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The Impact of Service Models on Pension Administration Costs: A Global Perspective

A standardization, comparison, and analysis of Defined Benefit pension administration costs and service across the United Kingdom, the United States, Canada and the Netherlands.

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Executive Summary

The cost of administering benefits for large, thirty thousand to three million member Defined Benefit (DB) pensions varies considerably around the globe, from under £14 per member in the United Kingdom to over $325 CAD in Canada. How comparable are these costs, and what factors contribute to the difference? In this whitepaper, we quantify the differences in costs caused by factors outside the control of administrators – currency and purchasing power, membership composition, local cost of living, economies of scale and pension maturity – and adjust for how they affect reported costs. In doing so, we answer some foundational questions about how pensions are administered in different parts of the world and why costs vary by as much as they do. One answer is found in the culture of service: in more expensive regions (e.g., Canada and the Netherlands), the focus of administrators is on service excellence across a broad spectrum of administration activities, an 'enhanced' services model, whereas in less expensive regions (e.g., the United Kingdom) the focus is on service maintenance across mission critical activities, a 'core' services model. An interesting case is found in the United States where pension systems administer using both models, employing the 'enhanced' services model in large, high cost-of-living urban city centres and the 'core' services model otherwise. Relative to the number of members, administering pensions using the 'enhanced' services model is about 2x to 2.5x more expensive than the 'core' services model, which appears to be used in an effort to keep costs relative to assets under management low. The two service models represent a choice, and neither is superior to the other.

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Key Takeaways:

The annual cost of administering Defined Benefit (DB) pension benefits in the United Kingdom (U.K.) and the United States (U.S.) is typically† between 3 to 8 basis points of net assets while in Canada and the Netherlands it is higher, 4 to 11 basis points of net assets.

The cost is not immaterial. It represents 10 percent or more of the investment management cost expected of a large (30k to 3,000k+ member) DB pension system, and 2x what investment management would cost if assets were invested in low-cost, indexed-tracking funds.

On a per member basis‡ costs range from under £15 per member in the U.K. to over $325 per member in Canada. The cost of a small pension system in the Netherlands and a large pension system in the U.S. can even appear similar despite vastly different levels of service.

We attempt to reconcile differences in cost through a detailed accounting of (i) currency and purchasing power, (ii) inactive membership, (iii) cost of living, (iv) economies of scale and (v) pension maturity. Together, these factors drive half of the dispersion in costs, but not all.

After standardizing costs of administering DB pension benefits for effects outside the control of administrators, regional differences are too large to ignore; on a per member basis, the average pension system outside the U.K. costs 2 times more than the average pension system in the U.K.

Differences in costs are driven by service model. In the Netherlands, Canada, and several large urban city centers in the U.S., administrators follow a ‘high-cost / enhanced’ service model whereas in the U.K. and most of the U.S. a ‘low-cost / core’ service model is employed.

‘Low-cost / core’ service providers spend less on contact centres and governance, and far less on Information Technology (IT) and staff support. Instead, they allocate more of their scarce spending to transactions and interactions, mission critical activities that make pension payments possible.

‘High-cost / enhanced’ service administrators invest in member services such as superior contact centres (the Netherlands) or more one-on-one (Canada) or group counselling (the U.S.) services. These investments appear in superior service level quality and capability metrics.

The cost of servicing active, accruing members and retired members is about the same in the U.K. Outside the U.K. pension administrators spend slightly more on retired members than active ones, and more so in the Netherlands.

Inactive, deferred members who neither contribute to nor receive a pension appear costless; therefore, the correct basis on which to compare pension administration costs is per active and retired member, excluding inactives, with only minor corrections for pension maturity.

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† Costs per member here are the 10th percentile in the United Kingdom, the 90th percentile in Canada.

DB pension administration costs and the CEM database.

Pension administration is the art and practice of providing the services required by members, employers and sponsors of a pension system. The pension administration and investment arms of pension systems are measured and managed in different ways, since for investments the metrics which define success are easier to define[1]. Is the goal of a pension administrator to have the lowest cost, or is it to provide the best service? And the best service to whom? Members may want a high degree of hands-on, white glove member service. Employers may prefer higher touch service, too. Sponsors might care about timely and accurate financial reporting. How do you even measure and compare these things, even if you can define them?

CEM Benchmarking is a Toronto based firm specializing in benchmarking the performance of pension systems and other large institutional investors. Because of our history, breadth of coverage, and depth of data (30+ years, 25+ countries, 10,000+ data sets), we are in a unique position to benchmark metrics such as costs, performance, service levels, and transparency across multiple dimensions.

Value for money is a primary concern for all pension administrators. Do members, employers, and plan sponsors get what they pay for? Of course, value is in the eye of the beholder, and neither high-cost nor low-cost pension administration is necessarily better or worse than the other. A pension administrator offering a high-touch, white-glove service model is aware that the cost of that service will be higher than a more self-serve, value-oriented offering.

In this paper, CEM offer no judgement of any service model. Instead, we provide an exposé of the drivers of administration costs across 79 Defined Benefit (DB) pension systems with a broad, 100x range in membership across four different countries, with the goal of explaining some of the differences in cost. In 2023 the cost per member[2] in Canada ranged from $102 (CAD) at the 10th percentile to $329 at the 90th percentile whereas in the U.K. it ranged only from £14 to £54 (GBP), a gulf so vast that it cannot possibly be explained by currency differences alone.

Our aim here is three-fold: First, by standardizing pension administration costs across regions for factors outside the control of DB pension administrators, we demonstrate that the gulf is not nearly as wide as reported. While the gulf may not be as wide as thought, a chasm across regions remains that requires explanation which we find rooted in differences in service culture. Second, after standardizing the data for factors outside the control of DB pension administrators, we show that the correct basis for comparing pension administration costs is on a per active and retired member basis. Third, we explore differences in DB pension administration costs by pension administration activity (e.g., call centre, governance, Information Technology (IT), etc.), illustrating where resources are spent and what the different levels of investment by administrators achieves in terms of service level quality and capability which we quantify using selected CEM service level data.

1. Measuring success in pension investments isn't easy. It can't be captured by a single statistics like net return. What we mean is that where a statistic exists, directionally we know what is better.
2. By members we mean the total number of active members contributing to the fund in the expectation of receiving a pension in retirement, retired members receiving a pension, and inactive members who no longer contribute to the fund but who also do not receive a pension yet.

Executive Summary I: The Total Cost of Administering DB Pension Benefits

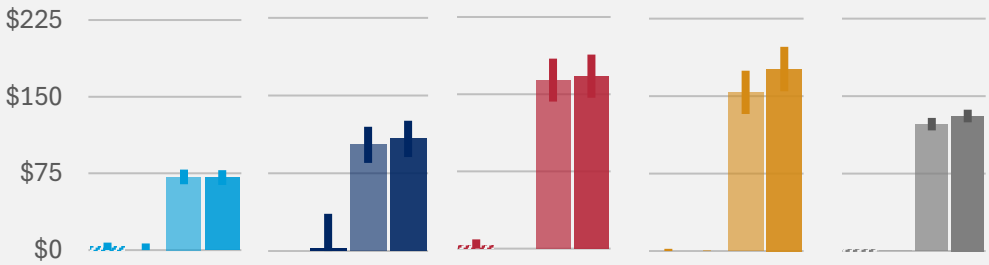
The reported cost of administering defined benefit pensions is not comparable across pension systems because of several factors outside the control of pension administrators, as detailed in Exhibits 2 through 6. The average effect of five factors outside of administrators' control on the average cost per member and the best estimate of an average 'standardized cost per member' after adjusting for each factor are given in ES1. The analysis shows that, even after standardizing cost per member, DB pension benefit administration is 1.5x, 2.3x, and 2.3x more expensive in the U.S., Canada and the Netherlands than in the U.K.

ES1. Reported costs, adjustments, and standardized costs

		U.K.		U.S.		Canada		Netherlands		Average
Reported pension administration cost per (in local currency):										
active, retired, and inactive member		£34		$91		$180		€ 78		96
multiple of U.K.		1.0x		2.7x		5.3x		2.3x		
Factors outside administrators control (adjustments, in USD):										
currency and purchasing power	+	$15	+	$2	−	$20	+	$24	−	$15
inactive members	+	$22	+	$29	+	$19	+	$66	+	$34
cost-of-living	+	$16	−	$6	+	$11	+	$26	−	$15
economies of scale	−	$16	−	$10	−	$24	−	$30	−	$20
pension maturity	−	$0	−	$0	+	$0	−	$0	−	$0
Standardized pension administration cost per (in USD):										
active and retired member	=	$71	=	$105	=	$165	=	$164	=	$126
multiple of U.K.		1.0x		1.5x		2.3x		2.3x		

Each pension member type places different demands on the part of pension administrators, and therefore a different cost to administer. The estimates of costs per member type below show that costs per active and retired member increase left to right - from the U.K. to the U.S., to Canada, and to the Netherlands. The cost per retired member outside of the U.K. is higher than that of an active member, but the difference is hard to resolve.

ES2. Pension administration cost per member type[1].



	U.K.	U.S.	Canada	Netherlands	Average
Base cost (£ millions)[2]	$3.22	$0.00	$3.48	$0.00	$1.68
Inactive member[2]	$0.00	$2.38	$0.00	$0.00	$0.59
Active member	$71.57	$102.47	$163.69	$153.63	$122.84
Retired member	$70.95	$108.21	$167.53	$176.22	$130.73

1. The basic regression model is Total Cost = Base Cost + $Cost_{inactive}$ x $\#_{inactive\ members}$ + $Cost_{active}$ x $\#_{active\ members}$ + $Cost_{retired}$ x $\#_{retired\ members}$. However, since estimates of base cost and cost per inactive are consistent with zero everywhere, we provide cost estimates for active and retired members as if base cost and cost per inactive were zero.

2. The base cost and cost per inactive member is consistent with zero in every model studied (i.e., it is zero within two standard errors). Where a regression estimate is less than zero, a zero is provided instead with an error bar spanning a minimum of zero to a maximum of the average plus two standard errors.

Executive Summary II: Activity Costs and Service Levels

Administration costs are spent differently across regions. The U.K. spends similarly to the U.S. and the Netherlands on member transactions and interactions, but far more as a fraction of total cost, and much less than other regions on information technology. Pension systems in Canada spend more on member transactions and interactions, primarily one-on-one counselling, and far more on information technology. In the Netherlands, contact centre costs are 3x that of peers, and added layers of governance and recent pension design changes increase costs.

ES3. Average activity costs[1]

Activity	U.K.	U.S.	Can.	Neth.	Activity Notes
I. Contact centre	$3	$7	$7	$18	The Netherlands invest the most, by far.
II. Transactions and interaction	$16	$17	$29	$17	Canadians spend most, but the U.K. allocate 25%+ of total spend.
III. Other administration	$9	$13	$18	$11	Canadians spend most, and elsewhere similar.
IV. Finance and audit	$7	$7	$8	$8	Spending in the office of the CFO is the same across regions.
V. Governance	$11	$10	$19	$44	Layers of governance in the Netherlands increases costs.
VI. Major projects	$10	$10	$17	$7	Major projects are primarily IT focused one-time costs.
VII. Information technology	$9	$27	$44	$35	The U.K. under-invests in IT relative to its peers.
VIII. Staff support	$5	$14	$23	$24	Support costs in Canada and the Netherlands are highest.
Total	$71	$105	$165	$164	Total cost is standardized as per ES1.

1. Administration activity definitions are provided Exhibit 7 (page 43). Distributions of allocations are provided in Exhibit 8 (page 45), and distributions of costs in Exhibit 9 (page 47).

Differences in activity level administration costs reflect in service level quality and capabilities. Call centre quality is much higher in the Netherlands than elsewhere on several measures, including dropped call frequency (shown below) and first call resolution (Exhibit 10). Since pension payments are mission critical, all regions spend similarly on transactions. Canadian administrators spend more on member interactions, primarily because they provide far more high-touch one-on-one counselling (shown below).

ES4. Selected service level metrics

Contact Centre Quality:

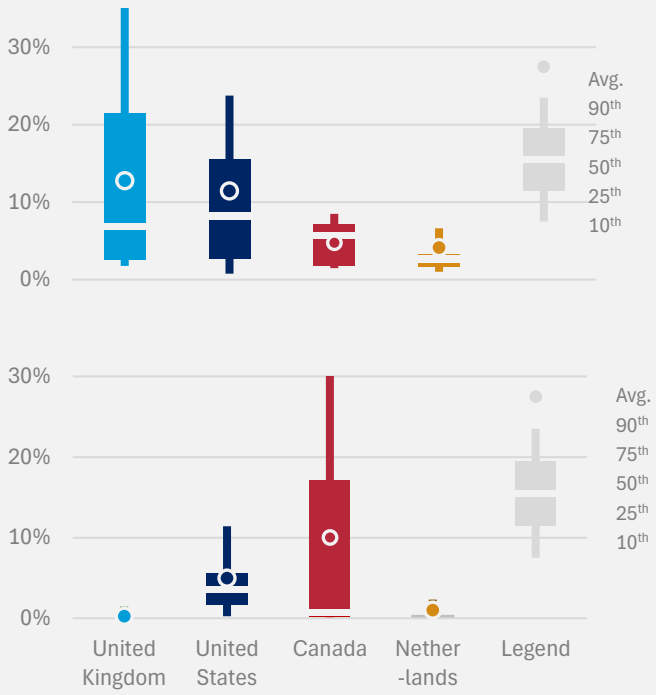
Percent of calls dropped before reaching a service agent

Contact centres are the first point of contact for members inquiring about their pensions whether by call or email. Pension administrators in the Netherlands spend more than 3x on their contact centres than their peers, and unsurprisingly, their contact centres have the best quality in terms of this (and many other) simple measures.

Member Interaction Capabilities I:

One-on-one counselling sessions per active member

Members interact with their pension administrator in a number of ways, but the single most expensive way is one-on-one counselling. Canadian pension administrators spend more than 1.5x than their peers on transactions and interactions, primarily because they offer far more one-on-one counselling (and clearly not only to new or soon to be retirees).



What does it cost to administer benefits for a DB pension system?

The expected cost of administering benefits for a DB pension system mostly depends on the number of members a system administers benefits for. If a system has 500k members and the expected cost of administering a member is around £100 per year, then a good estimate of the total administration cost is £50 million per year.

The scales in the simple example are right, but the range in cost per member spent is so varied that some sort of explanation for the differences within and across regions are required. Because the services provided by benefit administrators of DB pensions are so similar from one system to the next, the reasons for the differences in cost should be identifiable and quantifiable.

The two-page Executive Summary (pages 4 and 5) provides the high-level findings of our work towards understanding the differences in costs of administering benefits for DB pensions. The first part quantifies factors outside the control of administrators, the accumulated effect of which distorts comparisons across systems (for example, cost of living). By quantifying the impact of factors outside the control of administrators we can neutralize them in reported cost, producing a standardized cost which better reflects the choices made by administrators as to the level of service provided to members in terms of quality and capability.

Our standardized cost data provides evidence for what many in the industry already suspect: there are two very different models for administering benefits for DB pensions. The first is a service model that focuses spending on the maintenance of core services, those required of a pension administrator such as incepting and paying pensions. The model aims to keep costs low on a per member basis and is employed in the U.K. and much of the U.S. outside of several large and high cost-of-living urban city centres. In part, the model appears to be a necessary style of pension administration required to ensure that the cost relative to assets under management (AUM) remains reasonable, in the range of 3-8 basis points of AUM, roughly the 10th to 90th percentile of cost per AUM. We call this model the 'core' service model.

The alternative service model aims to provide a broader spectrum of benefit administration which comes with a higher per member cost, sometimes called "service excellence" in the industry. Pension administrators who offer this service model display a higher level of investment in their member contact centres, offer more one-on-one and group member counselling, and provide superior (and hard to quantify) online administration services. This model is employed across Canada and the Netherlands with some variation, costing between two and two and a half times that of the 'core' service model on a per member basis. It is made possible by systems with larger asset pools from which to fund benefit administration, since here cost on a per AUM basis remains in a similar range as systems providing 'core' services, between 4-10 basis points of AUM. The model is also employed in large and high cost-of-living American urban city centres. We call this model the 'whole' service model.

The difference in administration cost across the two service models does not appear on a cost per AUM basis, but instead on a cost per member basis. To clearly see it within the administration cost data, we first need to remove from the reported DB benefit administration costs the impact of those factors outside the control of administrators which distort cost comparisons across regions. These factors include currency and purchasing power, inactive members, cost of living, economies of scale, and pension maturity.

Second, and after standardizing cost, we need to identify differences in cost per member type. This is important since different member types (e.g., active versus retired members) place different demands on administrators and can call into question any cost per member calculations. If one region has a more mature membership, more retired members than active members as in the U.K., could it not be that one member type simply costs much less to administer than the other? What is the correct basis on which to compare administration costs anyway?

Standardizing cost for factors outside of the control of administrators.

We first provide in ES1 the average cost per member of administering DB pension benefits for each of the four regions we have data for, the U.K., the U.S., Canada and the Netherlands. Below that in ES1, we summarize the average impact on total cost per member for each of the five factors outside the control of pension administrators that we have identified. Lastly in ES1, we provide the average standardized cost per member which adjusts the reported cost to remove the impact of those five factors, and which provides better comparability across systems.

The standardization of costs shows that there are real, structural differences in the cost of administering DB pension benefits across regions that cannot be attributed to any of the factors we control for, namely:

Factor #1. Economics – differences in currency, purchasing power, and fiscal year ends (e.g., inflation).
Factor #2. Inactive Members – members that do not contribute to or collect a pension are virtually costless.
Factor #3. Cost of Living – differences in local cost of living drives salaries and benefits paid to staff.
Factor #4. Economies of Scale – larger systems with more members cost less on a per member basis.
Factor #5. Pension Maturity – retired members are more expensive to administer than active ones.

Each of these factors represents a cost pressure outside the control of pension administrators and does not reflect any conscious choice about the design of the DB pension benefit administration system. Rather, the accumulated impact of each factor together clouds any real comparison of costs. Leaving these factors unaccounted for leaves the question open: Are differences in cost from one system to the next or the average cost from one region to the next just the result of some trivial factor outside the control of administrators that hasn't been considered?

A first-glance comparison of the administration cost per member shows that the regionally averaged cost varies from a low of £34 (GBP) in the U.K. to a high of $180 (CAD) in Canada. There is a considerable range around these values, but the differences across regions expressed in the averages extends to all parts of the distribution[3]. As reported, administration costs in Canada simply look much higher than in the U.K., and far higher than what currency differences alone can explain. The average cost multiple relative to the U.K. is 2.7x, 5.3x, and 2.3x for administrators in the U.S., Canada, and the Netherlands, and on average 3.4x overall.

Some of these differences is indeed just currency, inflation[4] and purchasing power. After adjusting for economic factors by converting all systems to USD, the local currency of the U.S., and all systems to have a December 31st, 2023, fiscal year end, the cost multiples are reduced considerably. For pension systems in Canada the average cost per member in USD adjusts to $159, while the in the U.K. and the Netherlands cost per member adjusts to $49 and $102 respectively. In the U.S., the average cost per member adjusts as well as we synchronize fiscal years ends, but only by a small amount. The average cost multiples relative to the U.K. are now only 1.9x, 3.2x, and 2.1x for administrators in the U.S., Canada and the Netherlands, and on average 2.4x overall.

The cost of administering inactive members turns out to be almost immaterial, and because of this it is not unusual to exclude them from the calculation of cost per member. Our second factor, redefining membership to mean active plus retired members and excluding inactive ones, increases costs for all systems because the denominator in cost per member gets smaller. It reduces the differences between the average cost per member of Canadian and U.K. pension system from 3.2x to 2.5x, because pension systems in the U.K. have far more inactive members than Canadian systems. By contrast, a majority of the membership base in the Netherlands is inactive and so cost per member there increases relative to the U.K. from 2.1x to 2.4x. In the U.S. excluding inactive members reduces the cost multiple to the U.K. from 1.9x to 1.7x. The average cost multiple relative to the U.K. is now only 2.2x overall.

3 Detailed analysis of the raw cost data as provided is included in the Appendices, Figure 2A of Exhibit 2 on page 15.
4 Inflation turns out to be a notable factor since the fiscal year-end of some administrators is in March, others June, others September, and others still December. In high inflation years, a difference of 9-months can cause a cost difference of 10 percent.

The third factor is local cost of living, which can vary considerably within regions, not just across them (in the U.S., cost of living varies by more than 2x across the sample of 33 systems). Cost of living explains a large portion of the cost excess seen in the U.S. and Canada, and in the Netherlands too, just not at the extremes. Our first key finding is that:

> ***U.K. pension systems are low cost, in part, because pension administrators in the U.K. are situated in low-cost environments compared to those in Canada and the U.S. which are often situated in high-cost environments like New York City, Los Angeles, Sacramento, and Toronto. No U.K. system in our database administers benefits from the city centre of London.***

A detailed analysis of cost of living is left for Exhibit 4 on page 20. The average cost multiple to the average U.K. administrator, after factoring in cost of living, is 1.3x, 2.2x, and 2.2x for administrators in the U.S., Canada and in the Netherlands, and on average 1.9X overall.

The fourth factor is membership size, which drives economies of scale in pension administration. Increasing membership drives costs up, but the path is not a straight line, and on a per member basis, size drives costs down. Many pension systems in Canada and the Netherlands are small and so have substantial economies of scale disadvantages.

A detailed analysis of economies of scale is left for Exhibit 5 on page 21. After factoring in membership size, the difference in cost per member across regions is driven down on an absolute basis, but not on a relative basis. In fact, the average cost multiple to the U.K. after factoring in economies of scale goes up to 1.5x, 2.3x, and 2.3x for administrators in the U.S., Canada and the Netherlands, and on average 2.0x overall.

A second key finding is the observation that, in the U.S., adjusting for economies of scale increase the range of costs across systems rather than reducing it. This seemingly non-sensical result is grounded in a firm reality that (only) in the U.S. larger systems tend to be higher cost than scale alone justifies, and vice versa. This fact reveals an important detail about pension administration not just in the U.S., but in the other countries studied as well.

> ***There are two contrasting models of pension administration. An 'enhanced' service model is prevalent in Canada and the Netherlands, and a 'core' service model is prevalent in the U.K. In the U.S. there are two solitudes: in large, high cost-of-living urban city centres, administrators provide 'enhanced' service while elsewhere a 'core' service is provided, as in the U.K.***

The distinguishing features of 'enhanced' and 'core' services cannot be quantified from cost data alone. On a cost per member basis, the 'enhanced' service model appears high cost and the 'core' service model low cost, and it is tempting to label the two models as such. However, on a cost per AUM basis there is virtually no difference in cost, and so cost labeling is not appropriate. To really understand the difference, we need to look at activity level cost and service level quality and capability data. The 'core' service model is focused on mission critical pension administration activities whereas the 'enhanced' service model is broad based, providing a full spectrum of services to pension members.

The fifth and final factor we consider outside to be the control of administrators is pension maturity, as our analysis shows that more mature systems with a higher ratio of retired to active members should cost more to administer. While pension maturity could be an impactful cost factor outside the control of administrators, the differences in pension maturity across systems and the difference in cost between active and retired members are both small. In the U.K. where maturity is highest and where the effect should be biggest, pension maturity is immaterial relative to other factors. This represents a third key finding:

> ***The maturity of a pension system can play a role in cost – more mature systems are expected to be more expensive – but in practice the effect is small.***

Our standardized cost per member after adjusting for all five factors outside the control of administrators is our best estimate of what pension systems choose to spend to administer DB benefits. It represents what an average system would pay were they to have the same membership size, membership mix, and cost of living as the average pension system in the U.S., all expressed in USD to have the best possible comparability across regions. We conclude that the cost per member of administering DB pension benefits in 2023 was $71 in the U.K., $105 in the U.S., $165 in Canada, and $164 in the Netherlands on a standardized basis[5].

Cost per member type.

Even after accounting for each of the five factors outside the control of administrators, we still find a substantial difference in cost per member across regions. Prior to standardization, the average cost multiple relative to the U.K. was 3.4x, brought down through standardization to 2.0x. Such a difference in cost in any other segment of the global economy after accounting for currency and purchasing power would demand an explanation, and so, after accounting for so many more factors, there must be a big picture issue at play. For one, the U.K market is far more mature than (for example) the Canadian market, with a higher proportion of retired members than active ones.

To provide insight, we estimate the cost per member type for each of the four regions using a sophisticated regression analysis. The end results are provided in Table ES2 and shows our best estimates of the cost of administering DB benefits per active member, per retired member and per inactive member. In the U.K., active and retired members have nearly the exact same cost, between $71 and $72 per member. Outside of the U.K. there is strong evidence that the cost per retired member is higher than the cost per active member. While the data makes resolving the difference difficult, the analysis leading to the conclusion that retired members are more expensive to administer than active members is robust and conclusive (see the discussion of Exhibit 6 in the Appendices).

Two costs that we try to resolve, the cost per inactive member, and a base cost[6] incurred irrespective of members, appear immaterial at every level that we have studied them, which includes ten different models for each of the U.K., the U.S., Canada and the Netherlands. If the two were material relative to the cost per active or retired member, we believe we would have seen something to indicate that. In ES2, we provide estimates of the cost per inactive member and base cost where greater than zero, but again we emphasize that every model we've studied implies that they are immaterial. This analysis provides a fourth key finding:

The cost of administering benefits to inactive members is immaterial.

That the cost per inactive member is immaterial is perhaps surprising, because the work volumes for inactive members is clearly not zero. It could be that the work required for inactive members is accomplished in tandem with work done for active and retired members already, and so the incremental cost of adding one inactive member may in fact be immaterial to total DB pension administration cost. It could also be that the cost of inactive members is simply too small for us to measure, less than 1/10th that of active and retired members.

The base cost is different than a cost per member type. In regression analysis of cost versus members, base cost is the regression constant. In reality, it represents the cost of administering a pension with no members. The idea of a base cost irrespective of membership is a sound one – the administration of DB pension benefits has costs that might not grow with membership, for example in core functions such as governance or basic financial reporting. Our analysis of total administration costs however finds that in all regions and in every model, costs increase in a simple, predictable way after accounting for economies of scale, increasing with membership. This represents a fifth key finding:

The proper basis to compare pension administration costs is per active plus retired member.

[5] Standardized cost per member is not a useful statistic for benchmarking purposes.
[6] Base cost is a regression constant, and so where we model total cost as a cost per member represents some fixed cost which does not depend on membership.

Cost measured on a per active plus retired member basis is the usual way by which CEM benchmarks pension administration costs, and the evidence shows it is the correct one. That we demonstrate the appropriateness of it here is not just to verify the method, but to support our finding of a two-service model view of DB pension administration under a 'core' versus 'enhanced' banner. If retired members cost a fraction of active members, then the low cost-per-member nature of more mature pension regions like the U.K. would have a simpler explanation. But retired members do not cost less than active members, they cost more, but only marginally.

Cost by pension activity and service levels.

The cost of administering DB pension benefits is not as simple as paying a flat fee per member[7]. Costs are incurred by administrators who provide services across a variety of administration activities, some of which directly serve members and employers (front-office activities), and others which serve governance functions or in support of front-office and governance staff.

CEM collects data at the pension activity level which has many useful qualities. First, it allows CEM analysts to ensure that costs from all pension administration activities are collected. Second, it allows total cost to be disaggregated and presented on an activity level basis for comparison across regions to see where costs are incurred. In ES3 we provide the average cost of administering DB pension benefits[8] for eight different pension administration activities, each of which is an aggregate of more finely grained activity level data.

The eight activities (with brief descriptions) are:

1. **Contact Centre** – the first point of contact for pension members, either by phone or email.
2. **Transactions and Interactions** – transactions such as pension payments, inceptions, estimates and withdrawals plus interactions such as one-on-one counselling and member presentations.
3. **Other Administration** – mail room, imaging, mass communications, data and money from employers.
4. **Finance and Audit** – office of the CFO including annual reports, budgeting, compliance and audit.
5. **Governance** – office of the CEO, Board and trustee costs, strategy, policy, etc.
6. **Major Projects** – capital costs of non-recurring major projects that are or could be capitalized (excluding building).
7. **Information Technology** – IT hardware, software, data, web development, and outsourced IT costs.
8. **Staff Support** – human resources, building and building support staff costs.

More detailed definitions are provided in Exhibit 7 on page 23. Distributions of fractions of total spending (i.e., allocations) by activity and by region are provided in Exhibit 8 on page 24, and distributions of costs by activity and by region are provided in Exhibit 9 on page 25. While ES3 provides regional averages only, features which distinguish how pension administrators in different regions spend are readily apparent in the averages without recourse to the distributions (although the distributions are more telling).

Pension administrators in the Netherlands, who follow an 'enhanced' services pension administration model, outspend their peers in the contact centre – the first line of communications between members and their pension system – by about 3.5x on average. This is a remarkable investment in comparison to contact centre spending elsewhere. It is not surprising then that the quality of service in contact centres in the Netherlands is higher than elsewhere too, and as shown in ES4 this is borne out by service level data: the fraction of calls hung-up on before reaching a service agent in the Netherlands is much lower than elsewhere, especially the U.K. which spends 5x less on

[7] Where pension administration is outsourced, a flat per member may be charged, but that does not mean that the service provider incurs costs on a flat per member basis.
[8] Costs are presented after standardizing for differences in factors outside of the control of administrators.

the contact centre, and where administrators follow a 'core' services pension administration model. More service level quality and capability data is provided in Exhibit 10 on page 26.

Canadian pension administrators, who are also 'enhanced' service providers, allocate less to contact centres and trail their peers in the Netherlands on other contact centre service quality measures. Canadian administrators allocate their member facing front-office spending somewhat differently. The focus is on member transactions and interactions, the main component of which on the interactions side is one-of-one counselling. One-on-one counselling volumes, as shown in ES4, illustrate the difference, with average one-on-one counselling volumes 10x that of the Netherlands. In the U.K., the 90th percentile of one-on-one counselling volumes doesn't even reach one percent, the average in the Netherlands, illustrative of the 'low-cost / core' service model of pension administration.

This represents a sixth key finding:

> ***The 'enhanced' service model is not a one size fits all approach. In the Netherlands the focus is on contact centres while in Canada the focus is on member interactions.***

Canadian administrators also spend more on other administration, an activity aggregate which includes mass communication and newsletters, services to employers, data and money collection and a handful of other activities which we have not provided more detail on. Across regions, the U.K., the U.S., and the Netherlands all spend comparable amounts on 'other administration'.

By contrast, administrators spend about the same on Finance and Audit across regions, a core function for which the costs appear to be service model agnostic. The finance and audit function costs about $7-$8 per member on average with almost no variation across regions. There is some variation from the 10th to 90th percentile, $3-$12 per member, but very little in comparison to other activities (see Exhibit 9 page 25). This, together with the observation that U.K. administrators spend the same as elsewhere on member transactions and interactions (outside of investing in one-on-one and group counselling), represents a seventh key finding:

> ***The 'core' service model targets limited spending on mission critical front-office pension administration activities, such as data and money collection, pension inceptions and payments, as well as maintaining basic governance functions, and does so at the expense of member interactions.***

While providers of 'enhanced' services see higher levels of spending on a per member basis in member-focused, front-office activities, with demonstrably better service level quality and capability, the primary differences in activity costs between the two service models are elsewhere. The Netherlands is notable for incurring much higher governance costs than in other regions, in part because of an extra layer of governance in the 'bestuursbureau', a Dutch National Bank encouraged separation of pension fund and outsourced service provider that doesn't exist elsewhere. Canadian funds tend to spend more on governance than the U.K. and the U.S. as well, but not to the degree as in the Netherlands.

The other difference in costs between 'enhanced' service providers is found in IT. Pension administrators in the Netherlands and Canada spend on average 4-5x that of 'core' service providers in the U.K. However, metrics quantifying the difference in member service experience generated from these investments is hard to quantify. Interestingly, pension administrators in the U.S. almost perfectly bridge the two service models, showing in this activity more than almost anywhere else the fact that some pension administrators in the U.S. follow one model, and others the other (see Exhibit 9).

Finally, 'enhanced' services pension administrators spend more on support activities on a per member basis than 'core' services pension administrators, with spending in the Netherlands and Canada 4-5x that seen in the U.K. And once again, like IT costs, administrators in the U.S. appear to bridge the two service models with a distribution of support costs which spans both the costs incurred in the U.K., and those incurred in Canada and the Netherlands. A

comparison of the headquarters of large Canadian or Dutch pension administrators and those in the U.K. gives ample reason to understand the difference in investment.

These three findings represent a final, eighth key finding:

> ***Administrators following the 'core' service model spends far less on governance, IT, and support than 'enhanced' service model administrators.***

Unfortunately, the benefit of this investment is hard to quantify.

Parting remarks

In this whitepaper we provide a detailed analysis of the costs incurred by administrators of DB pension benefits in four countries. Our analysis of the effects on cost for factors outside of the control of administrators demonstrates that there are real, structural cost differences across regions that cannot be easily explained.

Our main finding is that there appears to be two DB pension benefit administration service models, a 'core' services model prevalent in the U.K. and an 'enhanced' services model prevalent in Canada and the Netherlands. The U.S. is distinguished by displaying both service models, with 'enhanced' services providers located in more urban, high cost-of-living environments. The difference in investment is apparent in several service level quality and capability measures and can be tied directly to differences in spending across regions (e.g., superior call centres in the Netherlands, higher one-on-one counselling volumes in Canada).

The ability to invest in superior member services is one driver of the choice to do so. Spending on member services is not vastly different for low-cost U.K. pension systems in comparison to high-cost Canadian or Dutch ones when measured on the basis of assets under management. The cost difference is instead seen on a per member basis, where spending in Canada and the Netherlands is on average 2.3x that of the U.K., while in the U.S. the multiple over U.K. administration spending is only 1.5x, again demonstrating the two service model approach which depends on cost of living, with investment in more expensive regions belonging to the 'enhanced' services model and in less expensive regions belonging to the 'core' service model.

Our analysis shows several other important features of pension administration costs that have not been demonstrated elsewhere. First, inactive members appear virtually costless. Second the cost of administering benefits for retired members is higher than that of active members outside of the U.K., although the difference is only slight. Third, pension administration costs grow with increasing membership in a predictable way, depending mostly on the choice of service model employed, 'enhanced' or 'core'. Thus, the correct basis on which to benchmark DB pension administration costs is on a per active and retiree basis, excluding inactive members, provided economies of scale are accounted for properly. Pension maturity, which should in principle be important, tends to be immaterial.

But ultimately, after the choice of service model has been made by administrators, the biggest drivers of differences in costs are features which administrators have little or no control over, cost of living and membership size.

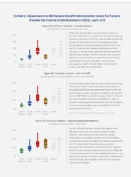
A guide to reading the remainder of this whitepaper

In what follows we provide an Exhibit-by-Exhibit discussion of the CEM data and our analysis of it. It reads as an Appendix and is provided for the motivated reader who is interested in the supporting evidence for our conclusions as well as additional colour and insight. No major conclusions have been omitted thus far. Each Exhibit is designed to provide a stand-alone expose of the data. In order we provide:

Exhibit 1. DB pension administration summary statistics. page 15

Descriptive statistics detailing the sample of pension systems we include in this study by region. Tables include: 1A. total membership, 1B. DB net fiduciary assets (in local currencies), 1C. DB pension administration costs (in local currencies), 1D. cost per DB net fiduciary assets (in bps), 1E. cost per member (in local currencies) and 1F. cost per member (in USD, via OECD PPP). Tables include commentary and color.

Exhibit 2. Adjustments to DB pension administration cost per member for factors outside the control of administrators. pages 16 & 17

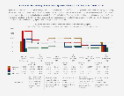


Box-and-whisker charts illustrating the distributions of cost per member by region as we progress step-by-step through each stage of adjustment to per member costs for factors outside the control of administrators, arriving at a standardized cost per member for each pension system that is most comparable across systems and regions. Figures includes 2A. cost per member (in local currency), 2B. cost per member (in USD via OECD PPP), 2C. cost per member in USD excluding inactive members, 2D. cost per member in USD excluding inactive members and adjusted for cost-of-living, 2E. cost per member in USD excluding inactive members adjusted for cost-of-living and economies of scale, and 2F. standardized cost per member (i.e., in USD, excluding inactive members, adjusted for cost-of-living, economies of scale and pension maturity). Figures include brief commentary and color.

Exhibit 3A. Changes to the average DB pension administration cost per member via adjustments for factors outside the control of administrators. page 18

Evolutionary path charts illustrating changes to the average cost per member as we progressively adjust from reported cost to standardized cost per member for factors outside the control of pension administrators. Exhibits include captions, commentary and color.

Exhibit 3B. Changes to the spread in DB pension administration costs per member via adjustments for factors outside the control of administrators. page 19



Evolutionary path charts illustrating changes to the spread in cost per member as we progressively adjust from reported cost to standardized cost per member for factors outside the control of pension administrators. Exhibits include captions, commentary and color.

Exhibit 4. Cost of living. page 20

Linear regressions showing relationship between cost per member (in USD, via OECD PPP, excluding inactive members) versus cost-of-living factors for the U.K., the U.S., Canada and the Netherlands. Figure includes statistics on changes in cost per change in cost-of-living and correlations. Exhibit includes caption, statistics descriptive of the regional relationships between cost and cost of living, and a detailed footnote describing our methodology.

Exhibit 1. DB Pension Administration System Summary Statistics[1]

Table 1A. Members

Total membership statistics descriptive of the 79 DB pension systems (i.e., schemes, funds, plans) included in this whitepaper. It includes active members accruing a pension, retired members receiving a pension, and inactive members neither contributing or yet receiving a pension.

(active, inactive and retired members, in thousands)

Region	10th	25th	50th	75th	90th	Avg.	Stdev.	Count
United Kingdom	140	180	361	597	1,686	683	878	21
United States	152	243	431	913	1,242	628	516	33
Canada	87	105	304	422	720	326	232	11
Netherlands	80	97	483	724	2,377	766	960	14
All	101	182	406	715	1,257	625	710	79

Table 1B. Assets

Net DB fiduciary assets available for pensions. Excludes assets managed by the investment arms that do not require DB pension administration (optional health benefits, DC assets, buffer assets, etc.).

(net DB assets, in billions, local currency)

Region	10th	25th	50th	75th	90th	Avg.	Stdev.	Count
United Kingdom[2]	8	10	19	35	45	24	18	16
United States	22	41	68	100	187	95	93	33
Canada	23	28	63	136	182	90	75	11
Netherlands	12	19	26	62	191	77	122	14
All	n/a	n/a	n/a	n/a	n/a	n/a	n/a	74

Table 1C. Cost of administration

DB pension administration costs excluding any non-DB administration activity such as administering optional healthcare benefits, disability benefits, DC pension administration etc.

(DB pension administration only, in millions, local currency)

Region	10th	25th	50th	75th	90th	Avg.	Stdev.	Count
United Kingdom	14	23	34	40	54	34	16	21
United States	36	50	66	93	178	91	75	33
Canada	102	121	152	204	329	180	82	11
Netherlands	32	47	68	101	115	78	49	14
All	n/a	n/a	n/a	n/a	n/a	n/a	n/a	79

Table 1D. Cost per assets

Pension administration cost per pension assets (DB-only) is a measure of cost analogous to an investment management ratio - it is an estimate of the annual reduction of DB assets directly attributable to administering benefits for DB pensions.

(in basis points, 1 basis points = 0.01 percent)

Region	10th	25th	50th	75th	90th	Avg.	Stdev.	Count
United Kingdom[2]	3.4	3.8	5.1	7.0	7.8	5.5	2.0	16
United States	2.7	3.7	5.0	6.8	8.6	5.4	2.3	33
Canada	4.0	5.0	6.0	7.6	10.3	6.8	3.3	11
Netherlands	4.1	5.1	5.7	8.2	11.3	7.2	4.1	14
All	3.1	4.1	5.5	7.0	9.5	6.0	2.9	74

Table 1E. Cost per member

The measure of pension administration cost most often included in annual reports, but often includes costs incurred by non DB-pension administration activities. Here, all non-DB pension administration costs have been removed including pro-rated governance and support costs.

(local currency, as reported)

Region	10th	25th	50th	75th	90th	Avg.	Stdev.	Count
United Kingdom	14	23	34	40	54	34	16	21
United States	36	50	66	93	178	91	75	33
Canada	102	121	152	204	329	180	82	11
Netherlands	32	47	68	101	115	78	49	14
All	n/a	n/a	n/a	n/a	n/a	n/a	n/a	79

Table 1F. Cost per member

Pure DB administration cost per member converted to a common currency and year-end allows for cross-region comparisons. Comparisons at this level are however mostly meaningless because of differences in inactive membership, cost-of-living, membership size and pension maturity.

(USD, Dec 31 2023, converted using OECD PPP and CPI)

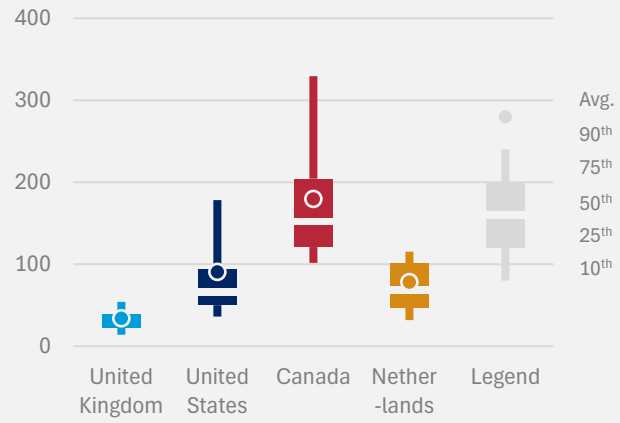
Region	10th	25th	50th	75th	90th	Avg.	Stdev.	Count
United Kingdom	20	33	48	57	79	49	23	21
United States	37	51	67	95	182	93	77	33
Canada	91	107	136	183	290	159	72	11
Netherlands	42	61	89	132	151	102	65	14
All	33	48	67	110	167	92	72	79

1. Statistics include percentiles (10th, 25th, 50th, 75th, and 90th), average (Avg.), standard deviation (Stdev.) and the count.
2. Five of 21 U.K. pension administrators provide services for pay-as-you-go-schemes and do not hold significant assets relative to liabilities or administration costs and so have been excluded from the analysis.

Exhibit 2. Adjustments to DB Pension Administration Cost per Member For Factors Outside the Control of Administrators - part I of II

Figure 2A. Cost per member - in local currency

(including active, inactive and retired members, local currency at system 2023 fiscal year end)

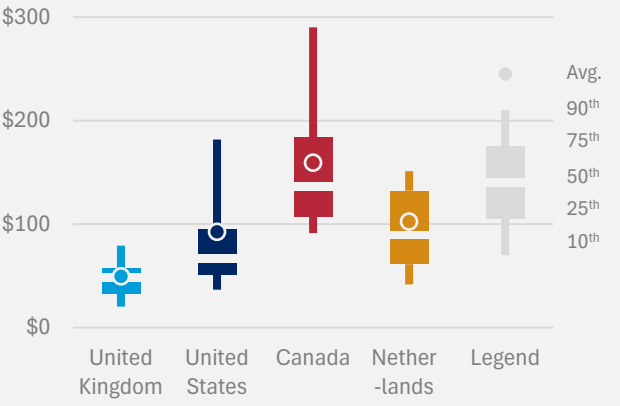


We first show the distribution of DB pension administration costs per member, including active, retired, and inactive members as provided in Table 1E. Costs include salaries and benefits for on-site staff, IT/IS systems and software, board and governance costs, building etc., plus third-party spend on outsourced pension administration activities. Pension administration costs are shown in local currency, as reported at the end of each systems 2023 fiscal year end, and so are not directly comparable (i.e. GBP in the UK, USD in the U.S.,, CAD in Canada, and EUR in the Netherlands).

(Note the scale does not represent any one particular currency)

Figure 2B. Cost per member - cast into USD

(including active, inactive and retired members, in USD as of December 31, 2023)

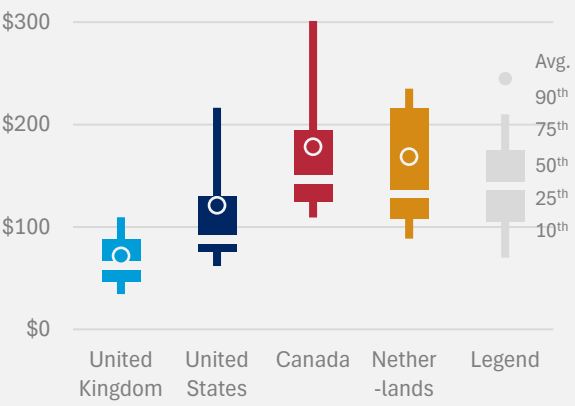


To compare DB pension administration costs we need to cast them into a common currency, purchasing power and point in time. We do so using OECD purchasing power of parity (PPP) for gross domestic product adjusted for inflation to Dec 31 2023 using U.S. OECD national consumer price index (CPI) for each pension system to the U.S. (see text). This DB cost per member statistic, the same as that provided in Table 1F, illustrates the gulf in administration costs across regions, with the average Canadian system spending 3.2x that of the average system in the U.K.

(Note the scale change upon transitioning to common currency)

Figure 2C. Cost per member - excluding inactive members

(including active and retired members, in USD as of December 31, 2023)



Inactive members are much less expensive to administer then active or retired members (they are virtually costless by comparison). Since pension systems in the U.K. and the Netherlands have a higher proportion of inactive members (31% and 41% respectively) they appear less expensive than their peers in the U.S. and Canada (25% and 11% respectively). Figure 2C displays the same pension administration costs from Figure 2B excluding inactive members, showing that the low cost nature of U.K. pension systems is in part due to inactive members, and that Dutch systems are much more expensive than they initially appear.

Exhibit 2. Adjustments to DB Pension Administration Cost per Member For Factors Outside the Control of Administrators - part II of II

Figure 2D. Cost per member - adjusted for cost of living

(excluding inactive members, in USD as of December 31 2023, adjusted for cost of living)

Cost of living varies widely from one city to the next; for example, cost of living in New York City is 2x that experienced by the average U.K. system. While PPP data suggests U.K. systems should be more expensive than those in the U.S., Canada, and the Netherlands, the locations of pension administration headquarters and satellite offices does not reflect this. Figure 2D shows the same data as in Figure 2C except that for each system, costs have been adjusted to have the same cost of living standard as experienced by the average pension system in the U.S., showing that much of the variation within countries is caused by differences in cost of living, and some across countries too.

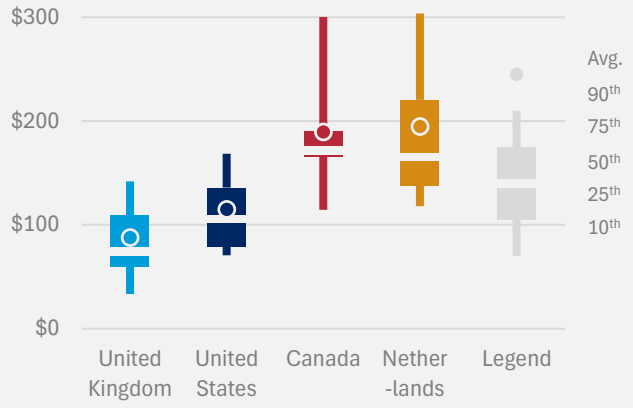


Figure 2E. Cost per member - adjusted for economies of scale

(excluding inactive members, in USD as of December 31 2023, adjusted for cost of living and economies of scale)

Economies of Scale in pension administration costs is the phenomenon whereby systems with more members tend to cost less on a per member basis than systems with fewer members. Indeed, one reason pension systems in Canada and the Netherlands have higher costs than those in the U.S. and the U.K. is because of differences in scale. Figure 2E shows the same cost per member data from Figure 2D, adjusted so that each system has the same number of members as the average system in the U.S., showing that the average Canadian and Dutch system is still more expensive to administer than those in the U.S. or the U.K., even after accounting for economies of scale.

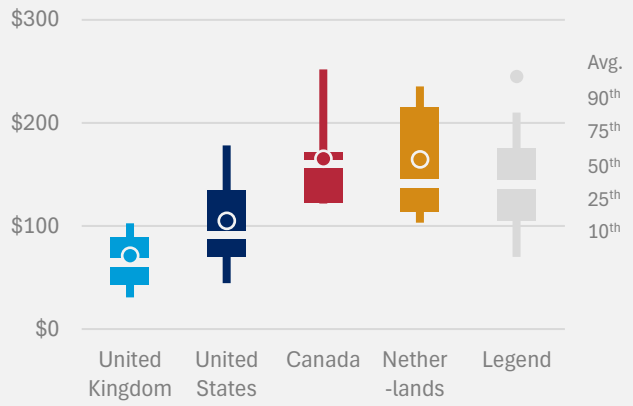


Figure 2F. Standardized cost per member

(excluding inactive members, in USD as of Dec. 31 2023, adjusted for cost of living, economies of scale and pension maturity)

Retired members cost 5% more to administer than active members, on average. Therefore, we expect more mature pension systems to cost more as well. Figure 2F shows the same cost per member data as Figure 2E, adjusted so that each system has the same mix of retired and active members as the average pension system in the U.S.. Much of the difference in cost within the Netherlands is caused by this effect, plan maturity. While U.K. pension systems tend to be more mature (average maturity of 55%) than elsewhere (45%), they do not cost more. U.K. pensions systems mitigate this disadvantage by spending far less per retired member.

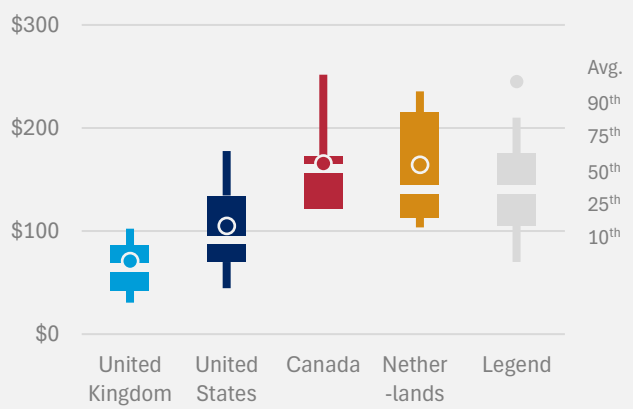
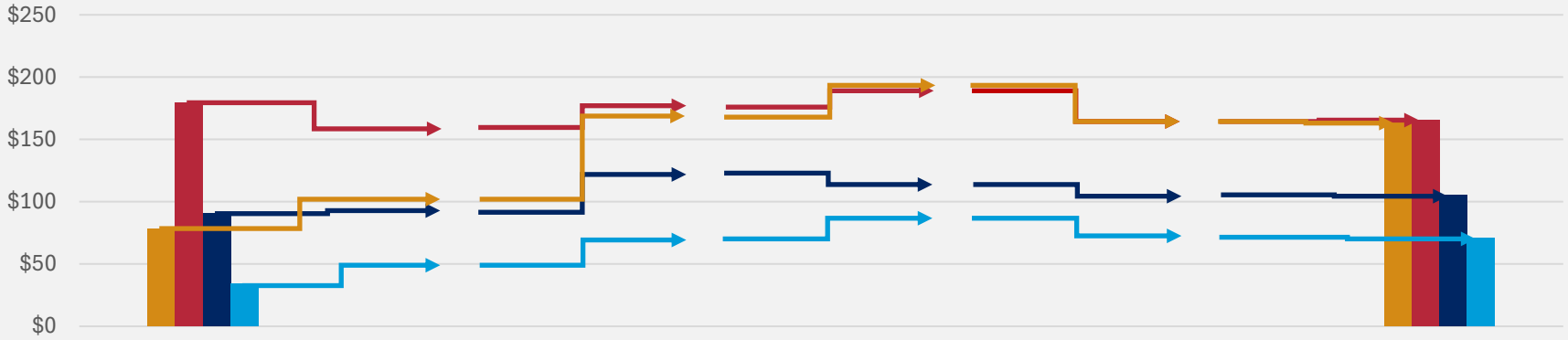


Exhibit 3A. Reconciling Differences in Average Pension Administration Costs

Figure 3A illustrates the average pension administration costs by region following each step of the standardization shown in Exhibit 2. After converting into a common currency (A->B) and excluding virtually costless inactive members (B->C), cost of living (C->D) and economies of scale (D->E) are about equally important in driving differences in average pension administration cost across regions. Pension maturity (E->F), by contrast, does not account for much of the difference in average cost. The reason is that while retired members cost 5 percent more to administer, the difference in membership mix from one system to the next is typically small, measured in percents.

Figure 3A. Average pension administration cost per member by region

average cost shown left (reported) to right (standardized) following each step described in Exhibit 2



	A. Cost per member local currency	Purchasing power of parity	B. Cost per member (USD)	Excl. inactive members	C. Cost per active & retiree (USD)	Local cost of living	D. Cost per active & retiree (USD)	Economies of scale	E. Cost per active & retiree (USD)	Pension maturity	F. Cost per active & retiree (USD)
Netherlands	€ 78.11	+ $24.31	$102.42	+ $66.14	$168.55	+ $26.12	$194.68	- $29.97	$164.71	- $0.45	$164.26
Canada	$179.61	- $20.35	$159.27	+ $19.19	$178.46	+ $10.97	$189.42	- $24.08	$165.35	+ $0.08	$165.42
United States	$90.83	+ $1.69	$92.52	+ $28.68	$121.20	- $6.33	$114.86	- $9.87	$105.00	- $0.02	$104.97
United Kingdom	£33.99	+ $15.42	$49.41	+ $22.28	$71.69	+ $15.97	$87.66	- $16.43	$71.23	- $0.36	$70.86

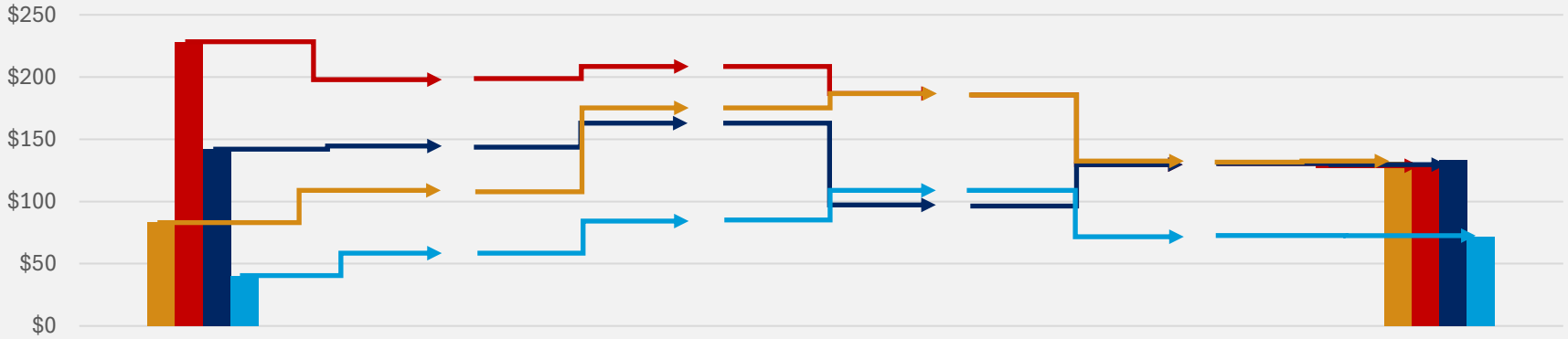
Rationale	Local currency in Canada has less purchasing power than in the U.S. Currency in the Netherlands and the U.K. has more.	Systems in the Netherlands have far more inactive members. Excluding them, costs increase by more than half.	A handful of pension administrators in the U.S. are located in very high cost-of-living locations.	Pension systems in Canada tend to be small. A selection of systems in the Netherlands are very small.	Pension maturity is not a large factor in explaining differences in pension administration costs.

Exhibit 3B. Reconciling Differences in Spreads of Pension Administration Costs

Figure 3B illustrates the spread (as measured by the difference between the 90th and 10th percentile) in pension administration costs by region following each step of the standardization shown in Exhibit 2. Cost of living (C->D) and economies of scale (D->E) explain a fair amount of the data. The exceptions are one, cost of living in the Netherlands where a handful of small Dutch systems (see Exhibit 4) drive the variation, later explained by economies of scale. Two, economies of scale in the U.S.; here, large systems which have a cost advantage operate high cost programs like in the Netherlands whereas small systems which have a cost disadvantage operate low cost programs similar to the U.K.

Figure 3B. Variation in pension administration cost per member by region

spread in 90th to 10th percentile shown left (reported) to right (standardized) following each step described in Exhibit 2



	A. Cost per member local currency	Purchasing power of parity	B. Cost per member (USD)	Excl. inactive members	C. Cost per active & retiree (USD)	Local cost of living	D. Cost per active & retiree (USD)	Economies of scale	E. Cost per active & retiree (USD)	Pension maturity	F. Cost per active & retiree (USD)
Netherlands	€ 83.48	+ £25.98	$109.46	+ £64.82	$174.28	+ £11.24	$185.52	- £53.33	$132.19	- £0.22	$131.97
Canada	$227.76	- £28.84	$198.92	+ £9.30	$208.22	- £22.53	$185.69	- £55.23	$130.46	- £0.25	$130.21
United States	$142.02	+ £3.05	$145.07	+ £17.34	$162.41	- £64.65	$97.76	+ £35.88	$133.64	- £0.57	$133.08
United Kingdom	£40.08	+ £18.81	$58.89	+ £26.32	$85.21	+ £23.29	$108.50	- £36.62	$71.87	- £0.12	$71.75

Rationale	Casting cost per member into USD moves the variations in cost per member by a similar proportion.	Increasing cost per member by reducing the membership base increases the variations as well.	In Canada and the U.S., high-cost administrators are located in high-cost locations.	Several large U.S. administrators operate "high-cost / enhanced" service models, negating their cost advantage.	Some variation in cost is caused by differences in plan / scheme maturity, but not much.

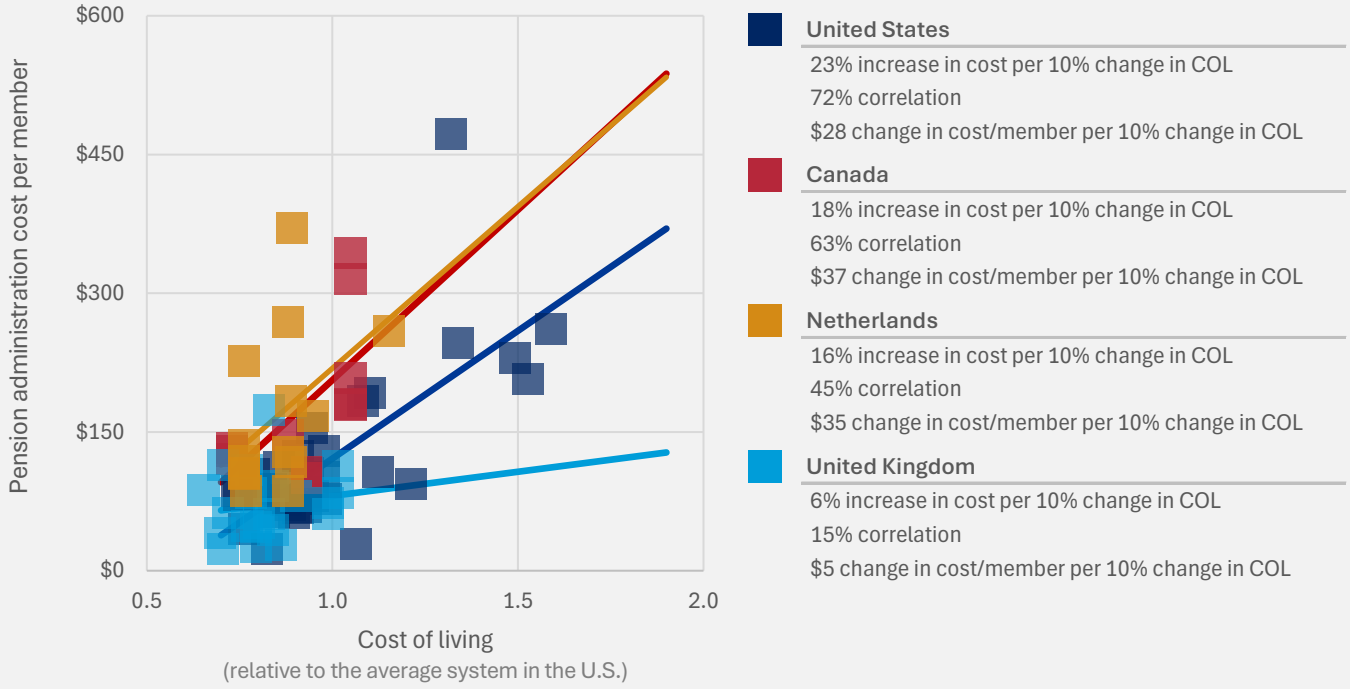
Exhibit 4. Cost of Living

Differences in pension administration cost per member outside the control of administrators beyond economic factors and inactive membership have two main sources, cost of living (COL, shown here) and economies of scale (EOS, see Exhibit 5). A fifth factor, pension maturity does not have a large effect. Pension administration cost per member vs. COL shows that: (i) a substantial amount of cost variation within countries is caused by COL, and (ii) the pattern of pension systems cost being high in the Netherlands and Canada relative to the U.S., and the U.S. relative to the U.K. is mostly independent of COL.

Relative cost per member increases with COL fastest in the U.S. because at low COL pension systems are typically 'low-cost / core service' providers and at high COL 'high-cost / enhanced service' providers. In the Netherlands, cost per member is less correlated to COL than in the U.S. or Canada, but only because three pension systems have very small memberships and are strongly effected by EOS not yet accounted for (the correlation is greater than 70 percent if excluded). In the U.K., cost per member does not appear correlated to COL, but this is because administrators in the U.K. are not located in high COL environments required to see the effect.

Figure 4. Pension administration cost per member vs. cost of living

(per active and retired member)



Notes on cost-of-living adjustments

Cost of Living (COL) explains much of the variation in pension administration cost per member within countries. For each of the pension systems in the CEM database we located the pension administration headquarters (often different from the head office of the investment arm) and any satellite offices where pension administration activity takes place using publicly available documents and contacts within organizations. COL data for all locations[1] were estimated relative to London, U.K. using the free online tool www.livingcost.org. Data in the U.S. was cross-checked for relative accuracy using a cost of living calculator provided by www.forbes.com. Cost of living is then expressed relative to the average U.K. pension system in the sample. A COL greater than one indicates that the cost of living is greater than average.

1. Where a municipal COL statistic was unavailable (for 4 of 79 headquarters and a handful of satellite offices), the nearest city was used as a proxy.

Exhibit 5. Economies of Scale

Pension administration costs grow with membership, but not linearly. Figure 5A shows the data and illustrates the idea that there are in fact two populations, one following an 'enhanced' services model which includes systems from Canada and the Netherlands, and many of the largest pension systems from the U.S., and another following a 'core' services model which includes pension systems from the U.K. and most of the smallest systems from the U.S. Figure 5B (right) displays the same data in double-logarithmic form, revealing a clear linear relationship between log(Cost) and log(Membership), indicative of power-law scaling. The log-log behaviour is typical of systems exhibiting non-linear economies of scale where Cost ~ Membership$^{\mu}$, since then log(Cost) ~ μ x log(Membership). The line of best fit has a slope of μ = 0.75 +/- 0.06.

Figure 5A. Cost vs. members

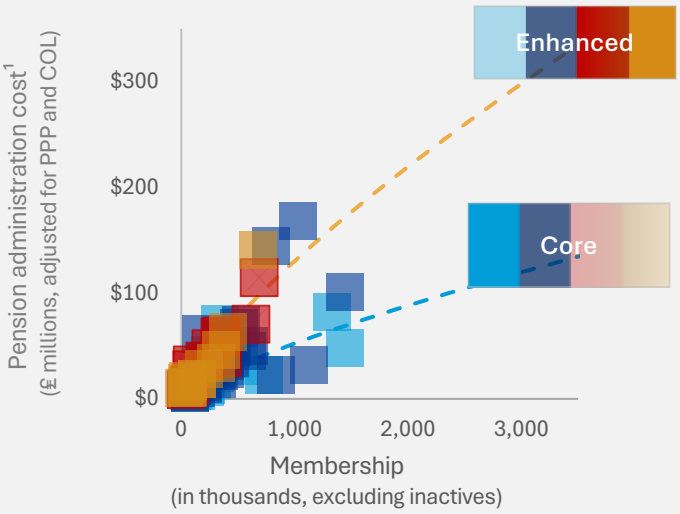
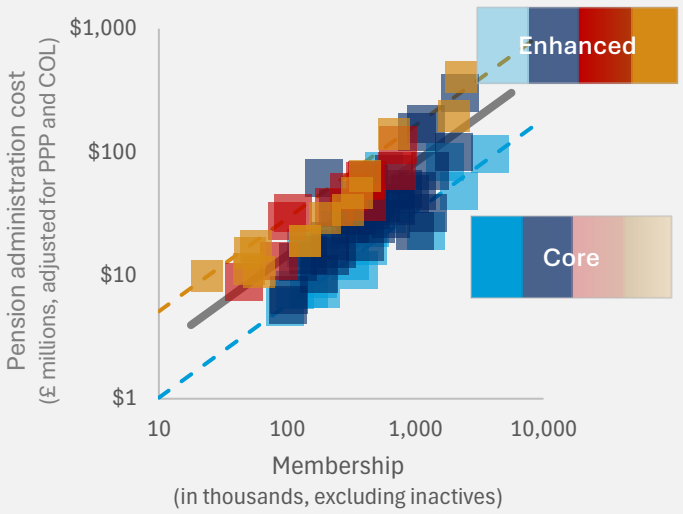


Figure 5B. Log(cost) vs. log(members)



1. Three high membership systems have been excluded to preserve anonymity[1].

Notes on economies of scale, size invariance, and adjusting costs for differences in membership

Data that is linear on a log-log plot over a number of decades of data is suggestive of a power law, since if we observe (and we do):

$$\text{Log(Cost)} \sim \lambda + \mu \times \text{Log(Membership)}$$

then:

$$\text{Cost} \sim \lambda' \times \text{Membership}^{\mu}$$

For two pension systems with different membership M1 and M2 with costs obeying a power law, the ratio of the costs C1 and C2 will scale according to:

$$C2/C1 = (M2/M1)^{\mu}$$

irrespective of the scale factor λ, a phenomenon known as scale invariance. With μ = 0.75 (the regression slope of the data in Figure 4B) we expect that, if two pension systems differ in membership by a factor of 2 (i.e., one is 100% larger than the other), the relative cost should grow like:

$$C2/C1 = 2^{0.75} = 1.69$$

In other words, for a 100% increase in size we expect a 69% increase in costs, an increase slower than the growth in membership itself. This behaviour is referred to as economies of scale. The fact that the expected growth in costs with growth in membership is totally independent of the membership itself is known as scale invariance. Scale invariance is important because a small pension system that doubles in size should experience the same relative increase in costs as a big pension system that doubles in size, meaning that the rule of thumb is universal, holding for all pension administrators independent of region and scale.

To adjust the costs of each pension system to remove the effects of economies of scale we calculate an economies of scale adjusted cost C2 using the above for each of the three regions independently, with M1 the observed membership, C1 the observed cost cast into USD (using OECD PPP for the U.S. and Canada) and adjusted for cost of living, and M2 the average number of members in each region.

Exhibit 6. Cost per Member Type, Membership Mix, and Member Maturity

The cost of administering a pension depends on membership mix. Each member type - active, inactive and retired members - places different demands on administrators, and the resources required for each are therefore different as well. Estimates of the cost per member type for each region are displayed below determined from analysis of regression model data (see text). The estimated costs per member type are relative to the average pension system in the U.S. and are not useful for benchmarking purposes.

U.K.	U.S.	Canada	Neth.	Table 6A - Cost per member type
$72	$102	$164	$154	**Cost per active member.** The cost of administering active members is about the same as that of retired members in the U.K., but less than that of retired members elsewhere. The cost of active members increases with overall cost.
$71	$108	$168	$176	**Cost per retired member.** The cost of administering retired members is about the same as that of active members in the U.K., but higher than that of active members elsewhere. The cost of a retired member in the Netherlands is nearly 3x that of an retired member in the U.K.
<$7	<$36	$0	<$1	**Cost per inactive member.** The cost of administering inactive members is immaterial, and within statistical error it is consistent with zero everywhere. There is no model we could construct where inactive members as a parameter improved the model over the null hypothesis.
0.99	1.06	1.02	1.15	**Retired member cost per active member**. The ratio measures the effective impact of member maturity on cost. U.K. pension systems may be more mature (see below), but they mitigate the issue by spending far less administering retired members than elsewhere.

Membership mix is (somewhat surprisingly) not a primary driver of differences in total pension administration costs. The reason membership mix is not a primary driver of cost differences is that the number of active and retired members is highly correlated everywhere (the correlation is 90%), meaning if you have more of one member type you also have more of the other. We define pension maturity as the ratio of retired members per active and retired member.

U.K.	U.S.	Canada	Neth.	Table 6B - Membership mix and plan maturity
31%	42%	50%	30%	**Active members per total membership**. Pension systems from Canada have by far the most active members. However, this is in part because they have the fewest inactive members. This mix makes pension systems in Canada appear expensive on cost per member basis.
38%	33%	38%	29%	**Retired members per total membership.** The UK and Canada have the same proportion of retired members. However, pension systems in Canada pay more than 2x per retired member than U.K. pension systems, increasing overall costs.
31%	25%	11%	41%	**Inactive members per total membership.** Inactive members are virtually costless to administer, and the Netherlands has far more of them. On a total membership basis including inactive members, pension systems in the Netherlands appear much less expensive than they actually are.
0.55	0.44	0.43	0.47	**Member maturity** (retired members per active and retired member). U.K. systems are, on average, the most mature and retired members cost the most to administer. So while we expect U.K. pension systems to be more expensive to administer because of higher pension maturity, they mitigate this effect by spending far less per member than elsewhere.

Exhibit 7. Pension Administration Activity Definitions, Average Allocations and Average Costs

Descriptions of the eight aggregate pension administration activities are provided below, along with the average allocation - the fraction of total spend - and average cost per active and retired member. Detailed distributions are provided in Exhibits 8 and 9. Each aggregate comprises several more precisely defined activities for which CEM Benchmarking collects data (i.e., staffing, salaries and benefits, third party costs, transaction volumes, service metrics, etc.).

Activity		U.K.	U.S.	Can.	Neth.	Descriptions
I.	Contact Centre	4% $3	7% $7	4% $7	11% $18	First-line' communication work including responding to general questions, initial requests for activity specific work to be performed, questions about account status or annual statements, etc. This activity includes member inquiries by telephone, automated information or self-serve lines, and email.
II.	Transactions & Interactions	27% $16	17% $17	18% $29	12% $17	Member transactions including pension payments, pension inceptions, estimates, withdrawals, transfers-out, service purchases and transfers-in. Member interactions including one-on-one counselling and group member presentations.
III.	Other Administration	13% $9	12% $13	11% $18	7% $11	Mail-room and document imaging, mass communications, data and money collection from employers, employer services and data not from employers.
IV.	Finance & Audit	10% $7	7% $7	5% $8	5% $8	Office of the CFO including preparation of financial statements, annual reports, budgeting and forecasting. Also includes (non-legal) compliance, (non-investment) enterprise and operational risk, internal and external audit. Excludes all costs associated with investments, investment management and investment oversight.
V.	Governance	12% $11	10% $10	12% $19	24% $44	Board / trustee fees and expenses and office of the CEO, including strategy and policy such as contributions / funding, employer covenants and PR. Includes fiduciary audits, ALM studies, actuarial studies and legal costs. Excludes all costs associated with investments, investment management and investment oversight.
VI.	Major Projects	13% $10	9% $10	10% $17	4% $7	Current year costs of major projects including IT associated with non-recurring major projects that are or could be capitalized (under GAAP or GASB 51) over the useful lifecycle of the project greater than one reporting period. Excludes amortization of capital assets such as buildings, leases and furniture (included in Support).
VII.	Information Technology	14% $9	26% $27	26% $44	23% $35	All IT / IS costs including hardware (mainframes, desktop for staff), software (databases, development), and website (development, hosting, etc.).
VIII.	Support	7% $5	12% $14	14% $23	15% $24	Human resources (HR) and building expenses for staff including asset and building management, office insurance, and utilities. Pay-as-you-go benefits to retired staff. Excludes HR, building and pay-as-you-go benefits associated with investments, investment management or investment oversight.
I - VIII.	Total Administration	100% $71	100% $105	100% $165	100% $164	Total pension administration cost per active and retired member. Cost includes salaries and benefits plus other internal costs, and costs paid for services to third parties. Costs are standardized for currency and purchasing power, local cost of living, economies of scale (membership size), and membership mix[1].

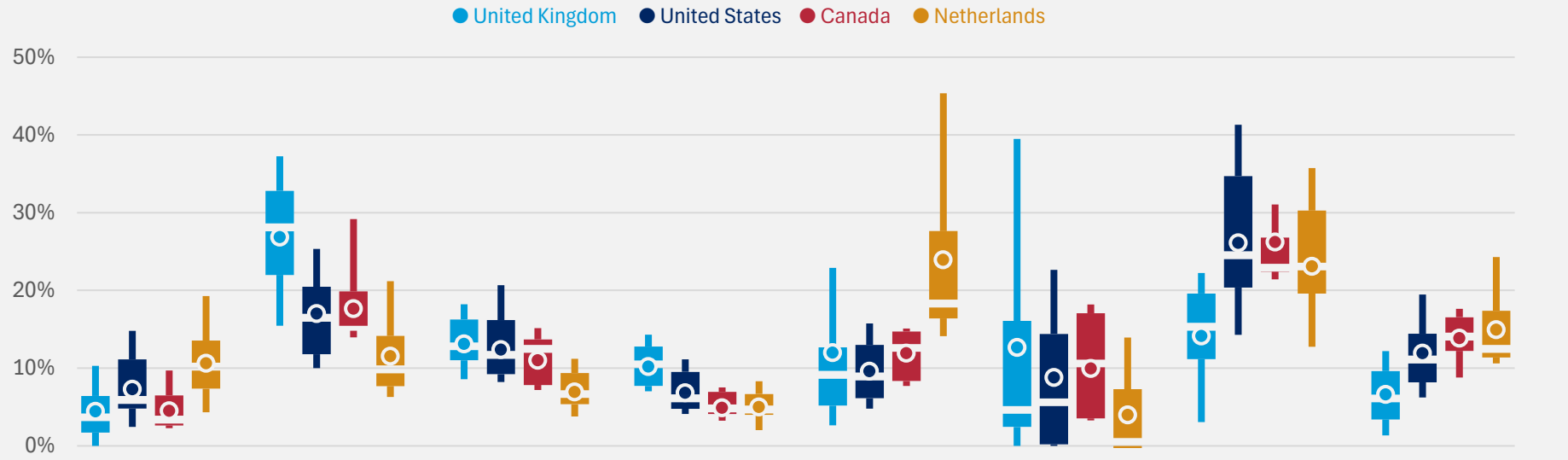
1. Standardization of total cost for factors outside the control of administrators as discussed in Exhibits 2 through 6.

Exhibit 8. Pension Administration Activity Allocations

Administrators of DB pension benefits allocate spending across a variety of activities, disaggregated into the eight activities shown below. The first three activities are front-office, client-facing activities (contact centre, transactions & interactions, and other administration), the second two mid-office activities (finance and audit, governance), and the final three back-office activities (major projects, IT and support).

Administrators in the United Kingdom providing a 'core' services model allocate 2x more of their budget to II. Transactions and Interactions and IV. Finance and Audit, and 2x less to VII. IT and VIII. Support. By contrast, administrators providing 'enhanced' services model in the Netherlands allocate more to I. Contact Centre and V. Governance, but substantially less to III. Other Administration and VI. Major Projects. Administrators from Canada and the United States, except where already indicated, allocate their administration spending across activities in line with their peers.

Figure 8. Fraction of total pension administration costs spent per pension activity, by region.



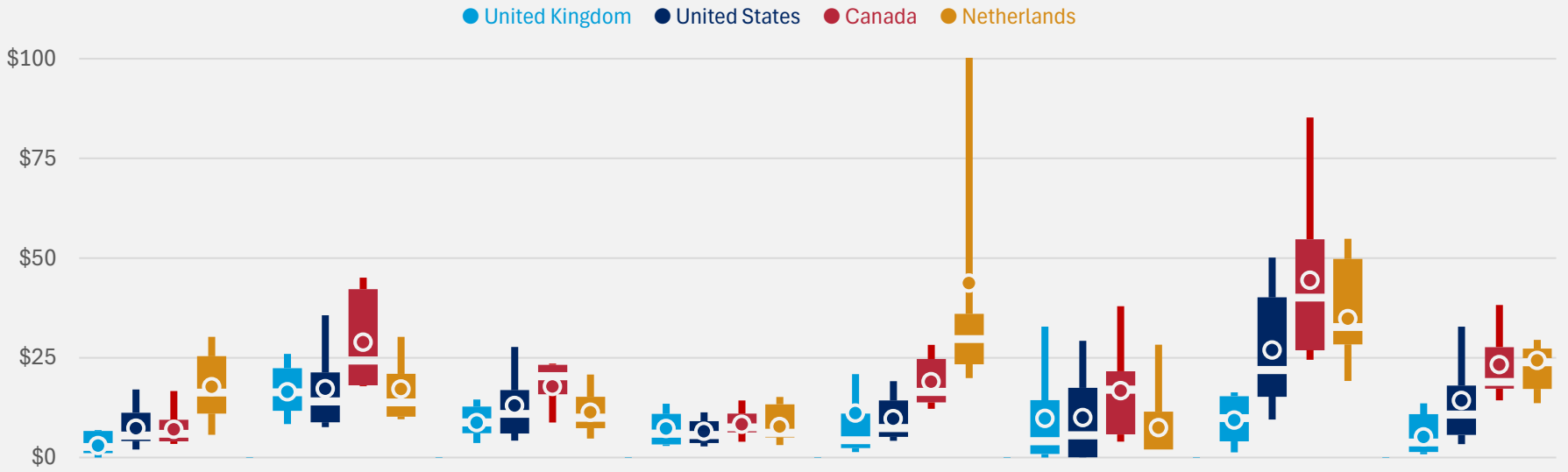
	I. Contact Centre				II. Transactions & Interactions				III. Other Admin.				IV. Finance & Audit				V. Governance				VI. Major Projects				VII. Information Technology				VIII. Support			
Avg.	4	7	4	**11**	**27**	17	18	12	13	12	11	**7**	**10**	7	5	5	12	10	12	**24**	13	9	10	**4**	**14**	26	26	23	**7**	12	14	15
90th	9	14	9	18	36	24	28	20	17	20	14	10	13	10	7	7	22	15	14	44	38	22	17	12	21	40	30	35	11	18	17	23
75th	5	10	5	13	32	19	19	13	15	15	13	8	12	9	6	6	12	12	14	27	15	13	16	6	19	34	26	29	9	13	16	16
50th	4	6	3	**10**	**28**	16	15	10	13	12	12	**7**	**10**	6	5	5	9	9	13	**18**	5	6	11	**0**	**15**	25	23	23	**6**	11	14	12
25th	2	5	3	7	22	12	15	8	11	9	8	5	8	5	4	4	5	6	8	16	2	0	4	0	11	20	22	20	3	8	12	11
10th	0	2	2	4	15	10	14	6	9	8	7	4	7	4	3	2	3	5	8	14	0	0	3	0	3	14	21	13	1	6	9	11

Exhibit 9. Pension Administration Activity Cost Totals

Administrators of DB pension benefits allocate spending across a variety of activities, disaggregated into the eight activities shown below. The first three activities are front-office, client-facing activities (contact centre, transactions & interactions, and other administration), the second two mid-office activities (finance and audit, governance), and the final three back-office activities (major projects, IT and support).

Administrators in the United Kingdom providing a 'core' services model spend less than administrator in other regions on I. Contact Centre, VII. Information Technology and VIII. Support than administrators in other regions, driving costs down. By contrast, administrators providing 'enhanced' services model in Canada and the Netherlands invest far more in V. Governance, VII. IT and VIII. Support, and in sum 2x more on client-facing activities. The two-solitudes nature of DB pension administration in the United States is apparent everywhere, but especially in VII. IT and VIII. Support where distributions span both models.

Figure 9. Pension administration costs spent per pension activity, by region.

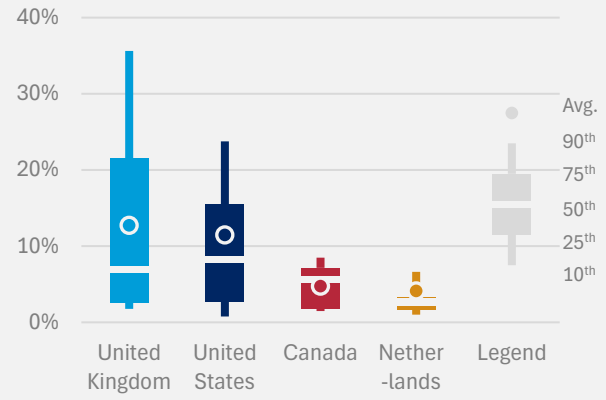


	I. Contact Centre				II. Transactions & Interactions				III. Other Admin.				IV. Finance & Audit				V. Governance				VI. Major Projects				VII. Information Technology				VIII. Support			
Avg.	3	7	7	18	16	17	29	17	9	13	18	11	7	7	8	8	11	10	19	44	10	10	17	7	9	27	44	35	5	14	23	24
90th	5	15	15	28	24	34	43	28	13	26	22	19	11	9	12	13	19	17	26	108	31	27	36	25	14	48	83	53	12	31	36	27
75th	5	9	7	23	20	19	40	19	11	15	21	13	9	7	9	11	9	12	23	34	12	15	20	9	13	38	53	48	9	16	26	25
50th	3	6	6	16	16	14	24	14	9	11	20	10	6	6	8	6	4	7	16	30	4	6	17	0	10	22	40	33	4	11	19	24
25th	1	4	4	11	12	9	18	10	6	6	16	7	3	4	6	5	2	5	14	23	1	0	6	0	4	15	27	28	1	6	17	17
10th	0	2	3	6	8	8	18	10	4	4	9	5	3	3	4	3	1	4	12	20	0	0	4	0	1	10	25	19	1	3	14	14

Exhibit 10. Service Level Qualities and Capabilities - part I of II

Figure 10A. Contact Centre Quality

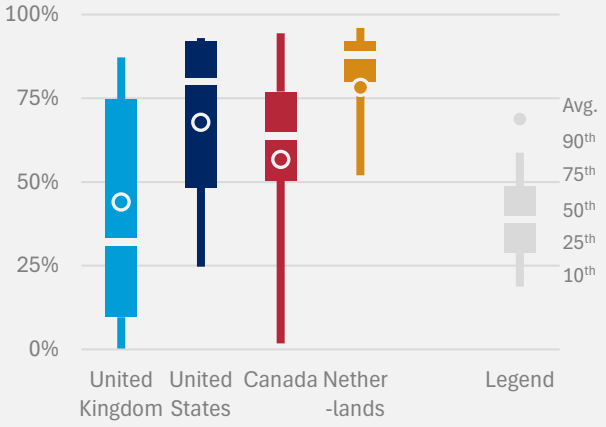
Percent of incoming calls dropped by a member before they reach a service agent



Contact centres are the first point of contact for members inquiring about their pensions whether by call or email. Quality can be difficult to measure. However, calls made by members that end in a hang up prior to making contact with a service agent is a simple measure of quality that is comparable across all systems. Pension administrators in the Netherlands spend more than 3x on their contact centres than their peers, and unsurprisingly, their contact centres have the best quality in terms of this simple measure. Pension systems in the U.K. spend 3.5x less, and so quality is worse.

Figure 10B. Contact Centre Capability

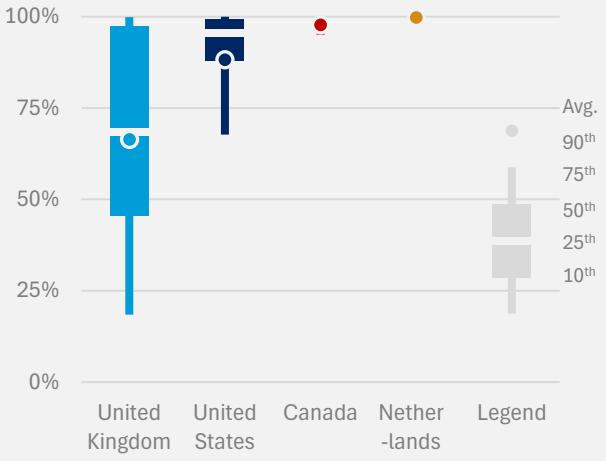
Percent of incoming calls resolved on first contact above a baseline of three quarters



Approximately three out of every four incoming calls to the contact centre are resolved on first contact at every pension system, because not all calls are complex and require expertise on the part of the service agent to resolve. The fraction of calls above this threshold is a better measure of the quality of a contact centre and the level of service delivered by pension administrators. The percentage of incoming calls resolved on first contact is substantially higher in the Netherlands and the U.S. than in the U.K.

Figure 10C. Member Transaction Quality

Percent of pensions incepted without an interruption in member payments greater than one month



Pension inceptions are an important part of the member journey, and interruptions in member pay between their final employment payment and their first pension benefit are a good measure of the quality of service delivered. This simple metric illustrates the contrast in service levels between the 'core' services model offered in the U.K. versus the 'enhanced' services model offered in Canada and the Netherlands where delays in pension payments are rare. The data displays the results of the two serve-model approach in in the U.S. where some pension administrators offer one service model and some the other.

Exhibit 10. Service Level Qualities and Capabilities - part II of II

Figure 10D. Member Transaction Capability

Number of pension systems that made at least one pension payment late

Mission critical for all pension systems is processing transactions and paying pensions on time. Pension systems operating under the 'core' services model therefore prioritize allocating more of their limited spending to II. Transactions and Interactions and III. Other Administration (which includes pension payments). Only one pension system missed a scheduled payment in 2023, a system in the U.K. that was one day late on one payment. Thus, while pension systems in the U.K. tend to have fewer resources at their disposal, they prioritize paying pensions and nearly always make that happen.

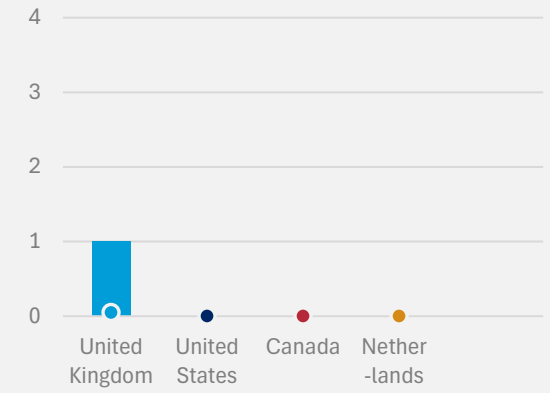


Figure 10E. Member Interaction Capability I

Fraction of active members receiving one-on-one counselling

Members interact with their pension administrator in a number of ways, but the single most expensive way is one-on-one counselling sessions. Counselling most often occurs near the inception phase of a members journey, as a member transitions from being an active member to a retired one. Canadian pension administrators spend more than 1.5x than their peers on transactions and interactions than their peers, and a big reason why is because they offer far more one-on-one counselling (and clearly not only to new or soon to be retirees).

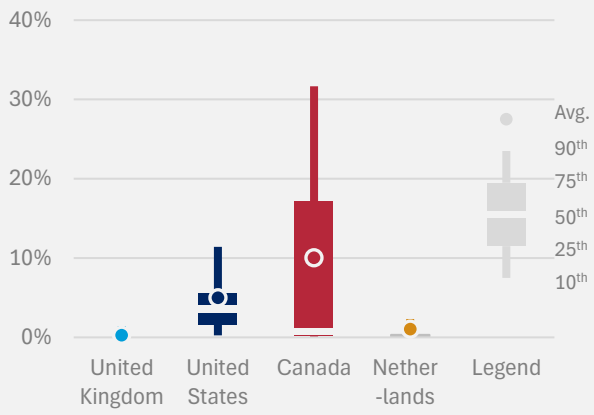


Figure 10F. Member Interaction Capability II

Number of group presentations per 1,000 active members

Group presentations are more efficient way of delivering counselling to members than one-on-one counselling, but offers a lower level of service since the experience cannot be customized for an individual member. Face-to-face member interactions are a common member experience in North America, with more one-on-one presentations offered in Canada and more group presentations offered in the U.S. Despite the high cost of pension administration in the Netherlands, face-to-face member interactions are rare with the member experience being tailored around more digital solutions.

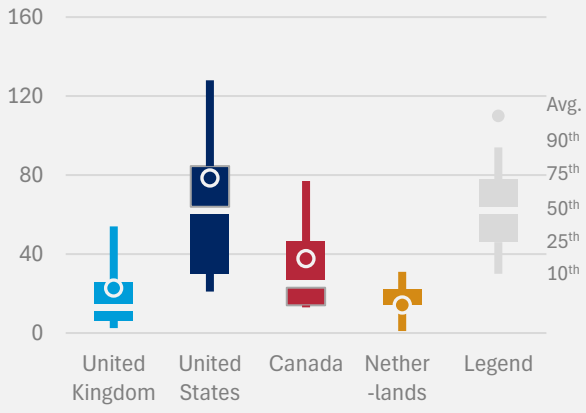


Exhibit 1. Descriptions of the DB pension systems included in this study.

In Exhibit 1 we provide descriptive statistics of the sample of DB pension systems included in our study. The sample includes systems from four countries with broadly similar DB pension systems. By similar we mean pension benefits are administered with a common set of cost centres, each of which describes a particular benefit administration activity. The levels of service provided in those cost centres are not necessarily comparable in that some systems provide a more hands-on, high-touch level of service and others a hands-off, self-serve level of service.

The sample is comprised primarily of defined benefit, public sector pension systems for employees of municipalities and sub-sovereign governments (i.e., states in the U.S., provinces in Canada, or regions in the U.K. and the Netherlands) like teachers, school employees, workers in the healthcare system, national defense, fire safety and police employees, and other governmental agencies. The sample also include a few large corporate sector DB systems in the U.K and the Netherlands for employees of banks, telecoms, and industrial trades. We exclude defined contribution plans which have a different administration model.

Table 1A. Members

Statistics on total membership is provided in Table 1A at the end of each system's fiscal[9] 2023. Membership includes three basic membership types[10]:

1. Active members – members currently employed by a DB plan sponsor, accruing service time and contributing to the fund alongside the employer with the expectation of vesting and, one day, retiring and receiving DB pension benefits.
2. Retired members – members currently retired, receiving benefits. Retired members must at one time been active members, and at other times been inactive members.
3. Inactive members – members who are neither active members accruing benefits nor retired members receiving a pension. Inactive members were at one time active members, and for vesting inactive members will transition to becoming retired members in the future.

The average DB system we study has 625 thousand members, and by any reasonable definition the systems are big (they are some of the largest pension systems in the world). With 79 systems in the sample, the total number of members administered is nearly 50 million.

Systems from the U.K. are a bit larger than average, but more varied in membership as measured by standard deviation. This is because the sample of U.K. systems includes a handful of very large funds. Otherwise, the sample of U.K. systems is completely typical of the rest of the sample.

Systems from the U.S. are almost completely average and typical of the sample, which is unsurprising as they comprise 33 or the 79 systems and so are the largest component of it. They are less varied and contain fewer smaller systems than the rest of the sample. Given the population of the U.S. relative to the U.K., Canada and the Netherlands, this is expected.

Systems from Canada are smaller than average, but include far fewer inactive members (11 percent, on average) that do not generate costs for pension systems (see Exhibit 6). If the number of inactive members were excluded from Table 1A, Canadian systems would look far more typical of the sample.

Systems from the Netherlands appear to be the largest of all as measured by the average number of members. However, the sample of systems from the Netherlands includes far more inactive members (41 percent of members,

[9] Fiscal years are most often June 2023. Some systems have a December 31 fiscal year end, and a handful September 30 and March 31.

[10] CEM Benchmarking collects more detailed membership statistics including data required for year-over-year reconciliation such as new active members, service retiree inceptions, deaths, survivor inceptions, new inactive members, etc. For our purposes, it is useful to think in terms of three basic membership types.

on average). In terms of active and retired members, systems from the Netherlands are a bit smaller than average, and not dissimilar in membership to the rest of the sample. There are a handful of small systems that exhibit large economies of scale disadvantages (see Exhibit 5).

The smaller size of Canadian and Dutch systems is an important factor driving up costs in both countries due to economies of scale. We note here that on a linear scale, the membership of pension systems in the sample can appear "lumpy" (i.e., skewed towards having many more below average systems than above average ones). However, membership only really matters on a log scale (e.g., 10k = 4, 100k = 5, 1,000k = 6), and here the range of membership sizes is remarkably uniform (see Exhibit 5).

When comparing the cost of administering pension systems, members is always the primary, driving factor. Indeed, the total pension administration cost can be reasonably modelled by 'total cost' equals 'cost per member' times 'members'. Cost comparisons are then made on a cost per member basis since, otherwise, you are only really comparing memberships, a feature imposed on administrators and not something on which they should be benchmarked.

Different member types however drive different work volumes; for example, active members require more work on the part of administrators than inactive members because of the work generated by the pension payments they make. The differences in cost of administering DB pensions for each member type is important towards understanding the differences in total pension administration cost but are difficult to ascertain for reasons we discuss later.

Table 1B. Assets

The statistics on assets provided in Table 1B are sometimes referred to as "net fiduciary assets available for (DB) pensions" in annual reporting. It is the total asset base available for paying DB pensions, shown here at the end of each system's 2023 fiscal year. The bulk of net fiduciary assets are invested assets; investments in stocks, bonds, real estate, private equity and other (sometimes exotic) assets. For regulatory reasons, it also includes various assets of systems such as receivables, net collateral from securities lending, capital equipment, and so on. Five systems in the U.K. are do not have significant invested assets for the purpose of paying pensions, and so we have excluded from the table rather than showing "zero" or whatever minimal non-investment assets they hold. Such systems are sometimes referred to as "unfunded" or "pay-as-you-go".

The definition of assets here is important. Many "pension" systems invest pools of money pools alongside DB investment assets for all sorts of purposes that do not require DB pension administration. It would be an error to include in the data things like defined contribution (DC) assets, assets invested to pay healthcare insurance benefits, buffer funds held by employers to pre-fund DB contributions, and other assets managed on behalf of the investment arms for government sponsors of the system such as disaster relief funds and so on. For true cost comparisons, we require the costs of running the DB pension systems alone, and the net invested DB assets held by the systems alone. Those assets are provided at the end of each system's 2023 fiscal year in Table 1B in the local currencies of the U.K. (GBP), the U.S. (USD), Canada (CAD), and the Netherlands (EUR). We do not provide the statistics for the entire sample, since taking averages (for example) of local currencies is non-sensical.

Average net DB investment assets range from £24 billion in the U.K. to $95 billion in the U.S., and from a 10th percentile of £8 billion in the U.K., to €191 billion in the Netherlands. The largest systems in the sample are all very large by any global standard, with 25 of the 79 holding more than 100 billion in assets (in local currency). Indeed, some of the world's largest DB pension systems are included. However, some have been excluded as well, either because they do not administer a pension (e.g., CPP Investments in Canada with over $600 billion CAD in assets), or because they do not benchmark their pension administration system.

We remark here that systems in the U.K. tend to have very low asset bases from which to draw on to fund the administration of DB pension benefits, despite having above average memberships. Average assets under

management in the U.K. amounts to under $40 billion USD of assets[11], less than half that of the average system in the U.S. This figure for the U.K. is overstated as well, since we have omitted from the statistics those administrators that do not have significant invested assets from which to pay pensions. If we included them, the average would drop to around $30 billion USD, less than a third of the average assets in the U.S.

Table 1C. Total pension administration cost

Total pension administration cost is, quite simply, the total cost incurred to run a DB pension benefit administration system. It is presented here as the total pension administration cost incurred by the sample systems in their fiscal 2023. Total pension administration cost includes salaries and benefits paid to on-site staff, staff support costs (e.g., travel, office supplies, etc.), costs paid to third-party vendors for services, IT systems and software expenditures, costs for capital equipment and office space, and costs for non-recurring major project that are (or can be) amortized and are reported on an amortized basis. CEM collects the data at the activity level (32 activities, not all related to DB pension administration) to ensure data accuracy and strict comparability, a feature that cannot be guaranteed if making the comparisons we do here by using publicly available sources. Obtaining net invested DB assets from publicly available sources is hard; collecting DB pension administration costs is nearly impossible, with one exception.

In the Netherlands, the Dutch National Bank collects data from DB pension systems and provides that data online in a standard format[12]. Many pension systems form the Netherlands had historically benchmarked their administration systems with CEM for many years. However, Dutch pensions are currently undergoing a transition to a so-called Defined Ambition (DA) model, a collective DC style pension, and a few of the largest systems in the sample of systems from the Netherlands still report to CEM. As such, and with established trust in DNB data through nearly a decade of cross-referenced data, we include the costs of an extra 12 Dutch systems for which we have confidence in the data. 2023 activity level data for systems from the Netherlands is estimated using 2023 DNB total costs with 2018 activity level allocations for 10 systems and 2023 activity level allocations for 2 systems which provide data to CEM Benchmarking.

Like invested assets, administration costs are not always directly related to DB pensions. Here, activity-by-activity data collection is valuable. We exclude from the analysis any cost associated with administering things like DC pensions, non-DB benefits such as healthcare insurance benefits (commonly administered in the U.S. by pension administers), so called Other Post-Employment Benefits (OPEB) in the U.S., disability benefits, etc. Overhead costs associated with these functions are excluded as well using complex, pro-rata formulae based on work volume proxies (e.g., call centres answering questions about pension benefits may also be able to answer questions about healthcare benefits, and so only 90% of the cost is attributable to DB pensions).

Table 1C shows the ranges of total DB pension administration costs in the sample of systems. Administration costs in the U.K. are far lower than elsewhere, ranging from £14 million to £54 million at the 10th to 90th percentile, or approximately $20 million to $85 million (USD). Costs in the U.S., despite having around the same number of members, is twice that, $36 million to $178 million (USD) at the 10th to 90th percentile. Costs in Canada, $102 million to $329 million (CAD) at the 10th to 90th percentile, when translated to USD are approximately $90 million to $290 million, are three to four times as large as the U.K. despite having half the members. Costs in the Netherlands, €32 million to €115 million, when translated to USD of approximately $40 million (USD) to $150 million (USD) are twice as large as in the U.K. again, with similar membership numbers. In the U.K. pension administration costs are simply low.

The low-cost experience of pension administration in the U.K. is one motivation for this research. Why, exactly, are pension systems in the U.K. so inexpensive? One obvious reason is assets: U.K. pension systems hold substantially

[11] Accurate currency conversion in this table is not important. A useful rule of thumb is to convert: (i) Canadian dollars (CAD) to USA dollars (USD) by multiplying CAD by 7/8, (ii) United Kingdom pound sterling (GBP) to USA dollars (USD) by multiplying GBP by 8/5, and (iii) Netherlands Euro (EUR) to USA dollars (USD) by multiplying EUR by 4/3 (based on OECD PPP).

[12] https://www.dnb.nl/statistieken/data-zoeken/#/details/gegevens-individuele-pensioenfondsen-jaar/dataset/78c1c804-0b65-4bbc-a5cc-df9cd75c9ded

less assets than systems in the other three regions, and so the low spend on administration might simply be a result of an effort to reduce the impact of cost on assets.

Table 1D. Total pension administration cost per net invested DB assets

A good way to measure the impact of pension administration cost on a pensioner's retirement is to look at total DB pension administration cost per net fiduciary DB assets available for pensions. The ratio represents (to an excellent approximation) the annual reduction in gross investment returns caused by the DB pension administration function and acts exactly like an investment management expense ratio in this respect.

Table 1D shows the data, which is currency agnostic. A good rule of thumb is that the average cost of DB pension administration is about 6 basis points (i.e., 0.006 percent). This may not seem like much, but the cost is two to three times what it would cost to invest the assets of most pension systems passively, indexing in ultra-low cost public equity and fixed income with third parties (something like 2-3 basis points). As it is, a typical, large pension system spends about 50 basis points investing assets, excluding transaction costs, and a bit more than 70 basis points including transaction costs. Thus, pension administration alone is responsible for around 10 to 15 percent of the drag on investment performance due to the total expense of incurred operating a DB pension system.

The range in cost per assets however can be extreme. In the Netherlands the 90th percentile of cost per net assets is more than 11 basis points, while in the U.S. the 10th percentile is under 3 basis points. This is more than a 4x difference that requires an explanation. If two pension investment portfolios had 4x difference in investment expenses with no immediately obvious reason as to why, that would be a cause for alarm. Here this fact should be appreciated likewise. What drives such a huge difference in pension administration cost?

Table 1E Total pension administration cost per member (local currency)

A most basic, like-for-like measure of pension administration cost is cost per member, a rate statistic that articulates how much it costs a system to add one member, all things being equal. It is also a statistic often cited in annual reports, regulatory reporting, and so forth. We show the data in Table 1E as a guidepost so that systems can locate themselves[13] relative to their peers and see where they stack up. If you are a system from the U.S. and your pension administration cost is $91 per member, you are the average systems from the U.S. Cross-country comparisons are meaningless however because of an assortment of differences, the obvious difference being currency. Much of the remainder of this paper is devoted to studying these differences, and so we defer the discussion of differences in cost per member to Exhibits 2-9.

(This data is illustrated in box-and-whisker form in Figure 2A of Exhibit 2.)

Table 1F. Total pension administration cost per member (and currency conversion)

Total DB pension administration cost per member is shown in Table 1F cast into a common a common currency, here chosen to be USD. There are numerous ways to convert currencies, including using spot foreign exchange rates (FX) at year end, spot FX rates averaged over the year, year end or some average GDP, and so forth. The method we use is Purchasing Power Parity (PPP) as provided by the Organization for Economic Co-Development (OECD), with a further adjustment using Consumer Prive Index (CPI) inflation as provided by the OECD to adjust for different fiscal year ends. PPP has many advantages, including the fact that it normalizes for differences is prices of like-for-like goods and services, and that it does not suffer from day-to-day market gyrations in currency exchange rates that plague FX-based currency conversions. The further refinement of PPP to adjust for different fiscal year ends using CPI makes the cost data even more comparable.

The data shown enables very basic if misleading cross-country comparisons. For one, systems in the U.K. remains very low cost, with systems from the U.S. costing about twice as much. Canadian systems by contrast are very high cost,

[13] Pension administrators that do so should be cautioned: cost (i) excludes non-pension administration costs, and (ii) is presented relative to members including inactive members, sometimes (properly) excluded in reporting.

on average three times more expensive than systems in the U.K. Interestingly, and a hint to a key finding, is the fact that systems in the U.S. show pronounced dispersion in their pension administration cost on a per member basis; the standard deviation (a measure of the variety) of pension costs per member is nearly as big as the average, and bigger than the median.

While a lot of work is required to present this apples-to-apples comparison of pension administration costs per member, it ignores several important factors that are outside of the control of administrators. In what follows, we take a step-by-step approach to tackling several important drivers of pension administration costs to get to a truly comparable number that allows us to estimate the cost of servicing each member type in each of the four regions. In doing so, we end up showing that the biggest factors driving differences in pension administration costs are in part outside of the control of administrators, those factors being local cost of living at the location of administrator's offices as well as membership size which drives economies of scale. On the other hand, even after accounting for these effects pension systems in the U.K. remain low cost.

(This data is illustrated in box-and-whisker form in Figure 2B of Exhibit 2.)

Exhibit 2 (parts I and II). Distributions of cost per member during adjustment for factors outside the control of administrators – standardization.

In Exhibit 2 we illustrate the transformation of reported total DB pension administration cost per member (i.e., the data shown in Table 1E) to a standardized total DB pension administration cost per member that is adjusted for several factors outside the control of administrators. The data is presented in box-and-whisker format by region in six Figures, Figures 2A (reported total pension administration cost per member) through 2F (standardized total pension administration cost per member). We begin with reported cost per member (Figure 2A), adjusting in turn first for currency and purchasing power (Figure 2B), then for inactive members (Figure 2C), then for local cost of living (Figure 2D), then for economies of scale (Figure 2E), and finally for pension maturity (Figure 2F).

The discussion of how the distributions change upon each adjustment towards standardization is left to Exhibits 3A (changes to the averages) and to Exhibits 3B (changes to the dispersion, as measured by the differences between 90th and 10th percentiles). We instead focus our attention here on the motivations for each adjustment towards standardization, leaving the details of the mechanisms to Exhibit 4 (cost of living), Exhibit 5 (economies of scale), and Exhibit 6 (inactive members and pension maturity). We do go into some detail regarding the first adjustment for economic factors absent an exhibit devoted to it.

Figure 2A. Cost per member - in local currency

(per active, inactive and retired member, local currency at system 2023 fiscal year end)

Total DB pension administration cost (Table 1C) is not a useful metric for comparing costs of pension administrators, because the total cost depends on assets, members, currency and a host of other factors. Total DB pension administration cost divided by assets under management is a better statistic (Table 1D), but it does not provide any information as to how much pension systems invest in administering benefits for each member they serve. Since the primary driver of pension administration work volumes is the number of members served, a better metric is total pension administration cost per member (Table 1E), a statistic that can be interpreted as the incremental increase in total DB pension administration cost of adding a single member to a pension system.

Figure 2A of Exhibit 2 illustrates in graphical form the same data provided in Table 1E, distributions of total DB pension administration cost divided by the number of active, inactive and retired members in local currency, for each of the four regions studied. The data allows for administrators from each of the four regions to locate themselves relative to their peers in their own regions.

Figure 2B. Cost per member – cast into USD

(per active, inactive and retired member, in USD as of December 31, 2023)

Comparisons of cost per member across regions are not immediately possible from the data in Figure 2A due to several factors outside the control of administrators, the most obvious being currency and purchasing power. Cross-country comparisons are made possible by converting to a common currency, in our case chosen to be the local dollar currency of the U.S. (USD). We convert the cost data using Purchasing Power Parity (PPP) for Gross Domestic Product (GDP) provided by the Organization for Economic Co-operation and Development (OECD). Conversion rates for December 31st, 2023, as provided by the OECD into USD are 0.683 for the U.K., 1.135 for Canada, and 0.763 for the Netherlands (i.e., PPP for USD is 1.000).

Reporting periods are however not standardized within the pension industry around the globe. In the U.K., most pension systems report with a March 31st year end, but not all (one U.K. system in the sample has a June year end, two have December year ends). In the U.S., most pension systems have June years ends (one U.S. system in the sample has a March year end, another August, another September, and three December). In Canada, most pension systems have a December year end (four have March year ends, one August), while in the Netherlands all report with a December year end. In the U.K., where pension systems have a March year end, we have used cost data ending in 2024, and everywhere else 2023.

To synchronize data to a common point in time, we adjust the 2023 OECD PPP statistics to the 2022 and 2024 OECD PPP statistics, linearly interpolated between each systems year end. Since PPP statistics are not inflation adjusted (they are all relative to a USD PPP statistic of 1.000), we adjusted the 2022 and 2024 PPP statistics forward and backwards to December 31st, 2023 using 2023 and 2024 OECD Consumer Price Index inflation (CPI) for the U.S., a common inflation measure used to ensure that relative PPP in a particular year is kept constant. Currency transformations are therefore not identical in each possible version of this report. For example, the relative cost of retired to active members can differ slightly depending on whether this research is reported in USD, in GBP, in CAD, or in EUR for the Netherlands.

Figure 2B of Exhibit 2 illustrates in graphical form the same data provided in Table 1F, distributions of total DB pension administration cost divided by the number of active, inactive and retired members cast into USD as of December 31, 2023, for each of the four regions studied. We remark that, with the exception of pension systems from the U.S. with December 31, 2023, fiscal year ends, pension systems can no longer locate themselves easily within the data.

Figure 2C. Cost per member – excluding inactive members

(per active and retired member, in USD as of December 31, 2023)

Inactive members are virtually costless to administer, as we discuss later in Exhibit 6. This result may come as a surprise to administrators who no doubt put significant effort into keeping track of previously active members no longer contributing but not yet receiving a pension. We say 'virtually' because while the data is consistent with a cost per inactive member of zero, the nature of statistical analysis prevents us from making the bold claim that the cost is precisely zero. Rather, it is small enough that we cannot resolve the difference from zero. We suggest that much of the work to administer inactive members is likely accomplished independently of their number through efforts to service active members accruing benefits and service time[14]. A discussion of the reasons for the low-cost or no-cost reality of inactive members are provided later when we expound on our calculation of cost per member type in Exhibit 6.

Removing inactive members from the analysis, in effect redefining the definition of members to mean active members plus retired members only, decreases the denominator in the cost per member calculation and thus increases the cost per member for all pension systems. Removing inactive members increases the dispersion in cost per member

[14] The number of active and inactive members is also highly correlated, especially outside the U.S. This feature makes it difficult to resolve costs from one member type to another as we will show.

everywhere as well, but it need not do so; it could be that removing inactive members brings cost per member more in line for all systems within a particular region, reducing dispersion. On a pure cost level, this does not occur.

However, as noted in the discussion of Exhibits 3A and 3B, while the dispersion in each region increases, it increases less than the increase in the average everywhere. This means that even though the dispersion increases with the removal of inactive members, removing inactive members makes the data more comparable, and that including inactive members in cost per member makes comparisons of costs worse.

Figure 2C of Exhibit 2 illustrates in graphical form distributions of total DB pension administration cost divided by the number of active and retired members, excluding inactive members, cast into USD as of December 31, 2023, for each of the four regions studied. We remark that, with the exception of pension systems from the U.S. with December 31, 2023, fiscal year ends, pension systems can no longer locate themselves easily within the data.

Figure 2D. Cost per member - adjusting for local cost of living

(excluding inactive members, in USD as of December 31, 2023, adjusted for cost of living)

The first few factors we considered, currency and purchasing power (Figure 2B) and inactive membership (Figure 2C) are straightforward to account for. The next factor, the local cost environment in which each pension administrator finds themselves in, is more complex. The reason for the adjustment in our standardization is however plain; where cost of living is higher, pension administrators must pay more in salaries and benefit of staff, more for building costs to house staff, more for utilities in order to keep operations running, and so forth. As such, we expect cost of living to have a strong correlation to cost per member, and that's exactly what we find. Details of the cost of living data, the mathematics of the adjustment, and observations about the cost environment pension administrators find themselves in are provided in Exhibit 4 and the discussion of it.

The adjustment for cost of living is somewhat arbitrary in that we are free to choose any cost of living environment to adjust the data towards. In this version of the research, denominated in the local dollar currency of the U.S., we have chosen to adjust the cost data to the cost environment of the average pension system in the U.S. that we study. The closest single location used in the research representative of this cost environment is Tumwater, in the State of Washington, U.S. (zip code 98501). Costs for each pension system included in our study are individually adjusted to this cost environment, which is more expensive than the average cost environment of pension systems in the U.K., Canada or the Netherlands. Therefore, the costs per member outside of the U.S. tend to move upwards.

Figure 2D of Exhibit 2 illustrates in graphical form the distributions of total DB pension administration cost adjusted to the cost of living experienced by the average pension system in the U.S. included in our study divided by the number of active and retired members, excluding inactive members, cast into USD as of December 31 2023 for each of the four regions studied. We remark that pension systems can no longer locate themselves easily within the data.

Figure 2E. Cost per member - adjusting for economies of scale

(excluding inactive members, in USD as of December 31, 2023, adjusted for cost of living and economies of scale)

Economies of scale is the most complex factor we adjust for in our effort to define a standardized cost free of factors outside the control of administrators. In pension administration, economies of scale occur because while total pension administration costs increase with membership, they increase slower than membership itself. Therefore, as the number of members increase, cost per member tends to decrease. The detailed discussion of the mathematics of scale economies is left for Exhibit 5, where we also introduce the idea that there are two distinct populations of DB benefit administrators, those that strive to provide a higher cost per member 'enhanced' services model, and those that strive to provide a lower cost per member 'core' services model.

Like cost of living, the adjustment for economies of scale is somewhat arbitrary in that we are free to choose the size of the system we adjust the data towards. We could adjust the data so that the average change in cost per member is zero, and that overall distribution in cost does not move in aggregate. We cannot however choose the adjustment in such a way that each regional distribution does not move; the whole idea of adjusting the data for economies of scale is to remove from cost per member the impact of systems having different scales in terms of membership, and so movement of the distributions relative to one another is a desirable feature of the adjustment.

In this version of the research, denominated in the local dollar currency of the U.S., we have chosen to adjust the cost data to the membership of the average pension system in the U.S. The average membership of this system is 453,856 active plus retired members, excluding inactive members. Including inactive members, the average membership is 627,855.

Economies of scale are non-linear. The adjustment for smaller than average systems towards the average system's size is larger in magnitude than the adjustment for larger than average systems towards the average system's size. For example, where a 354k member system with 100k less members than average experiences a cost adjustment of $6.33 per member downwards to reflect the scale disadvantage they face, a 554k member system with 100k more members than average experiences a cost adjustment of only $4.79 per member upwards to reflect their scale advantage. Therefore, if we have a uniform distribution of memberships around the average, we should expect that the average adjustment in each region is downward.

Amplifying this effect, we have the added features that pension systems from Canada are substantially smaller in terms of scale, and so the cost adjustment downwards is larger still, and a handful of pension systems from the Netherlands are very small meaning that the adjustment to their data is outsized relative to the average. In aggregate, the economies of scale adjustment towards the average systems size of pension systems in the U.S. means that the cost per member distributions across all regions tend to drop in magnitude everywhere.

Figure 2E of Exhibit 2 illustrates in graphical form the distributions of total DB pension administration cost adjusted to the cost of living experienced by and membership of the average pension system in the U.S. included in our study divided by the number of active and retired members, excluding inactive members, cast into USD as of December 31 2023 for each of the four regions studied. We remark that pension systems can no longer locate themselves easily within the data.

Figure 2F. Standardized cost per member

(excluding inactive members, in USD as of December 31, 2023, adjusted for cost of living, economies of scale and pension maturity)

Pension maturity refers to how far along the retirement journey a pension system's members are, on average. More mature systems have more retired members relative to active members, and typically have an older membership base. Pension systems that are cash flow positive, with inflows from active member contributions exceeding outflows from retired member benefit payments, are less mature. Pension systems that are cash flow negative, with outflows from retired member benefit payments exceeding inflows from active member contributions, are more mature. We define pension maturity here – a simple measure of a more complex feature – as the ratio of retired members to active plus retired members.

Pension maturity is our final factor outside the control of administrators that we adjust for in our standardization of pension administration cost per member. The potential importance of pension maturity comes from our finding discussed in detail in Exhibit 6 that administering retired members is more costly than administering active members, at least outside of the U.K. Therefore, we expect more mature systems to cost more to administer, and less mature systems to cost less.

We adjust for pension maturity by assuming first that each system's cost per member reflects their maturity and the average ratio of cost per member of retired members relative to active members found in Exhibit 6, about 1.05. Cost for

each pension system is then adjusted to be reflective of the average maturity, here chosen to be that of the average system in the U.S., or 0.44. The calculation is provided in the footnotes in our discussion of Exhibit 6. Systems that are more mature than the average system in the U.S. have their cost per member adjusted downwards, and vise versa.

Figure 2F of Exhibit 2 illustrates in graphical form the distributions of total DB pension administration cost adjusted to the cost of living experienced by, membership of, and pension maturity of the average pension system in the U.S. included in our study divided by the number of active and retired members, excluding inactive members, cast into USD as of December 31 2023 for each of the four regions studied. We remark that pension systems can no longer locate themselves easily within the data.

Standardized cost per member is this final measure of cost presented in Figure 2F, after having adjusted for all five effects as described. The evolution of the average cost per member and the spread in cost per member per region (estimated from the difference between the 90th and 10th percentile) throughout each stage of the adjustment towards a standardized cost are provided in Exhibit 3A and 3B respectively, the subject of our next section.

Exhibits 3A and 3B. Adjustments to average (3A) and spread (3B) in cost per member for factors outside the control of administrators – standardization.

The adjustments for factors outside the control of administrators are intended to accomplish two goals. First, we want to quantify the impact in cost per member owing to each factor on each pension administrator. Second, we want to remove the impact in cost to have cleaner comparisons across administrators, free of such factors. Each factor is important and tells us something about the environment in which an administrator must operate, but it does not tell us about the choices that administrator makes.

Exhibit 2 (part I and II) illustrated the distributions across regions following each adjustment, beginning first with the reported cost of administering DB pension benefits per member in local currency (Figure 2A) and ending in standardized cost of administering DB pension benefits per member (excluding inactives) expressed in the local currency of the U.S., USD (Figure 2F). Here we show the progression of changes to both the average (Exhibit 3A) and spread estimated by the difference in 90th and 10th percentiles (Exhibit 3B) during each phase of the standardization, adjustment by adjustment.

Adjustment for currency and purchasing power (A → B in Figure 3A and 3B)

The first factor, currency and purchasing power uses OECD PPP and CPI data to cast DB pension administration cost expressed in local currency to a common currency, in USD, all with a common fiscal year end, December 31, 2023. Because the scale factor for the transformation varies little across funds within each region, differing only by an inflationary amount, the scale of the changes in average and the spread are nearly identical, a 31percent inflation in in the Netherlands, as 12 percent deflation in Canada, a 2 percent inflation in the U.S., and a 46 percent inflation in the U.K. Expressed in common currency (USD), reported in common currency, the average cost per member is highest in Canada ($159), followed by the Netherlands ($102), the U.S. ($93), and the U.K. ($49). Likewise, the spread is highest in Canada ($199), followed by the U.S. ($145), the Netherlands ($109), and then the U.K. ($59).

The change in the ratio of the average cost of each region relative to that of the average in the U.K. measures how much of the region-to-region variations are explained by each adjustment. As the ratio decreases towards one, the average costs are coming more in line with one another. The ratio decreases on going from A to B from 2.3x to 2.1x (Netherlands), from 5.3x to 3.2x (Canada), and from 3.5x to and 2.5x (the U.S.). Adjusting for currency and purchasing power explains much of the variation across regions.

The spread per average (i.e., 3B divided by 3A) is a scale free measure of the variations in cost per member within regions. The change in this parameter is a good measure of how effective an adjustment is in explaining variations in cost within regions. The change in spread per average on going from A to B is 1.27 to 1.25 in Canada, 1.07 to 1.07 in the

Netherlands, 1.56 to 1.57 in the U.S., and 1.18 to 1.19 in the U.K. Adjusting for currency and purchasing power do not explain much of the variation within regions, as we should expect.

Adjustment for inactive members (B → C in Figure 3A and 3B)

Removing inactive members from the denominator can only inflate the average cost per member and so tends to inflate the spread (it needs not) in cost per member as well. The inflation in average cost per member is by far the largest in the Netherlands where the average cost per member increases by 65 percent to $169 upon removing inactives, but by only 12 percent to $178 in Canada, by 31 percent to $121in the U.S., and by 45 percent to $72 in the U.K. The relative magnitude of the inflation in average cost per member on removing inactive members is quite simply related to the proportion of inactive members in each region, 41 percent of members in the Netherlands, 11 percent in Canada, 25 percent in the U.S., and 31 percent in the U.K.

The ratio of the average cost per member relative to the U.K. changes on adjusting for inactive members from 2.1x to 2.4x (Netherlands), 3.2x to 2.5x (Canada), and 1.9x to 1.7x (the U.S.). Differences in inactive members explains much of the variations in cost per member relative to the U.K. in Canada and the U.S., but not in the Netherlands.

The spread per average cost per member on adjusting for inactive members decreases from 1.07 to 1.03 in the Netherlands, from 1.25 to 1.17 in Canada, from 1.57 to 1.34 in the U.S., but remains virtually unchanged in the U.K. at 1.19. Thus, differences in inactive members describes a fair portion of the variations in cost per member within Canada and the Netherlands, a large portion of variations within the U.S., but very little of the variations within the U.K.

Adjustment for cost of living (C → D in Figure 3A and 3B)

Cost of living is our first non-trivial adjustment. A detailed discussion of the relationship between cost of living and cost per member is provided separately in Exhibit 4. The cost-of-living adjustment is a local adjustment, calculated individually for each of the 79 pension administrators in the sample based on the location of their headquarters and any satellite offices they may have.

Since the cost of living experienced by pension funds outside the U.S. is lower than that for those within it, adjusting cost per member for cost of living to that of the average pension system in the U.S. tends to increase cost per member. Adjusting cost per member to the average cost of living in the U.S. decreases it[15].

After adjusting for cost of living, the average cost per member increases by 15 percent to $195 in the Netherlands, increases by 6 percent to $189 in Canada, decreases by 5 percent to $115 in the U.S., and increases by 22 percent to $88 in the U.K. Pension systems in the U.K. are substantially low cost because they locate their headquarters in low cost of living locations.

The ratio of the average cost per member to the U.K. after adjusting for cost of living decreases from 2.4x to 2.2x (Netherlands), 2.5x to 2.2x (Canada), and 1.7x to 1.3x (U.S.). Cost of living explains a large portion of the difference in cost per member relative to the U.K. everywhere, and we conclude that the low-cost nature of pension administration in the U.K. is in part due to low cost of living.

The spread per average cost per member on adjusting for cost of living decreases substantially outside the U.K. from 1.03 to 0.95 (Netherlands), from 1.17 to 0.98 (Canada), and from 1.34 to 0.85 (U.S.). Thus, cost of living explains much of the variations in cost per member within these regions, especially in the U.S. This is explored in greater detail in Exhibit 4. However, cost of living does not explain any of the variation within the U.K., as the ratio in fact increases marginally, from 1.19 to 1.24.

[15] Cost per member is adjusted by a factor C' -> C/F, where F is a cost of living factor. While we adjust to a factor of $\langle F \rangle_{USA}$, with <> denoting the average, the average adjustment to cost per living for pension systems in the U.S. of <C/F> is not proportional to <F>.

Adjustment for economies of scale (D → E in Figure 3A and 3B)

Adjusting for economies of scale, that is, membership size, reduces the average cost per member everywhere. As discussed elsewhere, this is expected when we adjust to the average membership of the U.S. (see the discussion regarding Exhibit 4).

The deflation in average cost per member is largest in the Netherlands on an absolute scale, but not in proportion to cost per member. Cost per member is deflated by 15 percent to $165 in the Netherlands, by 13 percent to $165 in Canada, by 9 percent to $105 in the U.S., and by 19 percent to $71 in the U.K.

The ratio of the average cost relative to the U.K. changes from 2.2x to 2.3x (Netherlands), 2.2x to 2.3x (Canada), and 1.3x to 1.5x (the U.S.). Differences in scale are a big reason for differences in cost between Canada and the Netherlands relative to the U.S., but not a big reason for the low-cost nature of pension systems in the U.K.

The spread per average cost decreases substantially for all regions other than the U.S., from 0.95 to 0.80 (Netherlands_, from 0.98 to 0.79 (Canada), and 1.24 to 1.01 (U.K.). This shows that economies of scale explain much of the variation in cost per member in these three regions.

In the U.S. by contrast, the ratio increases from 0.85 to 1.27. The reason, as discussed in detail during our detailed exposé on economies of scale is related to the fact that, in the U.S. and the U.S. alone, the cost of administering large pension systems is much higher than scale alone would justify in comparison to the cost of administering small pension systems. This feature of pension administration cost in the U.S. is caused by a difference in administration service models; larger administrators in the U.S. tend to operate under an 'enhanced' services model like in Canada and the Netherlands while smaller systems tend to operate under a 'core' services model like in the U.K.

Adjustments for pension maturity (E → F in Figure 3A and 3B)

The final adjustment to the cost per member data is for pension maturity. Our analysis described in Exhibit 6 shows that retired members cost, on average, more than active members in every region studied outside of the U.K. Therefore, more mature plans are expected to cost more to administer.

However, the adjustment to cost per member for pension maturity turns out to be almost immaterial. We show it simply to prove that point. In dollar terms, the adjustment amounts to less than $0.50 in the Netherlands and the U.K., regions which are more mature and therefore expected to be more expensive than the U.S. which is less mature.

Exhibit 4. Cost of living

We adjust for differences in cost of living by locating the municipality where pension administration is headquartered (not necessarily the headquarters of the pension fund itself) as well as the locations of any satellite offices for all 79 pension systems we study. For each location we obtain estimates of the local cost of living for a family of four using the free online calculator 'https://livingcost.org/cost'. Cost of living for systems with satellite offices is estimated pro-rata based on estimated staffing levels at each office. Cost of living factors are then expressed relative to the average system in the U.S., which preserves to a substantial degree the anonymity of the systems we study. We adjust for cost of living by dividing total administration cost for each system by the computed, scaled, cost of living factor.

Cost per member versus cost of living by region (Figure 4)

The cost of living data together with cost per member (expressed in USD via OECD PPP and CPI adjustment, as described elsewhere, and excluding inactive members, but not adjusted for economies of scale or pension maturity) is displayed in Figure 4. The data clearly shows that a large amount of the variation we see within countries, especially within the U.S. and Canada, is caused by the local environment pension administrators find themselves in.

Cost per member, however, increases much faster than cost of living indicates outside of the Untied Kingdom. In the U.S., cost per member increases more than 2.3x what the cost of living statistics would suggest. In Canada and the Netherlands, cost per member increases by nearly 1.8x and 1.6x, less quickly but still faster than cost of living alone would suggest.

In the U.K. costs increase slower than the cost of living data suggests. However, in the U.K. there are no administrators located in high-cost environments such as the city centre of London, and there isn't enough variation in cost of living to establish a trend.

As we will see when we discuss economies of scale, there is reason to believe that, in the U.S., pension administrators in high-cost environments also strive to provide a higher level of service, spending more per member on administration than size or cost of living alone would suggest.

In Canada and the U.S. correlations between cost per member and cost of living are high, which we expect. In the U.K. and Netherlands by contrast correlations between cost and cost of living are low. In the U.K. the situation is readily understandable – administrators in the U.K. in the CEM dataset aren't located in high cost of living environments and so we cannot observe a trend because a lack of variation in the data.

In the case of the Netherlands, the correlation we see would be much higher, comparable to the U.S. and Canada, except for the fact that three small systems with low cost of living seen in the upper left portion of Figure 4 have high pension administration costs where, from cost of living expectations alone, we expect it to be low. The reason for the high cost of living for these three pension systems is economies of scale; these small systems experience much higher costs than larger systems simply because of their small size.

Exhibit 5. Economies of scale

Cost differences between pension systems are driven by differences in membership, an Economies of Scale (EOS) effect whereby the more members a pension system has the lower its costs are on a per member basis. Equivalently, while total cost grows with increasing membership, it grows at a rate slower than the membership itself.

Economies of scale are presented in Exhibit 5, first on a linear scale (Figure 5A). Included in the plot are two dashed lines provided as guides to the eye, with the uppermost representing the cost versus membership of an 'enhanced' services pension administration model, and the lowermost a 'core' services pension administration model. Both models follow the exact same power-law EOS model, showing that the causes of economies of scale are shared, but representing different cultures and costs per member of pension services. These are two separate ideas which we explain in turn.

Non-linearity and power law EOS (Figure 5A and Figure 5B)

The fact that the data in Figure 5A is non-linear, that is, it is "bent", is not at all obvious from the data as shown in Figure 5A. It could be argued that the data is linear and instead heteroskedastic[16], increasing in a straight line but with the data splaying outwards as the membership grows. If the data was expected to fall on a single line in Figure 5A, the data is most certainly heteroskedastic.

In Figure 5B we show the exact same data in a slightly different way. Here we plot the log of the cost (e.g., log $1 = 0, log $10 = 2, log $1000 = 3, etc.) versus the log of the membership (e.g., log 10,000 members = 4, log 100,000 members = 5,

[16] Heteroskedasticity is the name for data where the error (spread, range of observed values) on the observed data (here cost) grows as the dependant variable (here membership) grows. In that the range of observed costs grows with membership here is obvious. However, as we argue, the data is not heteroskedastic, as and "error" on the cost data is measured in the £000s, not the £millions implied at large system memberships were the data to fall on one single line.

log 1,000,000 members = 6). If we observe a dead straight line, we can be sure[17] the data obeys a power-law, since for power laws of the style:

$$Cost = \lambda \, x \, Membership^{\mu}$$

in log-log form appear as:

$$Log(Cost) = Log(\lambda) + \mu \, x \, Log(Membership)$$

which is just the equation for a line (but in log space!).

The log-log plot of Figure 5B is useful to us for four reasons. First, we can verify straightaway that we really have a non-linear power-law because the data in log space is almost perfectly linear. Second, we can read off the power μ which is just the slope of the line, here 0.75. Third, because the slope is less than one[18], we can prove that the data in Figure 5A is in fact non-linear (i.e., it really is bent – the slope is 4 standard errors smaller than one). And fourth, and perhaps most importantly, it is easy to see visually that there are two parallel lines of data being followed in the data, which for ease of visualization we have colored orange to represent the 'enhanced' services model of pension administration, and green to represent the 'core' services model of pension administration.

Pension administration service models: Enhanced versus Core. (Figure 5B)

The two parallel lines in the data of Figure 5B have the exact same power-law slope. Power-laws are very important in fields as diverse as physics, geography, network theory, biology, and here, the econometrics of pension administration costs. The source of the universal exponent 0.75 seen here will, however, be discussed elsewhere. Suffice to say, there is a reason for it related to the nature of pension administration.

What is important is the fact that the upper most line of Figure 5B is followed by all of the systems from the Netherlands and Canada, and a handful of very large systems in the U.S. located in high cost of living environments. We emphasize, cost of living has been accounted for in the data already, so cost of living itself is not the reason this set of systems from the U.S. are found in the high-cost grouping. We refer to this group of DB pension administration systems as following an 'enhanced' services pension administration model. The differentiating features of the model are in part a higher cost per member, and therefore a greater investment in member services, but also a higher level of service quality and capability commensurate with the higher level of spending as shown and discussed in Exhibit 10.

The bottom most line of Figure 5B is followed by all of the systems from the U.K., and most of the systems in the U.S., especially those in low cost of living environments. Again, the data presented has already been adjusted to remove cost-of-living, and so it cannot be the source of the difference. We refer to this group of DB pension administration systems as following a 'core' services pension administration model. The differentiating features of the model are in part lower cost per member, and therefore a lower investment in member services, but also a lower level of service quality and capability commensurate with the level of spending on member services as shown and discussed in Exhibit 10.

To put the difference in the two groups in perspective, consider the real-world ramifications of operating a pension administration system with both models. For a system with 100,000 members, a 'core' services model implies a cost of about $10 million, or around $100 per member whereas an 'enhanced' services model implies a cost of about $25 million, or $250 per member, a cost differential of $15 million and $150 per member. At a membership level of 1 million, where many of the 'mega'-sized systems reside, the cost difference is larger; $50 million ($50 per member) for the 'core' service model versus $130 million ($130 per member) for the 'enhanced' services model. With high enough

[17] To be sure of a power-law, one must observe the scaling over several decades of data, in our case three. We would not want to argue that the power-law holds outside of the range for which we observe the scaling; pension systems larger than those in our sample are exceedingly rare and likely aren't administered in a comparable way to the DB pension systems we study, and smaller systems (while common) likewise.

18 You can check this with a ruler at home. If you place the ruler or piece of paper in the bottom left corner (0,0) and extend it to the top right (4,4) which is a slope of one, the data clearly slopes underneath.

membership bases, a high-cost 'enhanced' services pension administration model is comparable in cost per member to a low-cost 'core' services pension administration model with a lower membership base.

A note on efficiency

Because economies of scale are non-linear, being inefficient can have serious consequences for administrators that choose to deliver an 'enhanced' services pension administration model. The data in Figure 5B has been adjusted to remove any cost of living effect and illustrates where systems stand relative to an expected cost given one service model or the other. If a system deviates from the expected cost by even the width of one of the square markers used to plot the data, the difference in expected cost can be extraordinary. A fund deviating by one single square marker at the top right for example doesn't have a cost of $200million, it has a cost of $300million! That the data follows a power-law isn't just some mathematical oddity, it is descriptive of the way costs and cost deviations grow with membership. Moreover, the data shows how what might seem like slight inefficiencies can easily explode and turn into huge cost differentials in comparison to peers, highlighting the need for accurate, timely and comprehensive peer-based benchmarking.

Adjusting for economies of scale

Adjusting cost for economies of scale requires us to choose a membership base with which to scale each pension system towards. In this version of this whitepaper, our adjustment for economies of scale converts cost per member for all pension systems to the average number of active plus retired members in the U.S., which to be precise is 453,856. Since inactive members turn out to be virtually costless, this is equivalent to scaling to the average total membership too, here 627,855.

We scale cost per member by calculating the expected cost per member at the membership of each pension system, the expected cost per member at the membership of the average system in the U.S., and subtract the difference from the cost per member of each system. For example, if a system has 227k members, half that of the average system in the U.S., then the expected cost is $119 per member whereas the average sized system has an expected cost of only $100, meaning that the smaller system has an economies of scale disadvantage of $19. Therefore, if the smaller system had an actual cost of $120, the economies of scale adjusted cost is $101.

Exhibit 6. Cost per member type, membership mix and member maturity.

We provide in Table 6A estimates of cost per member type, determined from a meta-analysis of several different multiple linear regressions of standardized cost versus membership. The cost per member type data is the same as that which was shown in ES1. Obtaining precise estimates of cost per member type in the various regions was one of our original goals, since it established the basis for two of the steps in the standardization process of cost per member type. The thought process and methodology behind the analysis is described in the next sub-section, which can make for long reading.

As Table 6A shows, the cost of administering active and retired members is close in each region, $72 versus $71 in the U.K., $102 versus $108 in the U.S., $164 versus $168 in Canada, and $154 versus $178 in the Netherlands. The precision of the estimates is about plus / minus $3.50 in the U.K. (one standard error), plus / minus $11 in the U.S. and the Netherlands, and a bit below $10 in Canada. The reason for difference between the errors in the U.K. versus elsewhere is related to the fact that, in the U.K., the cost of both member types is likely equal whereas outside the U.K. retired members cost more. Establishing that difference in cost with any precision, however, is difficult to do.

Table 6B provides the actual membership mix of each of the four regions - the average fractions of active, retired and inactive members - along with the average pension maturity, the ratio of the number of retired per active and retired members (i.e., retired members as a fraction of total members, excluding inactives). Pension maturity is defined this way because the cost of inactive members as we will show is immaterial. We note that the average maturity, the

average of the ratio of retired members to active plus retired members, is not equal to the ratio of the averages[19]. It is, however, close.

Motivation for cost per member type – benchmarking and standardization

We have two reasons for wanting to establish cost per member type. The first is that the usual method of benchmarking pension administration costs is to compare them on a cost per active and retired member basis. CEM Benchmarking has made this a standard for nearly two decades, and it is by now the common method for doing so. The second reason is to establish the soundness of our standardization of cost here.

Indeed, the second step of our standardization of cost per member following the adjustment for currency and purchasing power is to remove inactive members from the denominator, steps B->C in Figures 3A and 3B. Removing inactive members from the denominator in cost per member is made with the practical understanding that the cost of administering inactive members is small, immaterial relative to active and retired members. To the best of our knowledge this presumption that is based on feedback from pension systems, well founded as it turns out, has never been established rigorously.

The fifth step of our standardization of cost per member follows the adjustment for cost of living and economies of scale, and adjusts for pension maturity, steps E->F in Figures 3A and 3B. If active and retired members cost the same to administer, the adjustment would not be required. Equivalently, if every pension system had the same maturity, the adjustment would not be required either. If the adjustment turns out to be small – which it does – then we can establish with some rigour that the correct basis for comparing pension administration costs is per active and retired member, without the need to muddy waters by adjusting for the difference in cost per member type which turns out to be slight.

Multiple linear regression - How we arrive at our estimates of cost per member type

For each pension system we have calculated several "standardized costs", one each per pension system during each stage of the standardization process following each adjustment described along with Exhibits 2 through 5. However, in effect there really are only three steps in the standardization of total pension administration cost, first for currency and purchasing power, second for cost of living, and third for economies of scale. The other two adjustments are for membership mix, adjustments to the denominator of cost per member, and are not really adjustments to cost itself.

Using this standardized cost, we test several multiple linear regression models for each region (we have attempted the same analysis across all regions, but the results are nonsensical once you do the analysis by region, noting the differences in cost per member type). We therefore study each region separately, one set of regressions each for the U.K., the U.S., Canada, and the Netherlands.

In each region we carry out ten regressions. We start in each region by regressing standardized total pension administration cost (henceforth just referred to as "total cost" for brevity) versus the number of active members, retired members, inactive members, along with a constant (base) cost, representing some fixed cost basis that does not vary with membership, a four-parameter regression. Base cost we think of as a start-up cost; what would it cost to run a pension system with no members? (The base cost might represent the office of the CEO, a basic CFO function, and some minimal support staff to keep the lights on). The cost per active, retired, and inactive member is just that, an incremental cost of adding a single member of each type. We caveat here that the incremental cost per member is not in fact linear because of economies of scale, but that this non-linearity has been removed via the standardization itself.

We then simplify the model in a progression, removing factors that do not improve the model. The two factors which never improve the model are cost per inactive member, which we conclude is zero (or so small relative to the cost per

[19] That is, if we denote average by <>, active members by A, retired members by R, and maturity by M = R/(A+R), then <M> = <R/(A+R)> is not equal to <R>/(<A>+<R>). Outside of the Netherlands, however, the ratio of the averages is close.

active and retired member so as to not matter) and the base cost. Given this, we then aim to resolve if cost per active and retired member are different.

The U.K. model regressions

In the U.K., the analysis is very clear. If we regress total costs against active and retired members separately, a two-parameter model, the cost per active and retired member is the same within statistical error, with an R^2 of 95.04 percent and an F-test statistic of 182. If we further simplify by regressing total cost against the sum of active and retired members, a one-parameter model, the R^2, which by definition must get smaller with fewer regression parameters, is reduced only to 94.98 percent with an F-test statistics that improves to 378. In the U.K., the cost per member type is the same.

The U.S. model regressions

In the U.S. the situation is less clear. Regressing total cost against active and retired members separately shows that the cost per retired member is higher than the cost per active member, which is never significant. However, regressing against the sum of active and retired members improves the model showing that the cost per active member is not in fact zero. After removing a parameter by adding active and retired members together the R^2 drops from 85 percent to 82 percent, but the F-test statistic increases from 89 to 144, showing that the model improves. We conclude that retired members cost more than active members to administer, but that we are unable to resolve the difference in a single regression.

Canada model regressions

The pattern of results in the regression analysis in Canada is identical to that in the U.S. Regressing total cost against active and retired members separately sees retired members dominate the regression, with a cost per active member that is small and never significant. The R^2 is 92.1 percent with an F-test statistics of 151. Against the sum of active and retired members, however, the regression improves, and R^2 drops only to 96.1 percent and the F-test statistics jumps to 249. Again, we conclude that retired members cost more to administer than active members, that the cost of active members is not in fact zero, but we are unable to resolve the difference in a single regression.

The Netherlands model regressions

The regression pattern in the Netherlands is somewhat different. The regression of total cost against active and retired members separately is superior to the regression against the sum of active and retired members together. The best regression, in fact, is against the number of retired members only. However, the conclusion that active member costs are zero is suspicious, and we conclude that retired members cost substantially more than active members (in comparison to the other regions that is).

Regression meta-analysis and the derivation of cost per member type.

There are several ways to extract estimates of the cost per member from regression analysis. One way is to simply take the best model, that with the best F-test statistic. However, given that the F-statistics (except in the U.K. where the situation is clear) are close between models with same and different costs per active and retired member, we take a different approach.

To determine the cost per member type, we take a maximum likelihood approach. For each regression model we have an estimate of a regression parameter π_i from model i, and the standard error σ_i. If a particular regression model produces a better result, then the standard error on it is small.

We then estimate the error across regression models using:

$$\frac{1}{\sigma^2} = \sum \frac{1}{\sigma_i^2}$$

and estimate the final regression parameter from

$$\frac{\pi}{\sigma^2} = \sum \frac{\pi_i}{\sigma_i^2}$$

The results are summarized in the Table 6A and shown in ES1 with error bars. In the case of active and retired member costs, the data as presented is scaled in order that the cost per member type multiplied by average membership equals the estimated average standardized cost (in regression, it need not do so).

Table 6B. Member Maturity

Statistics that describe the maturity of pension systems' membership are shown in Table 6B, where we show the membership mix – average fraction of active members, average fraction retired members, and average fraction inactive members – along with our chosen statistic to describe how mature a pensions membership is: the ratio of retired members to active plus retired members (which we refer to as 'pension maturity'. Systems with older memberships should have high pension maturities and vise versa.

To present the best apples-to-apples comparison of cost per member type, we remove the effect of pension maturity, the last factor outside the control of administrators that we consider, from our standardized cost per member. We do so by applying a simple model of expected cost to each system that utilizes only their membership mix, and the average (across regions) pension maturity[20].

Curiously, adjusting for membership mix does not have a large impact on cost per member. Given that we only find a statistically significant difference in cost per active and cost per retired member in one of the four regions, this fact is somewhat comforting because it could be argued that the difference in cost per member type is an artifact of our analysis. However, again, given the fact that our models outside of the U.K. are consistently telling us retired members are the membership type driving cost, we think the opposite is in fact true.

Exhibit 7. Pension administration activity cost summaries and definitions.

CEM Benchmarking collects pension administration cost data at the activity cost level, aggregating data up to a total pension administration cost used in the prior sections. Collecting data this way allows for superior cost collection,

[20] Total cost C can most easily be modelled as: $C = (c_A \times f_A + c_R \times f_R\ ) \times M$ where $c_{A,R}$ are is the cost per active (A) and retired (R) member (M), and $f_{A,R}$ are the fractions of active and retired members. Since we do not know the cost per active or retired member for any particular system, we can write an expected cost $\bar{C} = (\bar{c}_A \times f_A + \bar{c}_R \times f_R\ ) \times M$ where $\bar{c}_{A,R}$ is the expected cost per active and retired member, retaining information about a systems total members and membership mix via M and $f_{A,R}$. The expected cost with average fraction of active and retired members $\bar{f}_{A,R}$ is therefore $\bar{\bar{C}} = \left(\bar{c}_A \times \bar{f}_A + \bar{c}_R \times \bar{f}_R\ \right) \times M$. Taking the ratio and doing a little algebra yields:

$$\frac{\bar{\bar{C}}}{\bar{C}} = \frac{\bar{M} \times \overline{C_{R/A}} - \bar{M} + 1}{M \times \overline{C_{R/A}} - M + 1}$$

where M is the pension maturity (i.e., f_R) if excluding inactives, $\bar{M}$ the average pension maturity, $\overline{C_{R/A}}$ is the expected ratio of cost per retired member to the expected cost per active member. The scaling for each system cost only depends on the systems own pension maturity. For example, if a system costs $100 per member and has a pension maturity of 0.4, then if the average pension maturity is 0.5 and the expected ratio of cost per retired per active member is 2, then the expected membership neutral cost is:

$$C = \frac{0.5\ \times\ 2 - 0.5 + 1}{0.4\ \times\ 2 - 0.4 + 1} \times \$100 = \$115$$

We note here that we calculate the expected ratio of cost per retired to cost per active member and expected maturity from the regionally averaged ratios and maturities appearing in Exhibit 6. Doing so prevents weighted one region more than another due to the uneven number of systems in the sample.

since accounting gaps can be identified and resolved by data specialists at CEM Benchmarking and client pension systems.

In the U.S. and Canada, a common survey is used to provide data which includes 32 activities, including seven member transactions categories, eight member interaction categories, three governance categories, four major project categories (including IT major projects), four IT categories, and seven support categories. For each activity (with some exceptions), data collected includes full-time equivalent staff, salaries and benefits, and third-party spending. The survey cost categories for the Netherlands are broadly similar, with only minor variations.

In the U.K., a different survey is used but with 26 broadly similar activity definitions. The differences between the surveys are two-fold. First, in the U.K., three of the 21 pension systems outsource the front-office, member facing administration activities to for-profit service providers, and two outsource portions of the same. The survey therefore allows for these clients to provide a single 'outsourced' administration cost for these activities.

Second, member interactions such as one-on-one member counselling, group counselling, and group presentations are not a common an element of the 'core' services model used in the U.K., and so costs are not separately collected for these kinds of high-touch / white-glove pension administration activities. Therefore, where member interactions are separated from member transactions elsewhere, they are grouped together with transactions in the U.K. For this reason, in this whitepaper we are unable to separately provide comparisons of member transactions and member interactions in the activity cost comparisons.

Of the 32 and 26 cost activities, we aggregate cost data into 8 aggregate activities (henceforth just activities for brevity). The eight activities are shown in Exhibit 7 together with definitions of each. The first three activities, I. Contact Centre, II. Transactions and Interactions, and III. Other Administration are front-office, member facing pension administration activities that have direct contact with either members or employers. CEM Benchmarking further collects member and employer level services data in order to benchmark the quality and capability of contact centres, member transactions and interactions, and other administration. Selected member service levels are compared in Exhibit 10.

The second two activities, IV. Finanance and Audit and V. Governance are mid-office activities that include pension design, oversight, public relations which overlap considerably with the investment side of the organization through the offices of the Chief Financial Officer, Chief Risk Officer if applicable, Chief Executive Officer, and the Board of Directors / Trustees. Costs in these governance activities applicable to pension administration are estimated on a pro-rata basis based on the relative time spent on pension administration versus pension investments. In the Netherlands, an extra layer of pension administration governance exists via the 'bestuursbureau', and additional costs associated with it are collected separately from the rest of the pension administration organization.

The sixth activity, Major Projects, includes IT and non-IT major projects. Major projects are non-recurring expenses that are or can be capitalized over the lifecycle of the project greater than the reporting period. Outside the U.K. major project costs are provided separately for both IT and non-IT projects, and on average 85 percent of the costs are IT related. The activity, while not specifically an IT activity, should be thought of as IT focused outside the U.K. and likely IT focused within it too.

Exhibit 7 otherwise provides the average allocation and spending on each of the eight pension administration activities together with definitions of each. The presentation allows for a simple comparison of where administrators in each region focus their spending. Average activity allocations add to 100 percent of total spending, while cost per activity add to the average total pension administration spending, standardized to remove the impact of factors outside of the control of administrators.

A detailed discussion of the distributions of pension administration activity level allocations and costs across each of the four regions are the focus of the next two sections.

Exhibit 8. Pension administration activity cost allocations.

Allocation refers to the fraction of total cost spent on a particular activity. By definition the sum of all allocations for each pension system is equal to 100 percent. In Figure 8 of Exhibit 8 we show box-and-whisker charts illustrating the distributions of pension administration cost allocations by activity for each of the four regions. Cost allocations are important as they show, given a budget, where administrators focus their resources.

In our discussion of the allocation data, we keep in mind the fact that administrators in Canada and the Netherlands spend nearly 2-2.5x those in the U.K., and administrators in the U.S. spend either 1x or 2-2.5x those in the U.K. depending on whether they follow a 'core' services model or an 'enhanced' services model. The allocation data bares out the differences in service models in a different way than cost data itself can show.

I. Contact Centre

Contact centre allocations are highest in the Netherlands. The average allocation of 11 percent is 2x the average in the other regions, and the distribution itself is roughly 2x as large overall as elsewhere. Pension systems in the Netherlands place a larger focus on contact centre spending than elsewhere, and as the service level data shows, call centre quality and capability in the Netherlands is superior for the investment. Pension systems from the U.K. and Canada allocate about the same, whereas in the U.S. allocations are between the distributions of the other regions.

II. Transactions and Interactions

Transactions and interaction allocations are far higher in the U.K. than elsewhere and consume more than 25 percent of pension administration costs. The 25th percentile of allocation in the U.K. is higher than the 75th percentile of allocation everywhere else. In the Netherlands, Transactions and interactions consumes a far smaller proportion of total pension administration costs. Processing transactions is the core function of pension administration – collecting contributions from employers and active members, incepting new pensions, and paying benefits to retirees. Pension systems in the U.K. focus spending on core transactions.

III. Other administration

Other administration allocations are notably smaller in the Netherlands than elsewhere, like transactions and interactions. In the other three regions, the allocation distribution between the 25th and 75th percentiles overlap well.

IV. Finance and Audit

Finance and Audit allocations in the U.K. are 2x that of Canada and the Netherlands. Allocations to finance and audit in the U.S. spans both the U.K. on the high side, and Canada and the Netherlands on the low side. Given the two service models, 'core' and 'enhanced', its evident that the distribution of finance and audit allocations of in the U.S. is displaying the reality that both models are employed there. As shown in the next section on activity cost, the fact is finance and audit costs per member do not vary much by region or by service model, and so the difference in allocation across region is a reflection of total spending more than it is one of an allocation of resources.

V. Governance

Governance allocations are notably higher in the Netherlands, extremely so. This higher allocation of cost to the governance function pre-dates any change of pension administration model currently underway in that market. The higher allocation to governance in the Netherlands is in part due to the separation between pension fund and pension service provider encouraged by the Dutch National Bank and the culture of pension administration prevalent in the region. The separation between the two, a change made in the early 2000s, creates an extra layer of governance, and this extra layer creates an extra layer of cost. On average, nearly one out of every four dollars spent on pension administration in the Netherlands is allocated to governance. Elsewhere the allocation is half that.

VI. Major Projects

Major project costs are primarily IT related costs, but not entirely. A handful of pension administrators in the U.K. allocate a large portion of their administration costs to pension administration system modernization projects that are amortized. This is true elsewhere however too, and on average, around 10 percent of spending is allocated to such one-off costs. Amortizing major projects is less prevalent in the Netherlands.

VII. Information Technology

The U.K. is notable for having much lower allocations of spending to IT, half that of the other regions. Canadian pension administrators consistently allocate between 20 and 30 percent of spending on IT, similar but more focused than in the U.S. and the Netherlands. Where pension administrators in the U.K. allocate more of their spending processing transactions than the other regions, they allocate less to IT. The benefits of higher levels of IT spending are however hard to quantify. There is, however, a clear association between allocations to IT and transactions, and so it is tempting to conclude that higher IT allocations drive down transaction allocations.

VIII. Support

Like IT, allocations to IT are lower in the U.K. than elsewhere. Staff support includes building costs, HR costs, and the like. That pension administrators in the U.K. spend less overall cannot in principle be a reason for the lower allocation; if you have fewer staff, your support costs should be proportionally lower as well. Evidently, in the U.K., administrators do not just spend less on administration per member in dollar terms but allocate less spending to supporting staff as well.

Exhibit 9. Pension administration activity cost totals.

Activity costs are the actual costs spent per administration activity per member. It is not equal to the average allocation per activity times the total average pension administration cost per member, because pension systems that spend more or less per member within a region allocate their spending differently as well, as subject outside the scope of this work.

In our discussion of the activity cost per member data, we keep in mind the fact that costs have been standardized for factors outside the control of administrators. Differences in cost per member cannot be due to differences in currency and purchasing power, inactive membership, cost of living, economies of scale, or pension maturity. Generally speaking, cost per member is low in the U.K. because of the 'core' services pension administration model employed, whereas cost per member is high in Canada and the Netherlands because of the 'enhanced' services model employed. In the U.S., depending on the culture of pension administration, cost per member in some activities spans both extremes, illustrative of the fact that both 'core' and 'enhanced' models are employed.

I. Contact Centre

Contact Centre activity costs per member are larger in the Netherlands than anywhere else, $18 per member on average. The 25th percentile of contact centre cost per member in the Netherlands is higher than the 75th percentile anywhere else. The median contact centre cost per member in the Netherlands is higher than the 90th percentile anywhere else. This level of investment in the contact centre is a definition feature of the 'enhanced' services model in the Netherlands and not copied elsewhere.

In the U.K., contact centre cost per member is low, on average $3 per member, half that or less than in Canada and the U.S. at $7 per member.

At the 90th percentile, contact centre cost per member in the U.S. and Canada at $15 per member is commensurate with the median in the Netherlands, showing that there are pension systems with contact centres that operate at the investment level of the Netherlands. This is not true in the U.K.

II. Transactions and Interactions

In Canada, the 'enhanced' services model used focus instead on member transaction and interactions, where the average cost per member of $29 is nearly 2x as high as anywhere else at $16-$17. The 10th percentile of transaction and interaction cost per member is about the same as the 75th percentile elsewhere.

Outside of Canada, member transaction and interaction cost per member is about the same. Despite the overall lower level of spending on pension administration in the U.K., there remains a focus on mission critical pension administration activities, transactions, a defining feature of the 'core' services model.

At the 90th percentile, member transaction and interaction cost per member in the U.S. and the Netherlands is commensurate with that in Canada, showing that there are pension systems operating like the Canadians in this pension activity. This is not true in the U.K.

III. Other Administration

In Canada, the 'enhanced' services model also invests in other administration (e.g., data and money, employer services etc.) with an average cost of $18 per member, spending that is nearly 2x as high as anywhere else, $9-$13 per member on average. Collecting and data and money, for example, is a core service required of a pension administrator. Other administration activities also include non-core services like mass communication, newsletters and enhanced employer service.

Outside of Canada, other administration cost per member is about the same for most. Despite the overall lower level of spending on pension administration in the U.K., there remains a focus on mission critical pension administration activities, a defining feature of the 'core' services model.

Above the 75th percentile, member transaction and interaction cost per member in the U.S. and the Netherlands is commensurate with that in Canada, showing that there are pension systems operating like the Canadians in this pension activity. This is not true in the U.K.

IV. Finance and Audit

Interestingly, finance and audit costs are about the same across all regions. This is a core pension activity required of administrators, and so while there is some variation in cost per member within regions, the variability is small in comparison to other activities. We conclude that finance and audit costs per member are around $6-$8 independent of region, with some variability within regions that is within the control of administrators but is otherwise unexplained.

V. Governance

Governance costs per member of $44 per member in the Netherlands stands out as an outlier. The 10th percentile of governance costs per member in the Netherlands exceeds the 90th percentile in all regions except Canada, where the 25th percentile of governance costs per member exceeds the 75th percentile. A majority of pension systems in the Netherlands have governance costs higher than anywhere else.

Governance costs in the U.S. and the U.K. are on average similar, $10-11 a member, just under half that of Canada at $19. This difference would be notable were it not for governance costs in the Netherlands. The high governance costs experienced in the Netherlands cannot be a feature of the 'enhanced' services model but is instead a local phenomenon particular to the country.

VI. Major Projects

Major project costs per member are, on average, nearly 2x higher in Canda at $17 per member than the $7-$10 experienced elsewhere. However, the range is broad and overlaps across pension systems. Outside Canada, one in four pension systems does not report any major project costs which tend to be IT focused. Major project costs should be considered an incremental expense, additional to information technology costs which, because of the uniformity, does not alter the picture of information technology spending seen there.

VII. Information Technology

A defining feature of pension costs in the U.K. and the 'core' services model is underinvestment in information technology. Outside of the U.K., information technology cost per member sits in the range of $25-$50 per member, except for the bottom half of pension systems in the U.S. also administering pensions using a 'core' services model.

The fact that the distribution of information technology costs in the U.S. spans both the distribution in the U.K. and that of Canada and the Netherlands is illustrative of the use of both 'core' and 'enhanced' services pension administration.

A handful of Canadian pension systems spend far more on information technology than anywhere else, with a 90th percentile of cost per member cost of $83 per member, similar to the much higher governance spending observed in the Netherlands.

VIII. Support

Staff support costs are also illustrative of the 'core' versus 'enhanced' services pension administration models. In Canda and the Netherlands, costs per member are $23-24 whereas in the U.K. they are $5. Measured via the median, support costs per member are still 5-6x that of the U.K. Once again, in the U.S., support costs per member span both groups.

A defining feature of the 'enhanced' services model is a higher investment in building costs to house staff and IT systems. HR costs per member are higher too, required in the 'enhanced' services model to support higher staffing levels.

Exhibit 10. Service level indicators – qualities and capabilities.

Investment in pension administration by pension systems is done to achieve a purpose, to provide services to members and employers. Services include member transactions and interactions processed through channels like the contact centre, website, and one-on-one and group counselling. Other services provided focus on processing data and money – collecting and recording contributions from active members and processing benefit payments from retired members.

A selection of six quality and capability service metrics provided by pension administrators in the U.K., the U.S., Canada, and the Netherlands are shown in Exhibit 10. The metrics provided are by no means exhaustive – CEM collects hundred of metrics around service quality and capabilities. Rather, the data has been selected to best illustrate the differences between the three regions in the quality and capabilities of pension administration services they provide, and to demonstrate in clear terms the differences in services provided by pension systems providing 'core' versus 'enhanced' service pension administration service models.

We do not show any data however for one channel that is difficult to compare: the public and secure websites. The functionality of websites and the capabilities provided from the much higher investment by pension systems providing an 'enhanced' services pension administration model are too complex for a simple exposé as provided here.

Figure 10A – Contact Centre Quality

To provide a display of contact centre quality, we have chosen to show the percent of incoming calls that are dropped by the member before they reach a service agent. Contact centres for large pension systems with 100k to 1million+ members as studied here usually have well staffed, professional contact centres, and incoming calls are first routed through a menu before being placed into a queue. Ultimately, the quality of the menu (number of layers, specificity) and the length of time spent in the queue can be estimated simply by the abandonment rate; how many calls are dropped before reaching a service agent? This is shown in Figure 10A as a percent of all calls in a box-and-whisker diagram.

Contact centres in the Netherlands receive far more investment than elsewhere, and so it is not surprising that the abandonment rate is lowest of all the regions. On average only one in 25 calls is abandoned before reaching a service agent. This kind of customer experience is typical of pension administrators operating an 'enhanced' services pension administration model.

Contact centres in the U.K. operating under a 'core' services model receive little investment by comparison, and abandonment rates are more than 3x that experienced by pension administrators in the Netherlands, on average. The 75th percentile of abandonment rate in the U.K. is over 20 percent of all calls, unheard of except in the U.S. where many pension systems also operate using a 'core' services pension administration model.

In Canada, where pension administrators also operate using an 'enhanced' services model like the Netherlands, investment in contact centres on a per member basis is similar to the U.S. However, contact centre quality is much better, but not to the same level as in the Netherlands. The average abandonment rate is similar, but the median rate is more than 2x worse. That the quality is so much better than in the U.S. likely reflects differences in spending on transactions and interactions, and not just direct investment in the contact centre.

Figure 10B – Contact Centre Capability

The capability of a contact centre is determined by its ability to resolve the issues presented to it. First contact resolution is a great measure of this capability, but imperfect because it does not standardize for the complexity of an incoming member query. For example, a query may be extremely simple – a caller might simply be changing address or asking for directions on how to log into the website.

Two out of every three calls are resolved on first contact everywhere, and a minimum of three out of four calls are resolved by every system but one. To remove a baseline of calls that are trivial in nature, we choose the latter, although the choice is unimportant, used only to help visualize the data shown in Figure 10B.

As can be seen, contact centres in the Netherlands provide a much higher rate of first call resolution than elsewhere, with over 75 percent of non-trivial calls answered on first contact. Contact centres in Canada and the U.S. are similar in this capability measure. Contact centres in the U.K., where administrators operate under a 'core' services model, lag far behind. The average system in the U.K. resolves non-trivial calls at a rate under 50 percent, less than 75th percentile of Canada and the U.S. and less than the 90th percentile in the Netherlands. This statistics together with call abandonment shown in Figure 10A illustrated well the quality and capability differences of contact centres at 'core' and 'enhanced' service model pension administrators.

Figure 10C – Member Transaction Quality

Pension inceptions are a core, mission-critical function of pension administrators. One quality of pension inceptions that can easily be compared across regions is timeliness; how fast is a pension incepted. Timely pension inceptions means that members that are transitioning to retirement do not experience a sizeable gap in payments from their last employer pay and their first retirement benefits, provided pensions are paid on time.

Figure 10C shows the percentage of pensions incepted without an interruption greater than one month. At the 75th percentile, pension systems in the U.S., Canada and the Netherlands incepted more than 99 percent of pensions without delay, but at the median the rate drops precipitously; in the U.K., only 69 percent of pension were incepted without a delay, whereas the rate is 96, 98 and 100 percent in the U.S., Canada and the Netherlands.

At the 10th percentile, which captures the administrators following the 'core' services model in the U.S., only 68 percent of pensions were incepted without delay (18 percent in the U.K.). In Canada and the Netherlands, the 10th percentile is still 95 and 99 percent of pension incepted without delay. Again, the difference between 'core' and 'enhanced' services pension administration models is clear. Higher per member cost, but superior service, even in core administration activities.

Figure 10D – Member Transaction Capability

A core, maybe the core, mission-critical function of pension administrators is paying pensions. We expect this basic function to operate everywhere and show the data in order to articulate the point. While pension administrators in the U.K. and many in the U.S. operate under a much lower cost per member 'core' services model, the core service they provide works – they pay pensions.

Figure 10D shows the number of pension administrators in each region that missed or made late at least one pension payment. Only one such system in 2023 did so, and it was in the U.K. We have no reason to expect that the experience is something that will be repeated, and future versions of this research may well show a missed or late pension payment elsewhere, at an 'enhanced' services model pension administrator for reasons outside their control or force majeure.

Figure 10E – Member Interaction Capability I

Members interact with their pensions in a number of ways (or none at all). The most expensive to administer way is through individual, one-on-one member counselling sessions. One-on-one counselling is unusual in U.K. and the Netherlands, and anecdotally in the former, the particular member service would seem foreign. Less than 0.3 percent of active members receive one-on-one counselling in the U.K., and the median fund does not offer such a service at all.

In the Netherlands, one on one counselling is rarely offered as well, with an average number of sessions per active member of a bit about 1 percent. One-on-one counselling is instead associated with 'enhanced' services model pension administrators in North America.

In Canada, 10 percent of active members receive one-on-one counselling. The rate is 2x that of the U.S. The median rate however is under 1 percent of active members, showing that the service is not typical of all administrators in Canada. In the U.S. the median rate is above 3 percent of active members. Our expectation is that one-on-one counselling is primarily a service provided to active members in the year of their retirement. If we assume members are active for 25 years, then a 4 percent rate is expected. A rate of 10 percent is unusual.

Figure 10F – Member Interaction Capability II

A much more common member interaction is through group counselling. In the U.S., nearly 80 percent of active members attend group counselling sessions every year on average, and in Canada the average rate is nearly 40 percent. In the Netherlands, the average rate is only 14 percent, lower than the 23 percent average rate in the U.K.

We shown this member interaction capability metric to demonstrate a point. While the 'core' versus 'enhanced' services model is a useful moniker to capture the difference in investment in pension administration and the level of service provided, it is not a catch all, and pension administration is not black and white. While the Netherlands offers superior member service across a range of pension administration activities, one-on-one and group counselling is not part of the pension administration services culture, and for many may not represent a superior services model.

Counselling may in fact be seen as a response to a lack of member services. If members understand their pensions well - the rights, responsibilities and obligations to them as members – then counselling may not be required. Thus, it is not clear whether member counselling is even representative of good service. The example and discussion offer a pointed example of how hard it is to benchmark pension administration services.