



Principles and Policies for In-House Asset Management

Gordon L Clark

Ashby H B Monk

University of Oxford

Stanford University

Contact. gordon.clark@ouce.ox.ac.uk, amonk@stanford.edu

Abstract. Spurred on by the recent financial crises, a growing number of institutional investors are working to bypass traditional financial intermediaries, agents and centers through the development of in-house teams of investment professionals. As such, the institutional investment community, which is often characterized by broadly diversified and outsourced organizations, is becoming much more involved in the day-to-day asset management of their portfolios. Research shows that this new path offers a variety of important benefits, including higher net-of-fee returns. And yet, there remain significant pitfalls as well. In this paper, we outline the challenges facing would-be 'in-sourcers' and offer a series of principles and policies for effective in-house asset management is a function of the people, processes, systems and overall resources at the disposal of management.

Keywords: Institutional Investment, Asset Management, Finance, In-Sourcing

Acknowledgements. The authors are pleased to acknowledge the support of Stanford University, and members of the research consortium on in-sourcing and outsourcing coordinated by the Global Projects Center in the Faculty of Civil and Environmental Engineering. None of the above should be held responsible for the views and opinions expressed herein.





INTRODUCTION

Spurred on by the recent financial crises, a growing number of institutional investors are working to bypass traditional financial intermediaries, agents and even centers through the development of in-house teams of investment professionals. As such, the institutional investment community, which is often characterized by broadly diversified and outsourced organizations, is fast becoming more active in the day-to-day asset management of their portfolios. And, significantly, this appears to be having a positive effect on financial performance, as research now demonstrates that in-house asset management can lower costs and generate higher net-of-fee returns (MacIntosh and Scheibelhut 2012; Fang et al. 2012).

Notwithstanding the benefits, such as higher returns and more sustainably constructed portfolios, there remain significant challenges and pitfalls associated with in-sourcing. For many institutional investors, such as public pensions and sovereign funds, moving assets in house requires a complete reorganization of the investment process. The operational DNA of a traditional, externally managed institutional investor looks completely different – and is set up with different objectives – than the operational DNA of an internally oriented institutional investor. "Going direct" thus requires an overhaul of many of the existing institutions and processes; which means in-house asset management is much more difficult to implement than just hiring a few dealmakers. It requires mobilizing significant internal resources and committing them to a specific course of action (Leiblein et al. 2002).

At issue, then, is the degree to which the broader community of long-term, institutional investors will be able to change their organizations enough to be successful as in-sourcers. Many institutional investors have proven incapable of managing change within their organizations, allowing inertia to be the main factor influencing decision-making. Encouragingly, however, there is a small community of institutional investors that have already gone down this path and can provide useful lessons to other investors considering the same (see MacIntosh and Scheibelhut 2012). In this paper, then, we detail some of the experiences and lessons from in-sourcing institutional investors. Specifically, we draw on the insights of twenty in-depth and in-person case studies of public pension and sovereign funds around the world with the objective of developing a series of principles and policies for effective in-house asset management.

The twenty funds that make up our cases are drawn from four continents and are comprised of many of the biggest institutional investors in the world. We selected our cases on the basis that each had insourced at least a portion of their asset management and could offer insights into how it should (or should not) be done. While there are many names you would recognize among our case studies and respondents, we respect the social science guidelines concerning the confidentiality and anonymity of our respondents (see Clark 1998). As such, no funds are named in this paper, which is why we focus on broader principles and policies rather than dwelling on the specific practices of any one fund. In this respect, our methodological and conceptual framework is similar to that used by Clark and Urwin (2008).

The paper proceeds as follows: We begin with a discussion of the principal-agents problems embedded in the financial services industry. We then highlight the nature of the institutional investment business. Subsequently, we discuss the challenges associated with innovation in this domain, as institutional investment organizations tend to be bureaucratic and sclerotic. Next we develop a series of principles and policies for effective in-house asset management. In the end, we conclude that the key touchstone to a successful in-house investment policy is governance, which refers to the medium through which the time, skills and commitment of the Board is managed to make decisions and set strategy. In our view, it is ultimately the Board that holds the strategic levers of success for institutional investment organizations.

Global Projects Center





'BROKEN AGENCY' & FINANCE

Institutional investors, such as pension funds, endowments, and sovereign funds, exist because their sponsors decided to manage a set of future liabilities and / or uncertainties by setting aside financial assets and investing those assets in financial markets. The rational for doing this can be simplified down to two key reasons: On the one hand, prefunding was a way to ensure that sponsors' were making credible and legitimate promises; this was a way to ensure that they could actually meet the obligations they were promising today in the distant future. On the other hand, it was also hoped that the pre-funded financial assets would grow at a rate faster than that of the sponsor and the overall economy, which meant that future liabilities could be met at a relative discount today. There was an assumption embedded in both factors that the financial markets offered a reliable mechanism to manage a variety of long-term policies. Moreover, it was also assumed that institutional investors could successfully achieve their corporate <u>and</u> financial objectives over the long run.

Most of the sponsoring entities of these institutions (e.g., governments or unions) did not, however, build up the capabilities in these organizations to invest their assets in financial markets on their own. Rather, they took the position that they'd be better served by using their institutional investment organizations as simple conduits for the financial services industry. In this respect, the institutional investors job was to contract for investment management services to external asset managers in the private sector. As such, it was the private asset managers (and not the institutional investors) that made the actual investments in stocks or bonds or other financial securities (which were themselves derivative of some underlying asset or business). In addition, institutional investors used custodians to manage the actual securities and had an array of consultants, accountants, auditors and actuaries to provide oversight.

As this suggests, the traditional institutional investor was almost entirely outsourced, rarely possessing the expertise and competencies to execute even the most basic financial transactions without the help of some external advisor. Said differently, sponsors of institutional investing organizations were seemingly comfortable with the idea that their funds' success was a function of the effective oversight and management of a long chain of principal-agent relationships, bringing together the sponsors (e.g., governments) with institutional investors (e.g., public pensions), asset managers (e.g., Wall Street) and advisors (e.g., consultants). And, as it happened, this model did work for a while, thanks in particular to a series of bull markets. But, over time, the extended chain of principal-agent relationships became problematic. In particular, the injection of new incentives and motivations at each link of the chain served to distort the original motives of the asset owners. Too often the ultimate investment decisions made by asset managers maximized the utility of the asset managers (and not the asset owners); this is a phenomenon known as a "broken agency" problem (see Sheffer and Levitt, 2010).

Broken agency stems from a misalignment of interests due to an inappropriate distribution of risks and expected returns among the principals and agents. It's most obvious in large-scale construction and infrastructure projects where the agents that bear the short-term risk and receive the short-term rewards are different from those that bear the long-term risks and rewards. In large-scale infrastructure projects, broken agency results in a number of contradictions between the short-term and long-term parties that can lead to suboptimal outcomes. In the case of institutional investment organizations, however, broken agency distorts portfolio construction; the portfolio a long-term investor would like to hold and the portfolios that long-term investors actually hold are quite different due to an over-reliance on short-term oriented asset managers. This is the broken agency of institutional investing. The only way to realign interests in this case would be to identify asset managers that have the same long-term objectives as the





asset owner. The idea here would be to take a "life cycle perspective" that explicitly involves long-term interests in the design and framing of short-term investment policies and strategies.

This is sound in theory, but, in practice, it is difficult to achieve. It is rare to find private sector asset managers willing to make decisions that will benefit a portfolio twenty or even ten years in the future. In addition, it is rare to see the asset owners (i.e., institutional investors) able to manage the end-to-end investment process required to take a life cycle perspective. And yet, in the wake of the financial crisis, a growing number of plan sponsors have begun to wake up to the misalignment of interests embedded in their principal-agent based investment model. In fact, the onslaught of recurring financial crises over the past few years has jolted some sponsors to push their own organizations toward a more internally oriented investment strategy. The idea is to disintermediate the short-term asset managers through the development of internal teams to refocus on long-term priorities and avoid short-term distortions and broken agency.

Box 1: Why In-Source?

There are five key factors pushing institutional investors to move assets in-house:

<u>1) Access:</u> There are instances where the third party vehicles are not attractive, and access to a given asset or market can be more effectively achieved on a direct basis.

2) Alignment: Principal-agent problems are pervasive in the asset management industry, and some institutional investors view in-sourcing as a useful mechanism to minimize agency costs.

<u>3) Capabilities:</u> By developing an investor's internal resources, all aspects of the organization's capabilities are improved, as internal teams can identify 'unknown unknowns' about the business.

<u>4) Performance:</u> Perhaps the most cited reason for in-sourcing by institutional investors was the desire to maximize net-of-fee investment returns.

5) Sustainability: Managing assets in-house offers an investor the ability to think critically about how to tailor a portfolio to meet its needs (as opposed to trying to cobble together a series of external mandates).

THE NEW BUSINESS OF INSTITUTIONAL INVESTING

Institutional investors organize their production process to realize a given objective, which is typically communicated to management in the form of a return target. In order to achieve this target, investors are obliged to make a series of strategic decisions regarding asset mix, market access points, and execution of investment strategies (Campbell and Viceira 2002). In making these decisions, institutional investors will tend to have three key resources internal to the organization: human capital, systems, and processes. It is important to note that the level of sophistication the fund has in these three areas will tend to drive the decisions made by the organization about assets, access and execution. As readers might imagine, the fact that most institutional investors are lacking in human resources, systems and processes, the asset mix, access and execution has been, for the most part, conservative and outsourced.

Financial intermediaries, it should be noted, were also very adept at packaging the risk and return characteristics of underlying assets into products that institutional investors could easily digest. These





products came with specific risk-return characteristics that could be combined with other products to construct a credible portfolio to meet institutional investors' planned rate of return. This intermediation and derivation was deemed necessary and indeed useful and was the basis for talented asset managers to work with lay asset owners.

As noted above, however, the business of institutional investment has begun transitioning away from intermediation and derivation for lay investors towards direct access to assets by skilled institutional investors. Indeed, in the wake of the financial crisis, a growing community of institutional investors is transitioning towards a new business model based on direct investing through in-house teams. This move towards in-sourcing represents a profound shift from the traditional business of institutional investment. For example, a fund that outsources asset management to external parties will be focused on external searches for managers, manager due diligence, performance assessments and benchmarks, and ongoing monitoring of external parties. A fund focused on in-house asset management will need to hire the people to execute the strategies and the people and systems to support them. Indeed, it's important that insourcers do more than just hire 'investors'; they must also focus on building an entire organization that includes a back, middle and front office. It's important that the investment teams not get too far ahead of the fund's organizational abilities; otherwise the fund will disappoint partners and co-investors. (And it won't be given many second chances.)

To sum up, realizing the advantages of being a long-term investor will inevitably require some level of insourcing due to broken agency problems. But this will be challenging to implement since for much of the 20th century institutional investors have been restricted from developing internal capabilities. In our view, overcoming this deficiency will require good governance. Following Clark and Urwin (2008), we find that good governance is crucial to be an effective in-house investor, as it is the primary mechanism to mobilize the resources of the institution. And so, given the dramatic organizational and management changes required to move assets from external managers to in-house teams, it should come as no surprise that a strong and capable governance framework is an absolute prerequisite.

INNOVATION & GOVERNANCE

The key ingredient driving the long-term success of an institutional investor is its governance. As noted above, governance is the mechanism that can mobilize the resources of the institution to realize its objectives. It's also the mechanism that can create new resources (or further develop existing resources). The independence of the organization, its resources and systems and the ability to identify areas of opportunity as well as challenges are all crucial elements of governance that can dramatically impact the success of any in-sourcing policy. So, before moving assets in house, institutional investors should first assess their governance capabilities to determine whether a given investment strategy is commensurate with its organizational capabilities.

The idea is to root the fund's investment style and strategy in a clear assessment of the organization's capabilities and the resources at the disposal of staff. Similar to using a 'risk budget' to guide portfolio construction and investment decision-making, institutional investors should use a 'governance budget' to guide the process of investing, the development of the organization and the guidance of management (Clark and Urwin, 2010).¹ A good Board will recognize the unique nature of the financial services

¹ Here it is important to recognize that governance is a finite and measurable resource, and the investment style and strategy of the organization should match the available levels of governance. Said slightly differently, a fund's governance budget should implicitly be reflected in its planned and expected performance and explicitly be reflected in the fund's risk budget.





business and compensate internal staff accordingly. The Board will defend the independence of the organization, which also helps when trying to compensate staff at rates far exceeding traditional government pay scales. In-sourcers have to streamline investment decision-making and be ready to move at the pace of transactions. For example, this may require public pension fund boards to break from calendar time meeting schedules and be prepared to meet in real time, which requires a high 'governance budget'

Developing a governance budget first requires cataloging the resources and assets that drive sustainable returns. In general, these include: the talent and skills of portfolio managers; the processes and protocols of decision-making; and the information processing tools that support judgments. In other words, it's the people, processes, protocols and systems that seem to matter most in this business (Clark and Monk, 2012). And where do the people, process, protocols and systems ultimately come from? It is the Board that makes the resourcing decisions; it is the Board that controls the strategic levers of success. A fund's governance budget, which ultimately refers to the resources available to the fund to build the investment operations, is thus a crucial determinant of an investor's capacity to innovate and has clear relevance to in-sourcing.

Governance budgets are comprised of three ingredients: 1) The amount of time that a fund's Board can apply to a given investment problem; 2) The level of expertise that can be called upon at the level of the Board; and 3) The commitment of the Board, which refers to its effectiveness at getting things done; this is the dynamic capabilities of the board (e.g., real time meetings versus calendar time meetings). We can look at each of these as being scarce resources that can be drawn down as a fund engages in more innovative or risky behavior. Thinking about governance budgets, then, should become just as important as thinking about asset allocation or manager selection, especially for those funds interested in bringing assets in house.

In sum, any fund considering a policy to move assets in-house should first check to ensure that their governance budget aligns with their new risk budget. If the levels of governance required exist, then the fund can begin to develop the organization in accordance with the principles and policies below. In order to achieve the level of Governance required, we think it prudent to first examine the nomination procedures of Boards. It's reasonable to argue that the single most important factor driving the success or failure of an institutional investor over the long run are is the procedures used to nominate Board members. In the ideal, these procedures should prioritize commercial, financial and entrepreneurial expertise over political or stakeholder affiliations.

PRINCIPLES AND POLICIES FOR SUCCESS

Moving assets in house resolves a variety of principal-agent problems. However, it also raises an entirely different set of operational challenges for institutional investors and, in particular, the funds' governing Boards. In this section, we distill the lessons learned from our twenty case studies and set out the principles and policies that Boards should focus on when considering (or managing the process of) moving assets in house. Readers will notice that we develop these principles in a deliberate manner such that the foundational elements are presented first. Subsequently, the more advanced elements are raised. Said differently, we think effective in-sourcing requires a foundational approach that starts, at the base, with good governance and then adds additional principles and policies in a cumulative manner. Indeed, among our cases each additional element seemed to build on the previous element, which gives the impression that a sophisticated in-sourcer is developed like a pyramid (See Figure 1). In short, Boards should focus on the following order:





Fundamental Attributes: The follow three elements are deemed to be foundational among in-sourcers:

- 1. <u>People:</u> Recruitment and retention of talented individuals is the single most important factor driving the success of any investment organization (Bertram and Zvan 2009; Ambachtsheer 2011). And so, when it comes to institutional investors managing assets internally, the attraction and retention of people is a prerequisite. It should come as no surprise, then, that our cases all had sophisticated human resources policies and teams. Specifically, the funds tried to combine a competitive salary (near the mean for the specific industry or asset class) with some compelling extra-financial characteristics (e.g., mission, location or responsibilities). In addition, the funds often targeted their recruiting efforts on those individuals for whom the investor had an inherent competitive advantage in hiring, such as those with ties to the region (see Bachher and Monk 2012).
- 2. <u>Organization</u>: Internal asset management requires building out much more than an investment office; it requires the entire organization be improved. For example, successful internally managed pension funds require nearly two people in the back office for every one person in the front office (MacIntosh and Scheibelhut 2012). In-house investors also have to be able to analyze (and be confident in) their data, which requires a data warehouse with the ability to aggregate and normalize data with a view to presenting it to key decision-makers in a manner that it can be interrogated (ideally in real time). This will require expensive and customized data infrastructure.
- 3. <u>Risk Management:</u> By taking responsibility for end-to-end investment of assets, the fund will have to develop sophisticated risk management capabilities. These can be broken down into financial and operational risk management:
 - a. *Financial:* Investors are going to have to develop the systems and protocols for managing financial risks. Among our cases, this often was done with a combination of traditional financial models as well as informal models and metrics to get a "real" sense of exposure. This may require a dedicated team led by a Chief Risk Officer as well as sophisticated data visualization systems that can allow the senior management to slice portfolios according to risk exposures.
 - b. *Operational:* All of our cases focused a great deal on compliance, control and 'fail' prevention. Some funds attempted to build redundancy into almost everything they do. This was deemed necessary to prevent 'unwanted events' that could delegitimize the organization in the eyes of sponsors. And yet, a major downside with this level of (attempted) control and compliance is the increased hierarchy and bureaucracy, which results in a prolonged decision making process for strategic changes to the fund. In order to minimize bureaucracy, we encourage funds to map operational risks and set 'tolerance levels' for losses to help guide behavior of risk managers.

Intermediate Attributes: Building on the above factors, culture, asset selection and mandates offer Boards important touchstones in developing an in-house team:

4. <u>Culture</u>: As a fund moves from external to internal asset management, a cultural transformation is inevitable (and necessary). In-sourcers need to promote a culture of responsibility, accountability and high performance. It's also important that the organization speak the same language. This will ensure mutual understanding and help to assess competing opportunities. The Board and the management team have to be willing to take some personal career risk in this process too. Remember that outsourcing to asset managers provides pension and sovereign fund staff a sort of





political and career risk insurance policy, so setting up an in-house team will mean giving up this comfort level and getting involved in the challenging and sometimes painful business of investing. Note that building a cohesive culture may require keeping all staff local for the first few years, which may be deemed contrary to the collection of local information in foreign markets.

- 5. <u>Asset Selection:</u> In-sourcing strategies should be conceived in relation to an institution's specific characteristics. In other words, the investor should first think about what's actually feasible within a given institutional environment and then tailor the strategy to that environment. Investors should obviously exploit their endowments when they bring assets in-house, as they are, in effect, signaling that they can outperform external providers. Here we think location, liability profile, and resourcing are paramount considerations. For example, some funds see their size and time horizon as being a competitive advantages that allow for strategies and investments that extend far beyond what the private sector is capable of doing. In these cases, internal teams might focus on illiquid assets, such as infrastructure. In other cases, some funds look to start with local, small, and low-risk assets. These funds try to build legitimacy with their Boards to be able to bring a growing proportion of the assets in house over time. Investors must consider where they are physically located before launching an in-sourcing policy that requires special skills or access. As Spence (2002) notes, firms should outsource those functions that require high levels of specialization, while in-sourcing makes sense when information and transaction costs are high.
- 6. <u>Mandates:</u> Many funds with successful internal programs think of internal mandates in much the same way as they do external mandates. In large part, this helps to ensure the in-house mandates are adding value. So, for example, each in-house mandate would go through a similar documentation and oversight process as an external mandate. In addition, by treating in-house and external teams similarly the fund can be sure that developing an internal team is worth the effort (and headache). However, the in-sourcer should also recognize that this can go too far, as one of the benefits of running the mandates in-house stems from flexibility and the ability to deviate from time to time.

Advanced Attributes: The following aspects of in-sourcing will help Boards sustain in-house operations:

- 7. <u>Delegation & Segregation</u>: For the internal teams to be able to do their jobs effectively, they will require formal delegation of responsibilities from the Board (and management). In principle, this delegation of authority should include a variety of different delegated bands of authority, depending on the size of investment and asset class. Some key duties and functions should also be segregated among employees to ensure rules are being respected and indeed followed.
- 8. <u>Communication:</u> Institutional investors that in-source need to be pro-active about communications with stakeholders. It is important that everyone the Board, the Sponsors, and even employees and plan members truly understand what the fund is doing and why it is valuable and required. This will help build legitimacy for the policies and ensure their proper resourcing. Moreover, once the fund takes responsibility for deploying the capital, stakeholders will undoubtedly challenge losses generated by internal teams vociferously. This can lead to conservatism due to perceived career risks. Instead, management and the Board need to get out ahead of the markets by articulating the strategies and their risk return profiles.
- 9. <u>Networks:</u> Investors that bring assets in house are, in effect, giving up many of the agglomeration economies enjoyed by asset managers. These investors thus have to find ways to put themselves at the center of deal flow and investment opportunities, which can be a challenge for those funds





situated far from financial centers. One mechanism for sourcing deals and tapping into local knowledge is to develop relationships with like-minded investors around the world. A direct investor should thus look to 'network economies' within its peer group as a (potential) replacement for the 'agglomeration economies' they're giving up on Wall Street or London (see Currah and Wrigley 2004). In fact, some funds would do well to consider a Chief Networking Officer to foster strong relationships with peers.

In sum, the fundamental, intermediate and advanced attributes described above represent the nine key factors deemed to be at the core of the success of any in-house investment project. And, moreover, in order to develop these nine characteristics the fund has to have a tenth: good governance.



Figure 1: A Foundation for Internal Success

IMPLICATIONS & CONCLUSIONS

A growing number of institutional investors are working to bypass traditional financial intermediaries and agents through the development of in-house teams of investment professionals. Research shows that this path to financial markets, if executed well, offers a boost to long-term performance. In large part, this is about realizing the advantages of being a long-term investor and overcoming broken agency problems. Notwithstanding the benefits, there are significant challenges and pitfalls. In fact, for many investors it requires a complete re-organization of the business of institutional investment. At issue, then, is the





degree to which the broader community of long-term institutional investors will be able to change their organizations to be successful as in-sourcers and long-term investors.

Drawing on 20 in-depth case studies of in-sourcing institutional investors from around the world, we develop a series of principles and policies to guide Boards in their in-sourcing journey. At the highest level, we conclude that governance is the key touchstone to a successful in-house investment capability. In our view, the Board holds the strategic levers of success for institutional investment organizations. As such, it is the Board that will help develop the following nine elements of in-house asset management:

- <u>People</u>: The Board has to understand the importance of people and be willing to offer compensation packages sufficient to get the talent required, keeping in mind that even generous compensation paid to internal teams will almost always be dwarfed by the compensation routinely paid to external managers.
- Organization: A Board must have final authority over the allocation of resources and work to develop all aspects of the organization.
- <u>Risk</u>: Given that investors are little more than risk managers, operational and financial risk management is crucial. Note that the risk management function should not prevent the dynamic capabilities that can lead to success.
- Culture: Developing in-house asset management capabilities requires creating a culture of risk taking that is not present in most externally oriented institutional investors.
- Assets: No institutional investor can or should do everything in-house, which means that the Board must be very careful in selecting where the fund begin and focus its in-sourcing efforts.
- Mandates: Internal mandates should be conceptualized, sold and launched with the same rigor demanded of external managers.
- > <u>Delegation</u>: Successful in-sourcing requires delegation to experts and segregation of duties to ensure that these experts are being held accountable for their actions.
- Communication: A long-term investor with in-house operations has to be pro-active with its stakeholder outreach to ensure the ongoing legitimacy of the fund, even when markets are not cooperating.
- <u>Networks</u>: Successfully executing an in-house strategy almost certainly requires developing a network of like-minded peers to share opportunities and experience.

As this highlights, the path to move asset in-house is a long and difficult one. As such, it is important to be extremely selective in the areas where the fund looks to add value through in-sourcing and be humble about what's possible. Institutional investors considering internal mandates should always look to the market first to see if the service can be purchased at a lower price (with comparable returns) than the internal teams. If a fund can do no better than anybody else, it should outsource it to those people and focus efforts on something else.





REFERENCES:

Ambachtsheer, K. (2011). "How Should Pension Funds Pay Their Own People". Rotman International Journal of Pension Management. Vol 4(1): 18-25.

Bachher, J. S, and A. H. B. Monk (2012). "Attracting Talent to the Frontiers of Finance". Available on SSRN: http://ssrn.com/abstract=2120167

Bertram, R. and B. Zvan (2009). "Pension Funds and Incentive Compensation: A Story Based on the Ontario Teachers' Experience". Rotman International Journal of Pension Management. Vol 2(1): 30-33.

Campbell, J.Y. and Viceira, L.M. (2002). "Strategic Asset Allocaation: Portfolio Choice for Long-Term Investors". Oxford: Oxford University Press.

Clark, G. L. (1998) "Stylized facts and close dialogue: Methodology in economic geography." Annals of the Association of American Geographers, 88, 73-87.

Clark, G. L. and Monk, A. H. B. (2012). "The Scope of Financial Institutions: In-Sourcing, Outsourcing, and Off-Shoring". Available at SSRN: http://ssrn.com/abstract=2016359

Clark, G. L. and Urwin, R. (2008). "Best-practice pension fund governance. Journal of Asset Management 9(1): 2-21.

Clark, G. L. and Urwin, R. 2010. Innovative models of pension fund governance in the context of the global financial crisis. Pensions: An International Journal 15(1): 62–77.

Currah, A. and Wrigley, N. (2004), 'Networks of organisational learning and adaptation in retail TNCs', Global Networks 4:1–23.

MacIntosh, J. and T. Scheibelhut (2012). "How Large Pension Funds Organize Themselves: Findings from a Unique 19-Fund Survey". Rotman International Journal of Pension Management. May 27, 2012 · Innovation in the Pensions Sector Volume 5, Number 1 /2012. Pages: 34 - 40

Fang, Lily H., Ivashina, Victoria and Lerner, Josh, The Disintermediation of Financial Markets: Direct Investing in Private Equity (October 9, 2012). Available at SSRN: http://ssrn.com/abstract=2159229

Leiblein, M. J.; J. J. Reuer and F. E. Dalsace (2002) "Do Make Or Buy Decisions Matter? The Influence Of Organizational Governance On Technological Performance". Strategic Management Journal 23: 817–833 (2002)

Spence, Michael (2002). "Signaling In Retrospect and The Informational Structure of Markets" The American Economic Review Vol 92 No. 3 P 434 To 459

Sheffer, D. A. and R. E. Levitt. "How Industry Structure Retards Diffusion of Innovations in Construction: Challenges and Opportunities." CRGP Working Paper #0059, 2010.