantages of projecting pensions with models designed to use microdata are greater rigor, detail, and precision in projecting cost rates and in exploring options for cost containment. The indirect advantages are as great or greater. By constructing models for projecting pensions, states would also be able to develop automated processes for constructing and updating employee databases that have a wide range of uses for human resources management and budgeting.

A new model does not need to be designed for each state. A single model with state variations was used for all projections and analyses of cost rates for the five states. If the pension model were to be used more widely, each state could have its own model that is a clone of the mother model with state-specific variations.

The government should encourage states to be proactive in their management of defined benefit scheme pensions. The central government could support special programs financed internally or through donors on determining (i) the need for DBS cost containment during the 50-year paying down of DBS liabilities, (ii) available cost-containment options, (iii) the usefulness of an in-house pensioner database versus relying on authorized bank databases, and (iv) best uses and plans for state grants under recommendations of the Thirteenth Finance Commission. Although the schedules of finance secretariats are full, the central government could consider conducting annual meetings that include pension department heads and other relevant officers to discuss DBS developments, or, alternatively, make such discussions a session in another annual meeting of these parties on broader issues. Regional meetings of finance secretariat heads and senior officers could also be considered. It is notable that the five states working

simultaneously to develop databases developed a measure of camaraderie resulting from facing common issues.

States should begin taking steps toward proactive management of their DBS pension schemes. States should begin to track cost rates and revenue trends, taking care to define pension outlays as defined in the projections and using consistent definitions of revenue. The state pension account (i.e., 2,071 accounting heads) should be disaggregated to make possible the booking of all the components of DBS pension outlays, isolating them from any other types of pension outlays and showing each DBS component as it appears in the projection model being used.

Further projections and analysis should be made of state pension liabilities during the phasing out of the defined benefit schemes. The projections presented here are not adequate to meet all needs in pension cost management in the five states. These states should be assisted in continuing this work. They require the assistance of a pension modeler to refine the DBS pension projections, determine the level of cost-containment initiatives, develop detailed cost-containment plans, and design an implementation strategy. For the states that put a plan into action, a pension expert should make semiannual visits for 2 years to assist in tracking results and refining strategies.

States generally should use the construction of new employee and pensioner databases as an opportunity for improving their statistical capabilities. The five states succeeded in automating their payrolls and have, or soon will have, fully automated employee databases. However, automated payroll operations, and even employee databases, do not translate directly into statistical capability. The states need more time and a focused effort to be able to produce timely statistics in flexible formats and suitably detailed classifications for budgeting and other uses.

VII. Conclusion

A. Database Construction

The five states that constructed databases for DBS pension projections have over 2.6 million employees and pensioners, roughly 500,000 per state. These are small numbers for India but large sums when the work entailed dealing with scattered individual records. These records could not simply be picked up and entered into the computer. On the contrary, these came from multiple, mostly paper-based, sources. The same data items often came from different sources for different groups and for different time periods. Information on current pension amounts resided with district treasuries for some pensioners, with banks for others, and with state pension departments for still others. Payments from these different sources had to be merged with demographic records from other sources without the benefit of unique personal identification numbers. Merging data from different sources required multidimensional matching using pension payment order numbers, which were not unique, name (not unique in any population), and other available identifiers such as date of birth. Having multiple sources of data for the same person meant that there were not just 500,000 records to computerize, but 3 to 6 times that many, with all the attendant problems of match-merging the information for each individual pensioner.

The situation was generally better for employee data. In some cases, demographic data on employees had to be matched with current pay information. More often, both types of information resided with the same source, the drawing and disbursing officers who maintain employee service books and draw paybills for wage and dearness payments.

The undertaking faced by the states illustrates the enormity of the task facing any state that wishes to construct a singular, comprehensive, and up-to-date database for employees and another for pensioners. Automation must accompany these efforts to make them feasible and to ensure that the databases are sustainable. From the day a state completes the substantial task of constructing one of these databases, the database begins to become out of date, and, within 2–3 years, becomes completely obsolete. To be useful, the databases must be current, which means they must be continuously updated. This requirement increases the difficulty of the task by one-third or more, depending upon the configuration of current record keeping and its level of automation. Without an automated payroll system, it is not possible to regularly update an employee database at reasonable cost.

There is a natural tendency to slip back to old ways. However, exigencies of the service and the demands of the obligation to ensure the best possible future for civil servant retirees mandate that everyone move forward. It is as essential going forward as it was at the outset of database construction to stress the usefulness and potential of having employee and pensioner databases updated continuously. Updating and using these databases to their full potential is still not an integral part of the culture in finance secretariats. Even in the states with the most success in constructing such databases, it will take time before the databases are integrated into the annual budgeting and other processes. Backsliding is always a potential threat.

B. Managing Defined Benefit Scheme Legacy Costs

Building a pension projection model that does justice to the effort states expended preparing the databases has been a rewarding challenge. This was a unique opportunity to go beyond constructing the usual semi-aggregated model used for large-scale pension reform analyses. The models implemented for these pension projections incorporate the level of detail necessary to develop cost-containment strategies for managing cost rates during the entire transition to full New Pension Scheme (NPS) coverage of state civil servants. In the past, such models have not been available for pension projections in developing countries.

This model produced the first rigorous defined benefit scheme (DBS) projections for these five states. With these projections, a full history of the costs rates of the states throughout the 50-year transition to an NPS could be plotted. In the process, the critical questions could begin to be answered of how high DBS pension costs will rise before beginning to fall as the number of retires dying exceed that of active workers retiring. The answers were sometimes surprising and unexpected. Two of the five states have already reached their peak cost rates (DBS outlays as a percentage of state revenues). These two states will experience falling cost rates throughout the transition. Their cost saving has already begun and their situation should only improve.

The models were used to study optimal cost management strategies for those states that will require cost containment to control DBS costs rates at their peak. Here again, results were often not as expected, although at least one powerful tool for controlling costs was isolated.

As a result of the projections and related analyses, the five states that provided employee and pensioner databases are now in positions to be proactive in managing their pension costs. This is the most important legacy of this joint effort of the states and ADB.

C. Next Steps

A major difficulty faced by most states in estimating their future salary and pension outlays and in implementing changes to employee benefits has been the lack of reliable up-to-date information. Basic data have been lacking on the (i) number of persons drawing a salary; (ii) number of pensioners; (iii) amounts of regular monthly pensions being drawn; and (iv) levels and trends in basic employee and retired characteristics such as age, years of service, distribution of salaries, and distribution of pensions received. States need to build the capability to use their employee databases for regular monthly booking of basic statistics and occasional detailed distributions of worker characteristics.

Even states with automated systems and employee databases continue to follow the traditional approach to budgeting. As of August 2009, no state was using the automated payroll of employees or database of pensioners to estimate salary and pension expenditures requirements. States are still using the old system of departmental submissions of hard-copy spreadsheets. States with automated databases need to adopt more modern budget practices. There appears to be nothing preventing them from abandoning the old paper-based system or using the old systems for the verification of departmental statistics rather than for budgeting itself.

Modernization needs to come in other forms as well. States need to take responsibility for all aspects of pension record keeping and control. The traditional system of using offices of the accountant general to issue pension payment orders should be abandoned, and greater cooperation with authorized banks should be established to streamline the process of states updating their internal pensioner databases. States should become more proactive in managing their DBS pensions.

Going forward the central government and states need to be aware of the time frames that will be required to construct databases of the types discussed here. It was presumed that time frames for building databases and establishing automated systems would become shorter as the work progressed in one state and then another; once problems were resolved on one site, resolution should be much quicker at another. This proved not to be true. Each set of problems was unique. There was little chance of accelerating the work with experience.

The reason it took 3 years to put automated payrolls and employee databases in place is that it takes 3 years to accomplish this work in a state government setting in India. It may take longer to ensure that databases are sustainable through continuous updating.

This is a critical lesson going forward. The government and donors cannot expect states that are beginning to automate to have fully automated processes in place for budgeting, expenditure oversight, pension payment estimation, pension liability valuation, and NPS implementation within the next fiscal year or even 2. It will take 3 fiscal years before most state finance secretariats can satisfactorily automate and only then if the effort receives reasonably high priority and persistent attention.

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The Aftermath of Structural Pension Reform
Managing Legacy Costs of Defined Benefit Pensions in India

India's civil service retirement benefit system, based on a defined benefit scheme, imposed an annual expenditure of over $30 billion on the central and state governments. In an effort to truncate the unfunded scheme, which covers 30 million central and state government employees, the Government of India in 2004 decided to replace the traditional defined benefit scheme with a defined contributory scheme known as the New Pension Scheme.

This book contains an account of the efforts of five states—Assam, Bihar, Chhattisgarh, Jharkhand, and Madhya Pradesh—to estimate their current pension liabilities, project annual pension costs over the next 15–25 years, and explore options for managing their annual costs. Using newly constructed employee databases, the book discusses in detail the projections for each state and suggests cost-saving measures based on specific needs. Also included is a lengthy discussion of the lessons that emerged in database construction and practical recommendations in managing pension costs.

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