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JAPAN'S *GOVERNMENT PENSION INVESTMENT FUND (GPIF):*

SHOULD IT BECOME A 'HIGH-PERFORMANCE' ORGANIZATION?

Prepared for *Nomura Institute of Capital Markets Research, Tokyo*

by

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The Objectives and Design of this Study

We have been invited by the Nomura Institute of Capital Markets Research to assess the organization structure and governance of Japan's Government Pension Investment Fund (GPIF). The GPIF is the largest pension fund in the world, with ¥82 trillion invested in the financial markets at the end of 2006. The Fund was reorganized in 2006 as an Independent Administrative Agency connected to the Ministry of Health, Labour, and Welfare (MHLW). It is considered to be a key component of the public retirement income system of Japan, which has gone through a series of recent reforms to make it more sustainable. Thus the quality of the organization structure and governance of GPIF is of the utmost importance to the Japanese people.

After summarizing the Study's key findings and conclusions, Integrative Investment Theory and the results of recent empirical studies of pension fund organization structure and governance around the world are employed to identify six critical factors in designing an optimal organization and governance structure for investment funds such as GPIF. We use these six factors to summarize the actual organization and governance structure of Japan's GPIF, and compare it with that of the Canada Pension Plan Investment Board (CPPIB). CPPIB is the Canadian equivalent of GPIF, and is also a relatively new organization, created in 1997. Significant structural differences with significant implications for the capabilities of the two funds will be noted.

Our study concludes with a critical assessment of the current organization design and governance structure of GPIF. There is some analysis of the pros and cons of staying with its current 'cost-, and risk-minimizing' structure versus moving to a 'high-performance' alternative. Finally, the study poses some questions that should be addressed before any significant changes are made.

The Principal Author of this Study

Keith Ambachtsheer is a recognized global authority in the field of the organization design and governance of major investment funds such as GPIF and CPPIB. Over the course of his 38-year career in this field, he has written three books on the subject. His most recent book, *PENSION REVOLUTION: A Solution for the Pensions Crisis*, was released in January of this year. He has advised major investment funds in both the private and public sectors in North America, Europe, and the Pacific Rim on issues ranging from governance and organization design, to funding policy, to investment strategies and their implementation, including the Canadian government on the structure of CPPIB (see Appendix I).

Four years ago, he began work on founding the Rotman International Centre for Pension Management (ICPM) at the University of Toronto. ICPM has become a major sponsor of research into the organizational effectiveness of pension organizations around the world. The Centre has 18 Research Partners, all of which are major pension organizations from Europe, North America, and the Pacific Rim. Keith is the Founding Director of ICPM, and was the lead researcher on a recently-concluded ICPM study titled "The State of

Global Pension Fund Governance Today: Board Competency Is Still a Problem" (see Appendix II).

The Nomura Institute of Capital Markets Research was helpful in providing a dossier of useful information about GPIF. A special thanks goes to Mr. Toshio Taki of the Institute for his prompt attention to a series of follow-up questions by the author for further information and clarification.

Key Study Findings and Recommendations

We summarize the key study findings and recommendations as follows:

- The investment mandate, as well as the organization and governance structure chosen for GPIF, drives it towards a 'cost- and risk-minimizing' culture. In contrast, countries such as Australia, Canada, New Zealand, and Sweden have chosen mandates and structures that are driving their national reserve funds towards 'high-performance' cultures.

- Key elements of 'high-performance' investment funds are organizational independence, professional board-of-directors oversight, expert internal investment and control capabilities, and performance-based compensation schemes.

- While the national reserve funds with 'high-performance' cultures do not yet have long performance histories, early results suggest that they are meeting or exceeding their expectations. For example, in its just-released Annual Report, CPPIB disclosed that it generated an additional 2.5% of return ($2.4 billion) in 2006 above the return of its Reference Portfolio through their own active public and private market activities. In contrast, GPIF results suggest that, consistent with its current mandate and structure, actual returns are very close to benchmark returns.

- We believe that redirecting GPIF to become a 'high-performance' investment fund would offer Japan three significant potential benefits: (1) higher returns on its public pension reserves, (2) establishment of a 'centre of pension fund management excellence' in Tokyo, and (3) a tangible contribution towards establishing a more productive form of global capitalism.

- A decision to redirect GPIF towards becoming a 'high-performance' fund requires that Japan first address questions related to its national risk tolerance, to creating a truly independent GPIF legal structure, to defining the required GPIF board of director characteristics, selection process, and accountability structure, and to whether sufficient national trust and confidence exists for this GPIF transformation to be successfully completed.

We now proceed to provide the bases for these findings and recommendations.

A Theoretical Framework for the Study

In his Nobel Prize-winning formulation of investment theory in 1952, Harry Markowitz proposed that we think of investor value-creation (or welfare-, or 'utility'-creation) as finding the optimal portfolio combination of expected return and risk, where risk relates both to the riskiness of individual investments and also their covariance with other investments, and where risk tolerance is captured as a willingness to acquire additional units of expected return at the cost of additional units of expected risk at the total portfolio level.

Markowitz' original formulation of investment theory assumed all investors make their own risk/reward assessments of individual securities, and build their own portfolios. Today, most financial wealth is managed not by individuals, but by institutions. This institutionalization of wealth management requires a reformulation of investment theory that integrates institutional agency and governance issues with those of risk, return, and the willingness to trade off one for the other. In a 2005 *Financial Analysts Journal*, Ambachtsheer proposed Integrative Investment Theory (IIT) as follows:

$$\text{Stakeholder Value} = f\{A, G, IB, R, FE/IMPL, S\}$$

This formulation of investment theory proposes that the creation of maximum stakeholder value in institutional fund management contexts requires the effective, integrative application of six value-driving factors: (1) Agency Issues, (2) Governance Structure, (3) Investment Beliefs, (4) Risk Management, (5) Financial Engineering/ Implementation, and (6) Scale.

1. Agency Issues: every investment fund has principals (i.e., the asset owners) and agents (i.e., people who act on behalf of the owners). In the GPIF context, for example, the ultimate principals are current and future Japanese citizens. The agent chain begins with the elected representatives of the Japanese National Diet, and then moves on to the Minister of Health, Labour, and Welfare, to MHLW officials, to the GPIF Investment Advisory Committee, to the GPIF President and internal GPIF management, and finally, to a large collection of external agents providing a variety of investment and related services to GPIF. Principal-agent issues arise in this kind of structure because principals and agents have potentially conflicting goals. More specifically, investment funds like GPIF (and others as well) create the potential for all of the agents in the chain to choose to consider their own interests alongside of, or in conflict with those of the fund 'owners'. IIT recognizes this potential and requires that agency issues are identified and addressed as part of the stakeholder value-creation process. Research findings suggest agency costs in the investment field can be highly material, reaching 2-4% per annum of assets under management in some situations [1].

2. Governance Structure: even if all agency issues were correctly identified and addressed, institutional fund management could still be ineffective. There is a large body of research that has helped define effective organizational governance

and management principles and practices. We ourselves have been engaged in this research process, specifically focusing on the investment fund context. This research suggests that to be truly successful, an investment fund must have four elements operating in an integrative manner: (1) a clear mission/mandate, (2) a skilled, motivated oversight body accountable for ensuring that the overall mission/mandate is achieved, (3) a skilled, motivated executive/professional team accountable for the development and implementation of plans designed to achieve organization goals consistent with the mission/mandate, and (4) the necessary human, information, and financial resources required to achieve the task. The systematic application of these four elements measurably improves organization performance, including that of investment funds. For example, studies in which we have been involved found that well-governed pension funds outperformed poorly-governed ones by an average 1-2% per annum on a risk-adjusted basis. These studies also confirm that there continue to be significant barriers to creating strong governance mechanisms in the global pension fund sector [2].

3. Investment Beliefs: an investment fund's investment policies should be guided by an explicit, defensible set of investment beliefs. An important element of any investment beliefs set is whether future investment returns are identically, independently distributed ('iid') with known parameters (i.e., known expected returns, return volatilities, and correlations). This belief (or its absence) has important implications for how fund investment policies and investment mandates should be articulated and implemented. For example, in an 'iid' world, investment policies can remain unchanged for long periods of time. In a non-'iid' world, investment policies need to be dynamically adjusted to changing circumstances. Over the course of the 1980s and 1990s, a wide consensus developed in the institutional funds management world that we did indeed live in an 'iid' world characterized by a large positive (i.e., +5%) expected Equity Risk Premium (ERP) over the long term, and a manageable level of shorter term ERP volatility (i.e., in the 10%-15% per annum range). Actual events over the 2000-2003 period, and new emerging research results now challenge this broad 'iid' view of capital markets behavior [3]. Thought-leading investment funds around the world favored a decidedly non-'iid' view well before the 2000-2003 period of financial stress. Practically, this meant reclassifying the fundamental investment strategies into three categories: risk-minimizing (RM), short horizon-risky (SHR), and long horizon-risky (LHR). RM strategies cover payment obligations in as low cost, low risk manner as possible. SHR strategies involve generating excess returns through adversarial trading in securities, derivatives, currencies, commodities within a pre-determined amount of risk exposure (e.g., long-short absolute return investing is a SHR strategy). LHR strategies involve acquiring uncertain future cash-flows at reasonable prices, and enhancing the size and quality of these cash-flows post-acquisition (e.g., passive indexing, active public equity engagement, private equity, real estate, or infrastructure investment strategies). With the exception of passive indexing, all of these strategies involve active participation in investment processes. A key management task in a non-'iid' world is to assess the return

prospects for these three types of strategies (and their sub-components), and to optimally combine fund exposures to the strategies over time.

4. Risk Definition, Measurement, and Management: investment risk has many faces. Proper measurement and management requires that risk is defined in a relevant, operationally useful manner. In the context of a fractional reserve pension fund such as GPIF, risk for the principals (i.e., Japanese citizens) can manifest itself as a requirement for higher contributions into Japanese public pension arrangements than anticipated, lower pension payments than anticipated, or some combination of the two. Thus the challenge for the Japanese Government is to devise a dynamic protocol that changes contribution rates and plan benefits in an understandable, even-handed manner as circumstances change. The GPIF challenge is to convert these political goals into a risk policy for the assets under its management that is consistent and explainable to the general public. Such a risk policy should be consistent with the investment beliefs of GPIF [4]. Of course the financial risks of the GPIF principals are not the only type of risk that the organization must control. It must also manage the operational risks associated with operating a large investment fund. GPIF must also manage its reputational risk. If Japanese citizens lose confidence in GPIF as an institution looking after their financial interests, the future of GPIF would become very uncertain.

5. Financial Engineering/Implementation Strategies: strategies based on the mathematics and instruments of modern finance (e.g., derivatives) are essential to the efficient implementation of risk-based investment policies and related investment mandates. For example, sophisticated risk models are required to aggregate individual risk exposures into an estimate of total fund risk exposure. Further, that total fund risk exposure needs to be decomposed into its major sources (e.g., net equity, yield curve, credit, or foreign exchange exposures). If risk exposures need to be modified, it is often most cost-effectively accomplished through derivatives. However, the effective adoption of these implementation strategies is not costless. Their use requires combinations of highly trained and skilled people, high-powered mathematics, and significant, ongoing expenditures on information and control technologies. The modern investment organization sees these expenditures not as costs, but as investments with potentially very large pay-backs.

6. Scale: investment management is generally a highly scalable activity. For example, a ¥10 trillion index fund can be managed for virtually the same cost as a ¥1 trillion index fund. Thus, given its very large size, GPIF should be able to manage many of its functions at very low unit costs. At the same time, scale offers the opportunity to acquire the necessary resources to become a ‘high performance’ organization. However, very large size can also be a disadvantage in investment areas where there are capacity limitations. Experience shows that the cost of these capacity limitations can be minimized by thinking and managing funds such as GPIF on a global rather than local basis.

In the next section of the Study, we use the six value-drivers framework to compare GPIF and CPPIB along each of the six dimensions. We believe that understanding the material differences in organization structures of GPIF and CPPIB, and how those differences impact on value-creation potential, is important for reasons that will become clear in the matrix displayed on pages 8-13.

GPIF vs. CPPIB: Significant Differences

The matrix makes clear that the differences between GPIF and CPPIB along the six value-driver dimensions explained above are fundamental rather than marginal. The differences start with the respective legal positioning of the two organizations. CPPIB is a truly independent organization, while GPIF, with its costs controlled by government actions, is not. The two oversight processes are also fundamentally different. GPIF oversight is provided through government agencies, especially MHLW. The primary CPPIB oversight mechanism is a professional Board of Directors, specially selected and appointed for that purpose. GPIF oversight is diffused and distant. CPPIB oversight is focused and direct. These two oversight processes will elicit quite different behavioral and motivational responses from inside executives and professionals.

Beyond agency and governance, the differences between the two organizations extend into how they form, revise, and integrate investment beliefs into their investment policies. The GPIF processes appear static, grounded in a conventional, backward-looking 'iid' view of the world. The CPPIB processes are dynamic, responsive to changing circumstances. The differences extend further in how the two organizations define, measure, and manage risk. Starting with its mandate, GPIF seems to have a very risk-averse attitude towards financial risk-taking. The CPPIB approach is to convert a measured amount of approved and controlled risk-taking into additional return on assets. Also, CPPIB explicitly manages possible reputational risk through a pro-active stakeholder outreach program.

Finally, the differences extend into how the two organizations implement their strategies over time, and how they use their large scale. GPIF appears to focus almost exclusively on maintaining a low profile, and minimizing costs. In contrast the focus of CPPIB is to turn its scale into a comparative advantage in order to build a visible, world-class 'high-performance' investment organization. Thus the organization will consciously 'invest' in expensive people and technology if the expected payoff from making those investments is high enough.

Personal observation and research with which we have been involved suggest the combined impact of these factors should translate into an average 2%-3% percentage point margin of additional return per annum after expenses in favor of CPPIB. Indeed, the CPPIB just reported a 2006 return of 12.9% on assets versus a 10.4% return on its Reference Portfolio, implying its active management strategies generated a net excess return of 2.5% in 2006. In contrast, the GPIF reports returns by asset class, with actual returns very closely matching benchmark returns in most cases.

	GPIF	CPPIB	Observations
Agency Issues	- GPIF was established as an Independent Administrative Agency in 2006 to invest the financial reserves of Japanese public pension schemes. - As an IAA, it is assumed to operate independently from the MHLW. - However, as an IAA, GPIF is subject government-wide restraints on its operating costs, including compensation (but external management fees are exempt from these restraints).	- CPPIB was established as an independent Crown Corporation in 1997 to invest the financial reserves of the Canada Pension Plan. - As a Crown Corporation, CPPIB operates independently from government. - Through a Ministerial oversight committee, the Canadian federal and provincial governments hold the CPPIB's Board of Directors accountable for ensuring that CPPIB can develop and implement plans (including compensation) required to achieve its mission.	- There is clearly a difference in the degree of independence enjoyed by GPIF and CPPIB. CPPIB controls its own budget, and GPIF does not. - If GPIF cannot control its own budget to create success, then it is not really an independent organization, with likely adverse performance consequences. For example, if internal costs are controlled, but external fees are not, there will be a bias towards outsourcing, even though that may not be the best option.

	GPIF	CPPIB	Observations
Governance Structure	- GPIF has no Board of Directors to provide oversight. - An Investment Advisory Committee (IAC) recommends asset mix and 'other important matters' to the GPIF President. - The 11-member IAC is appointed by the MHLW, and has a strong academic rather than business orientation. - The GPIF President is also appointed by MHLW, and his/her performance is evaluated by the MHLW. - The President is responsible for the development and implementation of plans (strategic and operating) to achieve the GPIF mission.	- CPPIB is governed by a professional board of directors. Board selection is based on an arms'-length process that focuses on the professionalism and the willingness of candidates to make a contribution to 'the public good'. - The Board is responsible for selecting and evaluating the CEO of CPPIB. - The CEO is responsible for the development and implementation (with Board approval) of plans (strategic and operating) to achieve the CPPIB mission.	- The CPPIB governance structure and process follows directly from the application modern 'best practice' governance principles and research findings. - The GPIF's lack of a Board of Directors to provide strong, professional oversight is a serious shortcoming in the current GPIF governance structure. This gap in oversight cannot be filled by either the Investment Advisory Committee (it has no authority) or by MHLW officials (they are too far removed). The likely result is to adhere closely to the rules set out for the organization, with no attempt made to earn additional returns over the established benchmarks.

	GPIF	CPPIB	Observations
Investment Beliefs	- The MHLW provides GPIF with a long term nominal return target (currently 3.2%). - GPIF (with advice from IAC) develops a Basic Portfolio it believes will achieve the return target (currently Dom. Bonds-67%, For. Bonds-9%, Dom. Equities-11%, For. Equities-9%, Others 5%). - A key underlying assumption appears to be that security returns are identically, independently distributed ('iid'), and hence expectations can be based on historical outcomes. - Another key underlying GPIF assumption seems to be that undertaking active risk does not have a worthwhile payoff.	- The Chief Actuary of Canada has calculated that CPP reserves have to earn a net real return of 4.2% for the current contribution rate to be sustainable into the future. - CPPIB research has identified a passive Reference Portfolio that it believes, at current prices, could earn the target 4.2% without undue risk (Dom. Bonds-35% of which 10% is inflation-linked, Dom. Equities-25%, For. Equities-40%). This Reference Portfolio will be re-estimated every few years, based on changing expectations. - CPPIB believes it can add significant value to the Reference Portfolio return through a variety of active strategies in the public and private markets. A long investment horizon and significant scale are important contributors to this belief.	- The Japanese and Canadian Governments have both set target returns for their national pension reserve funds. The Canadian target (4.2% real) is set considerably higher than the Japanese target (3.2% nominal). - CPPIB has hired investment professionals who are on the leading edge of investment thinking and its implications. This gives CPPIB an important 'first mover' advantage in discovering and implementing new investment ideas to achieve or surpass its target return. - The current structure of GPIF naturally leads to taking a more conventional approach to investment thinking. This implies it will never be a 'first mover' in discovering and implementing new investment ideas to achieve or surpass its target return, unless it changes its structure.

	GPIF	CPPIB	Observations
Risk Management	- The derivation of the Basic Portfolio seems to almost fully define how much investment risk the GPIF should undertake. - As already noted above, there is little room for taking active risk in the current mandate and structure. While the active/passive split is officially 20/80, we surmise that the truly 'active' positions in the 20% of GPIF being actively managed are in fact small. - As a result, there is no perceived need at GPIF for sophisticated risk management tools or real-time information systems.	- The derivation of the Reference Portfolio is an important part of risk management at CPPIB. As a next step, the CPPIB Board of Directors has, with the advice of CPPIB professionals, assigned an active risk budget within the overall fund investment process must function. - Operating within this risk budget requires close co-operation between all CPPIB units, including the investment units, risk management, and finance operations. All investment units (e.g., public markets, private equity, real estate, infrastructure, high-yield debt, etc.) can 'bid' for a portion of the total fund active risk budget.	- The GPIF and CPPIB approaches to risk management both start with the identification of a benchmark portfolio that captures the governments' return ambitions with minimum risk. - However, in the case of GPIF, the Basic Portfolio is effectively provided by a group of outsiders (i.e., the IAC). In the case of CPPIB, the Reference Portfolio is derived by CPPIB itself, and approved by its Board of Directors. - Finally, CPPIB is assigned an additional active risk budget by its Board of Directors in order for the organization to generate additional return. - There is no such process at GPIF.

	GPIF	CPPIB	Observations
Financial Engineering Implementation	- Once the Basic Portfolio is decided, strategy implementation should be a relatively simple process at GPIF. - However, we note that GPIF currently employs 10 trust banks and 30 investment advisors to manage the 90% of assets managed externally. It is not clear to us why so many investment agents are required to implement what are largely passive investment mandates.	- Strategy implementation is an ongoing, complex dynamic process at CPPIB, involving both internal and external investment management resources. - As already noted, the risk management and finance operations units play critical roles. Incentive compensation also plays a critical role, with its philosophy of paying for excess returns, properly measured. - CPPIB also has a program to manage its reputational risk. It is in constant contact with such key stakeholder groups as the Canadian media, think tanks, politicians, and the general public.	- Implementation strategies are executed very differently at GPIF and CPPIB. - In the GPIF case, it is the relatively simple matter of allocating assets according to the dictates of the Basic Portfolio. - In the CPPIB case, a much higher level of complexity needs to be managed, as a variety of internal and external active strategies in the public and private markets needs to be monitored and integrated. Another important factor is that incentive compensation is based (at least partially) on generating excess return. Thus there is a high level of importance attached to measuring results accurately.

	GPIF	CPPIB	Observations
Scale	- GPIF managed ¥82T at the start of 2007, an amount that is expected to increase significantly for some time to come. - Up to this point, GPIF appears to have used its large scale only to reduce unit costs, with only 60 employees on the payroll at the end of 2006. Government fiscal restraint is expected to shrink this number even further. Meanwhile, external advisor fees are only 0.038% of assets.	- CPPIB managed C$117B at the start of 2007, with assets expected to triple in the next 15 years. - It considers its large scale a comparative advantage by permitting the organization to compete for top talent, and internalize an increasing proportion of its investment and support activities. Over the next year, it plans to add 100 people to its current number of 260, and open offices in London and Hong Kong.	- GPIF and CPPIB see the implications of scale very differently. - GPIF uses scale in a defensive sense to reduce unit costs. - CPPIB uses scale in an offensive sense (e.g., acquires additional resources to globalize its operations) to gain a comparative advantage in order to generate additional net return in excess of the Reference Portfolio return.

Choices for Japan

The matrix makes it clear that Japan has chosen a 'cost- and risk-minimizing' strategy for managing the financial reserves of its public pension schemes. As a result, with adequate controls, the GPIF should be able to produce the Basic Portfolio nominal return target of 3.2% at very low implementation costs.

This study contrasts Japan's 'cost- and risk-minimizing' strategy with the 'high-performance' strategies being adopted by some other national reserve funds, such as those of Australia, Canada, New Zealand, and Sweden. The specific example chosen in this study for a detailed comparative analysis was Canada's CPPIB, an organization with which the author is very familiar (see Appendix I). Why should Japan at least consider joining the countries that have chosen the 'high-performance' pension reserve fund route? Three major benefits of doing so would be:

1. A significant increase in the expected return on Japan's public pension reserves. A return increase of 2% per annum would increase Japan's public pension reserves by a highly material additional ¥1.6 trillion each year. This would help ease the already-recognized financing challenges of Japan's public pension schemes. Increasing the target return by this magnitude should be accompanied by an assessment of the risk implications, and how they could be mitigated.

2. The creation of an internationally-recognized 'centre of excellence' in pension fund management in Tokyo. Japan has built a justified global 'excellence' reputation in the design and manufacture of consumer products. Why not in pension fund management too? Associated with such a choice would be increased research in Japan in (a) capital markets and financial institutional structure, and (b) in the risk measurement and management of reserve funds such as GPIF. The choice would also lead to the development of a group of investment professionals who can compete with the best in the world in such global developing areas as relationship investing, private equity investing, infrastructure investing, high-yield investing, and emerging markets investing [5].

3. A boost to the evolution of a more productive form of capitalism: there is a growing consensus that a global capitalist structure which includes knowledgeable, properly-motivated institutional owners would reduce agency-related frictions in the capitalist system. Independent 'high performance' national reserve funds are ideally suited to play such a role, and indeed are already doing so in the countries noted above [6]. A redefined and restructured GPIF would accelerate this process, for the benefit of all.

Any one of these three benefits would be a significant contributor to Japan's future welfare. Together they could be transformative to how Japan addresses pensions and investment issues in the 21st century.

Questions for Deciding

In deciding whether to adopt a 'high-performance' organization model for GPIF, here are five key questions Japan will need to address:

1. Are the Japanese people psychologically prepared to move GPIF to a higher risk/reward 'high performance' environment?

2. What legal structure would provide the best opportunity for GPIF to achieve the autonomy required to successfully implement the 'high-performance' model?

3. What would have to be the characteristics of the board of directors that would oversee a 'high-performance' GPIF? [7] And to which Japanese body would this board be accountable for achieving GPIF's mission?

4. What would be the best process for selecting the members of such a board?

5. Would the Japanese people trust such a board to select a CEO to whom the board would delegate responsibility for devising and implementing plans for GPIF to attain its 'high-performance' vision?

Five profound questions. We encourage the Japanese people to consider them carefully.

ENDNOTES

[1] A recent Rotman ICPM study by Bauer et al. titled "The Performance of US Pension Funds: New Insights into the Agency Costs Debate" compared the performances of similar investment mandates executed by pension funds and retail mutual funds. They found the pension portfolios outperformed the retail mutual fund counterparts by an average 2-3% per annum, net of expenses. They attributed much of the performance differences to differences in agent motivation, with the interests of pension fund managers being more closely aligned with those of their 'clients' than is the case with the mutual fund managers, who also care about the profitability of their own businesses. In the case of GPIF, the scales may be tipped too far in the other direction, with cost-minimization being given too much emphasis at the expense of 'client' wealth maximization.

[2] A recent Rotman ICPM study by Ambachtsheer et al. titled "The State of Global Pension Fund Governance Today: Board Competency Still a Problem" surveys the status of pension fund governance around the world. It also provides estimates of the performance differential between well- and poorly-governed pension funds in the 1-2% per annum range. The study is appended to this document.

[3] See Part IV of our new book *PENSION REVOLUTION* titled 'Investment Beliefs". It documents our own non-'iid' views, as well as those of critical thinkers such as author Peter Bernstein, John Campbell of Harvard University, Andrew Lo of MIT, and Woody Brock of Strategic Economics.

[4] See Part V of *PENSION REVOLUTION* titled "Risk in Pension Plans" for further elaboration of these ideas. The critical challenge is to covert 'soft' perceptions of risk tolerance by diverse groups of pension scheme participants into a 'hard' risk budget for the pension fund.

[5] Observers have suggested that Toronto has already become a global 'centre of excellence in pension fund management'. It is the home of a number of major pension funds with global reach, including the CPP Investment Board. It is the home of the Rotman International Centre for Pension Management at the University of Toronto. It is also the home of CEM Benchmarking Inc., which monitors the cost-effectiveness of many of the globe's leading pension delivery organizations.

[6] See Part VII of *PENSION REVOLUTION* titled "Pensions, Politics, and the Investment Industry" for an elaboration of these ideas. See also *THE NEW CAPITALISTS* by Davis et al. on the implications of the institutionalization of the ownership of productive capital. They foresee an emerging 'civil economy', where successful enterprises are increasingly those that demonstrate productive commercial dynamism in the context of clear accountability to its institutional owners.

[7] See Part III of *PENSION REVOLUTION* titled "Pension Fund Governance" for possible answers to this question, especially Chapter 15 ("Should (Could) You Manage Your Fund Like Harvard or Ontario Teachers?") and Chapter 18 ("High-Performance Cultures: Impossible Dream for Pension Funds?").

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