Drawing the line:
The real effects of presenting pension smoothing outside of operating income

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We examine the real effects of ASU 2017-07, which alters the income statement presentation of pension expense by designating some components as part of operating income and other components as non-operating income. For over 30 years, the income-smoothing mechanisms from SFAS 87 (1985) are believed to have created financial reporting incentives for pension sponsors to tilt their portfolios towards higher-risk pension assets. By mandating the relocation of these income-smoothing mechanisms from "above the line" to "below the line" of operating income, we predict that ASU 2017-07 reduces financial reporting incentives for pension risk-taking. We find that a sample of affected US firms reduces investment in risky pension assets by 2.5 to 4 percentage points following ASU 2017-07, relative to a control sample of unaffected Canadian firms. In cross-sectional tests, we find that the reduction in risk-taking is more pronounced for (1) firms with economically significant pensions (i.e., where the financial reporting benefits to risk-taking were stronger in the pre-period), and (2) firms for which operating income is more relevant in valuation and contracting (i.e., where the ASU particularly reduced those financial reporting benefits). Our findings indicate that financial statement *presentation*, specifically a formal distinction between operating and non-operating items in GAAP, has real economic consequences.

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I. INTRODUCTION

We examine the real effects of a mandated relocation of certain income components from "above the line" to "below the line" of operating income. Operating income is a pervasively used performance metric; most companies report it (or a similar subtotal) on the face of the income statement, and analysts and investors use it to assess corporate performance (PricewaterhouseCoopers 2007, CFA Institute 2016). And yet, operating income has had no formal definition in US Generally Accepted Accounting Principles (GAAP). Despite long-standing requests from financial statement users for formal guidance, attempts to create a framework for classifying items into "operating" and "non-operating" have been stymied by the intrinsic complexity of that task.[1]

Specifically, we examine whether firms alter their behavior in response to a GAAP-mandated change in the financial statement presentation of defined benefit (DB) pension expense, which consists of heterogenous components (service cost, interest cost, the expected return on pension assets, amortization of actuarial gains/losses and prior service cost). Prior to the Accounting Standards Update 2017-07 *Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost* (hereafter, ASU 2017-07)[2] issued by the Financial Accounting Standards Board (FASB), all these components were disclosed separately in the pension footnote but aggregated to pension expense and included as part of operating income on the income statement. After ASU 2017-07, employers are required to present the service cost component separately from all the other (i.e., non-service cost)

[1] In response to the FASB's Agenda Consultation (2016), PricewaterhouseCoopers wrote that reassessing the performance reporting model should be the Board's top priority, as that model is "critical to the continued relevance of GAAP… challenged of late by the proliferation of non-GAAP measures." Jack Ciesielski argued that the income statement is "undeniably useful to investors yet has never received much comprehensive attention. A logical format consistently presented among companies would aid investors in making intercompany comparisons, yet there's never been a presentation standard addressing the matter." The CFA Institute wrote that "standard-setters should define more income statement sub-totals", e.g., operating income, EBIT, and EBITDA. In the absence of such frameworks in GAAP, non-GAAP performance measures (e.g., EBITDA, "street" earnings, "core" earnings) have proliferated to serve investors' needs.

[2] Accounting Standards Update 2017-07 *Compensation – Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost* (FASB 2017).

components of pension expense on the income statement. The ASU then goes a step further and requires employers to present the non-service cost components *outside operating income*. The relocation of pension cost components out of operating income represents a change solely to income statement presentation – "the display of line items, totals, and subtotals on the financial statement" (FASB Statement of Financial Accounting Concepts No. 8, Chapter 7 *Presentation*, 2021), with no accompanying changes to measurement, recognition, or disclosure.[3] We exploit the ASU's unusual – and clean – setting to provide evidence on the economic consequences of financial statement presentation, and specifically on the economic consequences of defining and distinguishing operating income from non-operating income.

Of particular interest to us is the mandated change in presentation for the expected return component of pension expense. The expected return is measured as the fair value of pension assets multiplied by a long-term expected rate of return (ERR) assumption chosen by managers based on the riskiness of the investments in the pension portfolio, with a higher (lower) ERR reflecting higher (lower) riskiness. Ever since SFAS 87 (1985),[4] the ERR has been employed as a mechanism for firms to "smooth" pension expense and avoid recognizing in net income the actual returns to pension assets, which are more volatile than expected returns. ERR-based smoothing recognizes the costs and benefits to risk-taking asymmetrically in reported income: it recognizes the benefits of risk-taking (a higher ERR) in reported income, in turn reducing pension expense and increasing reported income; but shields income from the costs of that risk-taking, presumably more volatile actual returns. Therefore, critics have long

[3] One could argue that ASU 2017-07 changes the *measurement* of operating income by excluding some components that were previously part of operating income. However, an operating income subtotal has never been formally defined or required by US GAAP. As a result, the relocation of components out of operating income cannot be characterized as "measurement" (which would, by definition, only apply to GAAP constructs). To that point, ASU 2017-07 is titled "*Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost"* (underlined emphasis added). In the FASB's own language, the ASU alters the presentation of pension expense on the employer's income statement, with only "Other Presentation Matters – Classification" amended in the codification. The measurement of pension expense remains unchanged.

[4] Statement of Financial Accounting Standards (SFAS) No: 87 *Employers' Accounting for Pensions,* Dec 1985.

argued that ERR-based smoothing biases pension portfolios towards riskier investments – i.e., that it creates a financial reporting-based incentive for greater risk-taking.[5]

After ASU 2017-07, the income statement continues to present the expected return as part of net income but no longer as part of operating income (i.e., the expected return moves from "above the line" to "below the line" of operating income). We argue that this relocation, which essentially distinguishes the "operating" and "non-operating" components of pension expense/income, is not cosmetic or a "simple format issue" (Libby and Emmett 2014); it could have economic consequences. Given prior evidence (i) that managers believe the value-relevance of income statement items declines as you move farther away from the topline (McVay 2006); and (ii) that operating income is itself an important metric for valuation and contracting (Barton, Hansen, and Pownall 2010; Ittner, Larcker, and Rajan 1997), we posit that ASU 2017-07 does not merely relocate the expected return, but rather the ASU metaphorically "draws a line" on the income statement at operating income and reduces the prominence of the expected return, which is now presented below the line. Hence, any risk premium in the ERR arising from higher investment in risky assets could become less visible and less salient – as it now only impacts net income but no longer impacts operating income.

Because the ERR (and the risk premium contained within it) is moved to outside operating income, we predict that the ASU dampens managers' financial reporting incentives to tilt towards riskier assets. Equally, for a firm that is contemplating derisking its pension assets, the ASU reduces the financial reporting cost of derisking, again pushing firms towards lower risk-taking. As a result, we predict that ASU 2017-07's distinction of operating and non-operating items will generate economic consequences for the items so rearranged – namely, some unwinding of pension risk.

[5] Gold (2005), in an influential piece "Accounting/Actuarial Bias Enables Equity Investment by Defined Benefit Pension Plans" summarizes the income statement benefits of the ERR model thus: CFOs "enjoy the benefit of the equity premium while avoiding much of the concomitant risk". Frieman et al. (2005), describes smoothing as an "opaque method of accounting that highlights the rewards of equity but obscures its risks".

To illustrate the ASU's change with a stylized numeric example, consider a firm reporting $35 for service cost, $120 for expected return, and $130 in cost for all other pension components.[6] Prior to ASU 2017-07, operating income would include a total "net" pension expense of $35 + $130 - $120 = $45 (typically within COGS and SG&A expense). However, ASU 2017-07 relocates all non-service cost components of pension expense to outside the subtotal of income from operations (if such a subtotal is presented), under the stated reason that these components are closer to investing or financing activities than to operating activities (ASU 2017-07, Paragraph BC20). The service cost is the only pension expense component that remains in operating income, as it exclusively originates from employee services rendered in the current period (ASU 2017-07, Paragraph BC9).[7] In our example, after ASU 2017-07, operating income will only include the $35 service cost, with the remaining $10 expense (i.e., $130 - $120) now appearing below the line, in the non-operating section of the income statement.

Our study is motivated by the economic significance of the ASU's impact on the income statements of pension sponsors. A survey of Fortune 100 firms revealed an average 7% increase to 2017 operating income for early adopters (due to lower SG&A expense), and a 5% expected average increase to 2017 operating income for other firms if they were to apply the ASU's mandated relocation (PricewaterhouseCoopers 2018).[8] Our study is further motivated by the marked departure that ASU 2017-07 represents for standard-setting on presentation. A "multi-step income statement" that provides operating income as a subtotal is textbook

[6] These stylized numbers are loosely based on average annual values of pension cost components for all US firms on Compustat in our pre-period: $34.5 million for service cost, $77.3 million for interest cost, $119.8 million for expected return, and $43.3 million (cost) for all other components. The expected return is economically significant – for the average US firm on Compustat prior to ASU 2017-07, the annual expected return is three and a half times as large as the service cost, and 77% of the sum of all non-expected return components.

[7] Service cost is defined as the expense caused by the increase in the pension benefits payable (i.e., the projected benefit obligation) to employees from services rendered during the period. Actuaries compute service cost as the present value of new benefits earned by employees in the period (Kieso, Weygandt, and Warfield, Chapter 20).

[8] For example, Ford Motor Company (an early adopter) disclosed in its 2017 10-K that on applying ASU 2017-07, SG&A expense was lower by $1.2 billion, and "other income" further down on the income statement decreased commensurately.

accounting practice,[9] with the twist that "current GAAP has no definition of operating income or lacks guidelines on what should be included in operating income" (ASU 2017-07, Paragraph BC21). Hence, many opposed the ASU's "prescriptive" approach that mandates the inclusion or exclusion of certain components in operating income, suggesting instead that the Board defer these changes "until it defines operating income or decides on performance statement presentation" (ASU 2017-07, Paragraph BC21). To boot, the IASB contemplated a similar rearrangement in IAS 19R (2011) *Pension Benefits* but deferred it to the larger project on financial statement presentation.[10] Therefore, in studying ASU 2017-07, we are studying a FASB move that is construed by many as an attempt to indirectly define operating income without the typical due process and deliberations, especially for a task of this importance.

Two features of the ASU 2017-07 make it an attractive setting to examine the consequences of altering presentation, and specifically of distinguishing operating from non-operating items. First, it tackles a specific financial reporting topic, namely pensions, allowing us to use context-specific proxies for outcomes (namely, risk-taking in pension portfolios).[11] Second, it alters only presentation on the face of the income statement, leaving recognition and measurement unchanged. Thus, pension expense and net income remain the same, regardless of the presentation change for the components of pension expense. The ASU also leaves disclosure unchanged: pension expense components have long been disaggregated in footnotes, and hence available to users desiring to develop their own performance measures, such that the amount of information disclosed is held constant before and after ASU 2017-07. As a result of both these features, ASU 2017-07 provides a setting with sharp identification of causal effects.

[9] For example, Keiso, Weygandt, and Warfield, 17th edition, Chapter 4.
[10] The IASB considered requiring the interest cost and expected return components to be included in the finance cost line item of the income statement, but concluded that this would be beyond the scope of a pensions project, as "the Board would also have needed to consider in due course whether it should apply similar treatment to amounts related to the passage of time in other projects, such as revenue recognition, insurance contracts, and leases." (IAS 19R, Basis for Conclusions Paragraph BC202).
[11] Hann, Lu, and Subramanyam (2007) discuss the advantages of investigating a specific "lever" of accounting choice, which "allows researchers to exploit their knowledge of GAAP and the economic determinants of the specific accrual" for cleaner modeling and inference.

We conduct empirical analysis on a sample of US DB sponsors, which are subject to the ASU, contrasted with a control sample of Canadian DB sponsors, which report under IFRS and are hence not subject to the ASU. Using a difference-in-difference research design and entropy balancing, we find that equity allocations in affected US firms' pension portfolios decline significantly after the ASU, relative to Canadian firms.

To attribute the effects more confidently to the ASU's reduction of financial reporting benefits from a higher ERR, we motivate cross-sectional tests along two dimensions: (1) firms for which the financial reporting benefits of risk-taking, as induced by the ERR-based expensing model, were stronger in the first place (pre-ASU); and (2) firms for which the ASU's relocation of expected return out of operating income reduced those financial reporting benefits more substantially. We expect larger reductions in pension risk-taking post-ASU for these types of firms, and find strong, consistent evidence from both sets of partitions. In subsamples within which we expect the ASU to have a greater impact (firms with economically significant pensions or expected return components; firms for which analysts specifically forecast operating income, and firms for which operating income is more value-relevant than net income), US (treatment) firms reduce equity allocations by about 12%-18% of a standard deviation more than Canadian (control) firms. We also find large reductions in equity allocations within US firms for which an operating income measure explicitly features in executive compensation contracts (albeit only for US firms, given the lack of Canadian data). Collectively, the cross-sectional tests help us to attribute the reduction in equity allocations to our proposed mechanism: an unwinding of risky investments built up in the pre-ASU period that would boost reported *operating* income.

Our study contributes to the understanding of financial statement presentation as well as of pensions, with standard-setting implications in both areas. First, any mandate that changes presentation is uncommon to begin with; by offering an isolated and hence clean change to

presentation (without accompanying changes to recognition, measurement, or disclosure), ASU 2017-07 provides early evidence on the potential consequences of broader overhauls of presentation. For example, in a recent culmination of its nearly decade-long review of financial statement presentation, the International Accounting Standards Board (IASB) issued IFRS 18 *Presentation and Disclosure in Financial Statements*, which will require issuers to separate out operating, investing, and financing activities on the income statement, and to present an operating income subtotal (issued April 2024 and effective in 2027).[12] Heralded as the "most significant change to the presentation of financial statements in recent times", IFRS 18 requires companies to reconsider the overall structure of performance reporting and requires an operating income subtotal for the first time.[13] Our findings based on ASU 2017-07 offer a natural preview of how firms reporting under IFRS will likely respond when IFRS 18 becomes effective in 2027.[14]

Second, while the academic literature has thus far extensively contrasted recognition to disclosure, our setting essentially documents the real effects of *presentation versus disclosure*, given that ASU 2017-07 alters the presentation of information already disclosed in footnotes. Practitioners often characterize (more) disclosure as a substitute for (improved) presentation on the income statement (PricewaterhouseCoopers 2016a).[15] Similarly, standard setters at times treat presentation and disclosure as substitutes. For example, the FASB collaborated with the IASB on a joint project on financial statement presentation (2004), which eventually

[12] https://www.ifrs.org/projects/completed-projects/2024/primary-financial-statements/#final-stage
[13] See: https://www.ey.com/en_gl/insights/ifrs/ifrs-18-changes-financial-performance-reporting
[14] The FASB has also been exploring related issues: in its Agenda Consultation (2021, p11), it describes constituents as being interested in "creating a more uniform income statement presentation, such as through a requirement for a defined subtotal for operating income". A recent Invitation to Comment (November 2024) tackles "Financial Key Performance Indicators (KPIs)", i.e., financial measures that are calculated or derived from the financial statements but are not presented in the GAAP financial statements (e.g., EBITDA, adjusted net or operating income). Noting the increasing prevalence of these measures, the FASB invited comments on whether certain KPIs should be required disclosure, and whether their measurement should be standardized.
[15] For example, PWC states: "Given the variety of industries and business models…it would be very challenging for the FASB to develop a definition of income from operations that could be broadly applied across industries. Rather than focusing on subtotals or categories of net income…it would be more effective to consider disaggregation of the components of income" (PricewaterhouseCoopers 2016a)

evolved into a FASB standard on disclosure, effectively treating a disclosure standard as a substitute for presentation reform.[16] In our setting using pension expense (where the components of pension expense have long been disclosed in the footnotes), we find that forcing the components to be presented separately across operating and non-operating sections of the income statement generates real effects. This suggests in turn that disclosure (in footnotes) is not a full substitute for presentation on the income statement, contrary to some practitioners' and standard setters' views.

Third, with respect to pensions, we contribute to the literature that examines whether the ERR-based smoothing model creates managerial incentives to invest in risky pension assets. Prior studies document real effects on pension asset composition for US firms after SFAS 132R (2003) requires the disclosure of pension asset categories for the first time (Chuk 2013) and similarly after IAS 19R (2011) eliminates the ERR from pension expense (Anantharaman and Chuk 2018 for Canadian firms; Barthelme, Kiosse, and Sellhorn 2019 for European firms). Notably, SFAS 132R alters disclosure, and IAS 19R alters measurement.[17] In contrast, ASU 2017-07 alters only presentation without mandated changes to disclosure, measurement, or recognition. Hence, we extend this stream of literature with evidence that risk-taking in pension investments is associated with regulatory changes for a different dimension of accounting rules: presentation.[18]

[16] As a result of the joint project with the IASB on presentation, the FASB ultimately issued ASU 2024-03 *Disaggregation of Income Statement Expenses* (November 2024), which takes the approach of leaving income statement presentation unchanged but requiring firms to disclose more information about (i.e., disaggregate) income statement line items such as COGS and SG&A (*Income Statement Reporting—Reporting Comprehensive Income—Expense Disaggregation Disclosures (Subtopic 220-40): Disaggregation of Income Statement Expenses)*.

[17] IAS 19R replaces the ERR with the discount rate, which is based on high-quality fixed-income yields duration-matched to the pension benefit cash flows.

[18] Our setting also differs from those prior studies in that ASU 2017-07 removes the expected return from operating income but retains it as a part of net income, whereas IAS 19R removes the expected return altogether from net income. A rule change that removes a component from operating income is arguably smaller in scope than one that removes the component from net income altogether. Thus, our study extends the prior literature on the effects of the ERR-based smoothing model on managerial incentives by showing that operating income is a sufficiently powerful performance metric to alter managerial behavior.

II. BACKGROUND AND HYPOTHESIS DEVELOPMENT

The extant pension expense model and its consequences

Ever since the issuance of SFAS 87 in 1985, pension expense on sponsoring firms' income statements has been composed of the service cost (i.e., the cost of additional benefits earned by participants for one more year of service) and the interest cost (the cost of carrying the liability, arising from benefits being discounted by one less year), offset by the expected (not actual) returns on pension assets, computed as the fair value of pension assets multiplied by the ERR assumption.[19]

Consider a plan sponsor deciding how to invest its pension portfolio, in an ERR-based expensing regime. Moving the portfolio towards riskier assets (that bring higher expected returns on average) would help to justify a higher ERR assumption. The income statement enjoys the benefits, through reduced pension expense and higher reported income. At the same time, the cost of investing in those riskier assets – namely, higher volatility in actual returns – is not reflected on the income statement. In a nutshell, the ERR-based accounting model, which smooths out volatility in actual returns, does not symmetrically reflect the expected costs and benefits of risk-taking – it "highlights the rewards of equity but obscures the risks" (Frieman et al. 2005).

As a result, holding constant all other economic determinants of asset allocation, the financial reporting model itself gives sponsors an added incentive to increase risk. The ERR-based "smoothing" model could hence tilt managers towards more risk-taking in pension

[19] The difference between expected and actual returns is a part of "actuarial gains and losses" (hereafter, AGLs), which are recognized in other comprehensive income (OCI), in essence a dirty-surplus item. These AGLs, which include not only differences between actual and expected return but also differences between actuals and estimates of other actuarial assumptions (discount rates, mortality rates, salary growth rates, etc.), can move in offsetting directions and are all recognized in the aggregate in OCI. If this pool of accumulated AGLs exceeds a threshold, or ''corridor''—currently 10 percent of the larger of the projected benefit obligation (PBO) and fair value of plan assets—it must then be amortized into net income (or ''recycled'') over the remaining average expected service life of beneficiaries. As a result, actual returns are recognized eventually in net income, but only through the recycling process, which usually occurs at a ''glacial'' pace, if at all (Picconi 2006), under US GAAP.

portfolios than they would have undertaken in a regime that reflects the costs and benefits of risk-taking symmetrically in reported income.

Documenting that the smoothing model creates a tilt towards risk-taking is inherently challenging, as that requires observing the counterfactual: what asset allocations would have looked like in the absence of smoothing. While ASU 2017-07 does not remove smoothing altogether, it does reduce its prominence within the income statement. This in turn allows us to get closer to that counterfactual, by observing asset allocations in the (post-ASU 2017-07) setting where a mandated change in presentation now renders smoothing *less* important on the income statement.

The removal of pension cost components from operating income under ASU 2017-07, and its potential real effects

With ASU 2017-07, the FASB has undertaken its first major change to pension accounting on the income statement since SFAS 87, which was issued more than 30 years ago in 1985. While the ASU leaves the *measurement* of pension expense unchanged, it alters the *presentation* of pension expense on the income statement. It first requires pension expense to be disaggregated into service cost and all non-service cost components. Then, it requires service cost to be reported in the same line item as other compensation costs arising from services rendered by employees during the period; typically, these will include salaries and bonuses, and would be reported as an operating cost.[20] All non-service cost components of pension expense – this includes interest cost, the expected return on pension assets, amortization of actuarial gains/losses, and prior service costs, and other items such as net

[20] Reviewing 10-Ks for the ten largest pension sponsors in our sample pre-ASU 2017-07, we note that pension expense was typically included within COGS and SG&A, and at times within R&D expense. Neither SFAS 87 nor subsequent pension standards explicitly specify whether pension expense is to be presented as a separate line item or not on the face of the income statement. Libby and Emmett (2014) note that guidance on income statement presentation is light for most topics, with the SEC's Regulation S-X implying that a split into COGS versus SG&A expense is all that is necessary, and little further guidance from specific accounting standards. As a result, many US firms only separate out these basic line items on the income statement, with varying levels of voluntary disclosure on what costs they enfold. The FASB's recently issued ASU 2024-03 on the disaggregation of income statement line items addresses this very issue.

gains/losses on curtailments and settlements – are to be reported separately from service cost and *outside* operating income, if operating income is reported separately on the income statement. Importantly, ASU 2017-07 does not alter disclosure: all pension expense components were already required to be individually disclosed on the pension footnote, per SFAS 87. Appendix A details the reporting changes mandated by ASU 2017-07.

Under the ASU, the ERR assumption continues to affect net income, but no longer affects *operating* income. That is, net income remains the same, regardless of where the expected return is presented on the income statement. Prior to the ASU, raising the ERR would boost both operating income and net income; after the ASU, raising the ERR boosts only net income but does not impact operating income. By relegating the pension expected return (along with other non-service cost components) from "above the line" to "below the line" of operating income, the ASU gives us the opportunity to test whether that relegation has economic consequences. To the extent that ERR smoothing in operating income created a financial reporting incentive for risk-taking, does moving the expected return out of operating income dampen that incentive? Framed differently, to the extent to which the expected return model had real effects on managers' behavior (i.e., tilting them towards more risk-taking in pension portfolios), do those real effects diminish once the expected return moves down the income statement? This is the central research question of our study.

Does ASU 2017-07 reduce the financial reporting benefits of a higher ERR?

Behind our prediction that the ASU can generate economic consequences (or more precisely, *diminish* the economic consequences of the ERR-based model), is a stream of research on how investor perceptions are affected by the location of line items on the income statement. Generally, the closer an item is to the topline (sales revenues), the more permanent investors perceive it as, with correspondingly higher value-relevance (e.g., Lipe 1986,

Bradshaw and Sloan 2002, Ertimur, Livnat, and Martikainen 2003, Fairfield et al. 1996, Ohlson and Penman 1992).

Conversely, it could be argued that the mere location of where a line item is reported on financial statements does not matter for rational financial statement users. However, even if the reporting location is not consequential for rational users, prior research shows that managers can still act as if they believe that reporting location matters (Bamber, Jiang, Petroni, and Wang 2010).

Focusing specifically on operating income, much research has shown that it is a useful metric for investor decision-making. Barton, Hansen, and Pownall (2010) compare many summary measures of performance for 46 countries including the US – from sales revenues to operating income to net income to comprehensive income – and document that value-relevance peaks towards the middle of the income statement – to operating income and its variants. Operating income also matters for contracting – it is one of the most commonly-used performance metrics in CEO annual bonus contracts, along with net income and EPS (Ittner, Larcker, and Rajan 1997, Huang, Li, and Ng 2013).

Market participants and contracting parties likely regard operating income as a useful metric; managers, in turn, focus on the metrics that are widely used (Dechow, Richardson, and Tuna 2003, Jacob and Jorgensen 2007, Jorgensen, Lee, and Rock 2014, Burgstahler and Chuk 2015, 2017). Hence, the desire to boost operating income – for valuation or contracting purposes – could have incentivized managers to increase risk in pension portfolios prior to the ASU. As those incentives no longer exist, some unwinding of pension risk could result. Equally, for a manager motivated to derisk the pension portfolio (which would translate into a lower ERR assumption), that derisking would have reduced both operating income and net income in the pre-ASU era. Post-ASU, a lower ERR reduces only net income but leaves

operating income unaffected; in other words, derisking becomes less costly in terms of its financial reporting impact. Our main prediction follows:

H1: Firms affected by ASU 2017-07 will reduce risk-taking in pension asset allocations following the adoption of ASU 2017-07.

Empirical tension from countervailing forces

Some key countervailing forces exist. First, notwithstanding the growing use of non-GAAP earnings measures, net income remains indisputably important in firm valuation and continues to be widely used in contracting (Ohlson 1995; Watts and Zimmerman 1986; Dichev and Skinner 2002). Therefore, it remains an open question whether the ASU's change in presentation for the expected return is substantial enough to trigger unwinding of risky asset allocations, given that it does not alter the impact of the expected return on net income.

Second, pension expense has been disaggregated component-by-component in the pension footnote since SFAS 87, and even prior to ASU 2017-07 sophisticated financial statement users were computing proforma measures of pension cost by re-arranging and/or re-measuring certain pension cost components. We provide evidence of this effect from three settings: credit rating agencies, financial analysts, and issuers' own proforma earnings. First, when computing its own non-GAAP measure of pension cost, Standard & Poor's replaces the expected return with actual return on pension assets (Standard & Poor's 2003). [21] Moody's makes adjustments to "eliminate the effects of artificial smoothing of pension expense permitted by accounting standards" (Moody's 2006; Moody's 2016).[22] Second, the CFA Institute's guide on International Financial Statement Analysis, considered a definitive guide on financial statements for analysts and portfolio managers, instructs users to rearrange pension

[21] If actual returns are positive, then actual returns reduce pension expense up to the amount of reported interest expense. If actual returns are negative, the full actual return is treated as an addition to pension expense.

[22] Moody's reverses all pension costs but adds back service cost; attributes interest expense to pension-related debt using an interest rate that represents a theoretical average borrowing cost for each issuer based on its credit rating; recognizes interest cost in other non-recurring income/expense; and adds or subtracts actual losses or gains on pension assets (up to the interest cost) in non-recurring other income/expense.

cost components in the same manner as prescribed by the ASU.[23] The FASB even acknowledges that the separation of service cost from other components is "highly supported by financial statement users and is consistent with the adjustment often made by some users in their analyses" (ASU 2017-07, Paragraph BC12); Rouen, So, and Wang (2021) report such adjustments by equity research firms. Third, Black, Christensen, Ciesielski and Whipple (2021) report in their study of non-GAAP earnings (for a pre-ASU period) that about 10% of S&P 500 firms exclude pension-related expenses from income; at least some of these firms excluded the non-service cost components.[24] If users in the pre-ASU regime were already stripping the benefits of a higher ERR out of operating income, and if managers correctly perceived that, then pre-ASU rules may not have created managerial incentives to tilt towards riskier assets in the first place and accordingly, the ASU 2017-07 mandate would not then reduce that tilt.[25]

Third, and perhaps most fundamental, there are counterarguments about the importance (or lack thereof) of presentation, which as a topic has received far less attention from standard-setters than recognition, measurement, and disclosure (Libby and Emmett 2014). One could argue that given a set of disaggregated disclosures about financial statement line items, users can rearrange those components in any way they deem appropriate to create their own proforma measures of performance, as plainly evidenced by the proliferation of non-GAAP and "street" earnings measures (reviewed by Black, Christensen, Ciesielski and Whipple 2018, 2021), and

[23] CFA Institute Investment Series. International Financial Statement Analysis, Fourth Edition. Wiley. "…It can be argued that only the current service cost component is an operating expense, whereas the interest component and asset returns component are both non-operating…To better reflect a company's operating performance, an adjustment can be made to operating income by adding back the full amount of pension costs reported in the P&L and then subtracting only the service costs…the interest expense component would be added to the company's interest expense, and the return on plan assets would be treated as non-operating income" (page 652).

[24] For example, in its 2015 annual report, General Electric reported two measures: (1) "operating pension cost", which included service cost, prior service cost, and curtailment loss; and (2) "nonoperating pension cost", which included the expected return on plan assets, interest cost, and the amortization of actuarial losses.

[25] While credit rating agencies are known to adjust reported pension expense by replacing expected returns with actual returns, Comprix and Muller (2006) provide evidence consistent with compensation committees *not* making a similar adjustment when determining CEO bonuses. Therefore, even if sophisticated investors back out expected returns from reported income when valuing the firm, it appears that higher expected returns can still boost income measures used in compensation contracting.

the increasing use of XBRL tags and data feeds to download numbers from SEC filings, en masse and directly into spreadsheets or other analysis software.[26] In that scenario, a GAAP mandate to rearrange income components in a specific way may not have any impact at all.

Finally, the ERR-based pension model gives managers desiring to report higher net income a lever with which to do that: inflate the ERR assumption (which reduces reported pension expense and increases reported net income). While our discussion till this point has assumed that managers must reallocate pension assets (towards higher-risk, higher-expected return asset classes) to achieve higher ERRs, there is also evidence in the literature that ERRs are susceptible to what can be characterized as pure "accruals-based" manipulation, i.e., where managers assume higher ERRs without making the accompanying investments in riskier pension assets (Bergstresser, Desai, and Rauh 2003; Asthana 2007). To the extent to which managers were successfully using higher ERR assumptions than were justified by the economic fundamentals (i.e., the expected returns and risk-return characteristics) of the pension assets to boost net income prior to ASU 2017-07, then we would not observe an unwinding of risky pension assets after ASU 2017-07, as predicted in H1. [27]

Cross-sectional variation in ASU 2017-07's impact on risk-taking

We are more likely to observe results consistent with H1 for some types of firms, as the pre-ASU 2017-07 accounting rules likely incentivized some firms more than others to increase risk-taking. Prior to ASU 2017-07, boosting the ERR was likely to have been more effective for some firms, relative to others, at boosting reported operating income. Hence, the risk-taking induced by the desire to boost operating income for these firms was also likely higher prior to

[26] Software tools that can automatically extract tagged data and present it to users and analysts through a readily usable interface have proliferated in recent years. For example, see https://www.xbrl.org/news/cfas-gain-access-to-xbrl-data-platform-via-calcbench-partnership/

[27] SFAS 87, Paragraph 45: "The expected long-term rate of return on plan assets shall reflect the average rate of earnings expected on the funds invested or to be invested to provide for the benefits included in the projected benefit obligation. In estimating that rate, appropriate consideration should be given to the returns being earned by the plan assets in the fund and the rates of return expected to be available for reinvestment."

ASU 2017-07. We expect that these firms experience a correspondingly greater "unwinding" of risky asset allocations post-ASU 2017-07. Accordingly, we exploit cross-sectional variation in how effectively the ERR could boost operating income to offer a further prediction:

H2: The reduction in risk-taking in pension assets after ASU 2017-07 will be more pronounced for firms for which inflating the ERR was more effective at increasing operating income prior to ASU 2017-07.

By a similar logic, the ASU's unwinding of the financial reporting benefits of risk-taking could have been stronger for some firms than for others. To put it simply, if operating income really "mattered" to a firm pre-ASU (and managers perceived that correctly), then the ASU's relocation of expected return out of operating income likely reduced the financial reporting benefits of risk-taking more for that firm. Conversely, if operating income is not a salient metric (for valuation or contracting) – because instead, say, net income is the dominant measure – then the ASU may not have substantially reduced the financial reporting benefits of risk-taking for that firm. We would expect a correspondingly greater unwinding of risk-taking for the former, rather than the latter, firm. Our third hypothesis follows:

H3: The reduction in risk-taking in pension assets after ASU 2017-07 will be more pronounced for firms for which the financial reporting benefits of risk-taking are reduced more by the ASU.

III. DATA AND EMPIRICAL MODEL

Constructing a treatment sample of US firms

Table 1 outlines the sample selection. We start by identifying all US firms with defined-benefit (DB) pensions that are represented in Compustat North America for the last fiscal year (FY) before ASU 2017-07 and the first FY under ASU 2017-07. As ASU 2017-07 became effective for fiscal years beginning after December 15, 2017, for December fiscal year-end (FYE) firms this translates into FY 2017 (pre-ASU) and 2018 (ASU) respectively. We obtain annual reports for these firms from the SEC website, yielding an initial sample of 1,328 firms.

We hand-collect detailed pension asset allocations, ERRs, and discount rates from annual reports for the two-year period extending from the last FY before adoption of ASU

2017-07 to the first FY post-adoption. We lose 498 firms due to missing data required for our model variables, and 80 firms that do not have sufficient data in both the pre- and post-periods. We remove four firms that are voluntary early adopters of the provisions in the ASU, given that changes in behavior for early adopters would likely have occurred prior to our time window. These steps lead to 746 firms and 1,492 firm-years for the US "treatment" sample.

Selecting a control sample of Canadian firms

To make reliable inferences about the effects of ASU 2017-07 and to rule out macroeconomic or over-time influences, we require a control sample of firms unaffected by ASU 2017-07. Lacking a natural control sample of unaffected pension sponsors within the US, we draw on Canadian listed firms that sponsor DB pension plans. While cross-country research designs come with inevitable limitations, Canadian firms are well suited as a control sample for many reasons: (i) they are geographically proximate to US firms and share a similar capital markets environment (e.g., Leuz, Nanda, and Wysocki 2003); (ii) the pension regulatory framework across both countries, even if not identical, shares many fundamental features: DB pensions are required to be pre-funded; assets are held in trust but controlled by the sponsor; asset allocations are determined by the sponsor without explicit rules and limitations on asset classes;[28] (iii) pension sponsors in the US and Canada are at a broadly similar (and early) stage of their de-risking journey, in stark contrast to other regimes like the UK, where de-risking actions have become commonplace in past decades.[29]

[28] These similarities are better appreciated when considering other potential control samples, such as the UK and Europe, which differ fundamentally from the US in their regulatory framework (e.g., Glaum 2009). For example, German DB plans are not required to be pre-funded and hence many hold no assets in trust. UK plans are required to index benefits to inflation, whereas most corporate DB plans in the US do not (Breedon and Larcher 2021).

[29] "De-risking" is a term that has come to be used to describe a range of actions that sponsors can take to minimize or transfer (to other parties) the various risks associated with a DB plan (Society of Actuaries 2021), i.e., asset risk (the risk that market returns on investments will fluctuate), interest rate risk (which affects the valuation of the plan obligation as well as returns on fixed-income investments), and longevity risk (the risk that beneficiaries will live longer than expected, leaving the sponsor responsible for paying more benefits than planned). These actions include changing plan design (closing or freezing plans, hybrid benefit structures), "hibernating" plans by investing entirely in fixed-income securities that match benefit payout maturity, and settling the plan with an insurance company or directly with beneficiaries through a lump-sum offer. Pension settlements were pervasive in the UK even pre-2010, while far less common in the US and Canada (Prudential Insurance 2012, Monk 2009).

Importantly, Canadian firms are presumably unaffected by ASU 2017-07, as they report under IFRS since 2013, and the measurement and presentation of pension expense components under IFRS underwent no alterations during our window of interest.[30] For all these reasons, we believe that Canadian firms offer an appropriate control sample to evaluate the treatment effects of ASU 2017-07. We use entropy balancing in estimating the effects of ASU 2017-07.

Relying on Compustat North America for financial and pension data on Canadian firms, we find 198 Canadian firms that sponsor DB pensions. We remove 19 Canadian firms that choose to report under US GAAP instead of IFRS, as allowed by Canadian securities regulators (Burnett, Gordon, Jorgensen, and Linthicum 2015). We lose 49 firms lacking data for model variables and 10 firms lacking sufficient data in both periods. Our final sample of 120 Canadian firms translates to 240 firm-years for the Canadian control sample.

We obtain annual reports for these firms from Canada's online repository of public company filings, SEDAR, supplemented by hand-collection from company websites. We hand-collect detailed pension asset allocations, ERRs, and discount rates from Canadian annual reports for the same two-year period as for the treatment sample. We convert all numbers from CAD to USD using the exchange rate at the fiscal year-end.

Specification to test the consequences of ASU 2017-07

We identify the overall effect of ASU 2017-07 with a difference-in-differences (DD) specification, which compares pre- and post-ASU 2017-07 shifts in asset allocation of US firms affected by ASU 2017-07, to shifts over the same time in asset allocations of Canadian control firms. We employ the following OLS specification:

$$\%EQUITY \text{ (or } \%FIXED\ INCOME) = \beta_0 + \beta_1\ POST + \beta_2\ US + \beta_3\ POST*US + \Sigma \text{ Controls} + FIRM\ FE + \varepsilon \quad \text{(Equation 1)}$$

[30] Under IAS 19R, there is no specific mandate as to where pension cost components should be presented on the balance sheet or even whether the components must be presented separately; firms are allowed to choose a presentation approach under the expectation that it is consistently applied.

The dependent variable *%EQUITY* captures the proportion of pension assets invested in the (relatively risky) equity markets and is hand-collected from the detailed asset allocation disclosures on annual reports of US and Canadian sponsors. We estimate an alternative version of Eq. (1) with *%FIXED INCOME* – the proportion of pension assets invested in relatively safe assets, namely fixed-income securities and cash and cash equivalents. We hand-collect these allocations to better capture the richness and complexity of these disclosures, which are not fully reflected on Compustat Pensions.

US is a firm-level indicator set to one (zero) for US (Canadian) firms. *POST* is an indicator set to one for firm-years under ASU 2017-07, and to zero for firm-years ending before the ASU became effective. Our variable of interest is the DD estimator on the interaction *POST*US*, which captures the incremental change in asset allocations of US pension plans, relative to Canadian plans.

Our control variables capture cross-sectional determinants of asset allocation, motivated by prior research. We control for sponsor size (*Size*) as larger sponsors have wider investment opportunities. Firms with tighter debt covenants or with a tradition of paying dividends have stronger incentives to minimize volatility in funded status and consequently in required contributions, to avoid breaching covenants or to preserve the cash flows needed to pay dividends. Accordingly, we control for closeness to covenant thresholds with leverage (*Leverage*), and for dividend-paying status (*Dividends*). Firms with volatile operating cash flows would also have an incentive to minimize volatility in required contributions, motivating cash flow volatility (*SDCF*) as a control variable. Black (1980) and Tepper (1981) argue that tax-paying firms have an incentive to borrow on the corporate balance sheet, fund plans, and invest plan assets in the most highly taxed securities – bonds.[31] This "tax arbitrage" argument

[31] This strategy helps to maximize shareholder value as sponsors can then deduct interest off the corporate tax return but accrue interest tax-free on the bonds held inside the pension trust.

suggests that high tax-paying firms invest more in bonds. We capture tax-paying status with an indicator variable set to one if the firm has net operating loss carryforwards (*NOL*).

Amongst plan-level characteristics, we control for funding ratio (*Fund Ratio*) and the square thereof (*Fund Ratio*^{2}), as prior research hypothesizes that very overfunded and very underfunded plans – in an attempt to minimize contribution volatility – tend to invest in bonds, while moderately funded plans increase equity investments to earn their way out of underfunding (Bader 1991, Amir and Benartzi 1999). We control for plan horizon (*Horizon*, measured as the natural logarithm of PBO/service cost), as longer-horizon plans (with younger beneficiaries) should invest more in equities to hedge against salary increases (Rauh 2009). Finally, not all sponsors rebalance allocations to target period-by-period; hence, equity investments can grow as a proportion of total plan assets in years when equity markets perform well. To control for passive growth in equity investments, we include the performance of equity markets with the return on the S&P 500 Index for US equities and S&P/TSX Index returns for Canadian equities (*Market Returns*).[32] We also control for interest rates as an increase (decrease) in interest rates can make fixed income investments more (less) attractive. To do so, we use the Effective Fed Funds rate for US firms and the Bank of Canada interest rate for Canadian firms (*Bank Rate*). We also incorporate firm fixed effects and cluster standard errors at the firm level. Appendix B provides detailed variable definitions.

IV. EMPIRICAL RESULTS

Descriptive statistics of model variables for the US sample (treatment group)

Table 2, Panel A (Panel B) describes the US sample pre- (post-) ASU 2017-07. Equities and fixed income (including cash/cash equivalents) are the largest categories for US plans pre-ASU 2017-07, with mean (median) investment of 40.4% (43.2%) of pension assets in equities

[32] As a result of less-than-perfect rebalancing, in a year in which the equity markets perform well (poorly), equity allocations can grow (decline) for all sponsors. As our DD specification involves comparisons across time, overall equity market performance in each period hence needs to be controlled for.

and 45% (42%) in fixed income. We observe a marked downward shift in *%EQUITY* after ASU 2017-07, to a mean (median) of 34.8% (36%). Notably, the entire distribution of *%EQUITY* shifts downwards – the 25th percentile declines from 25.3% to 16.8%, and the 75th percentile declines from 57.6% to 52%. Fixed income investment displays a corresponding upswing along the entire distribution – the mean (median) *%FIXED INCOME* increases to 50.4% (47.2%), with the 25th percentile increasing from 31.8% to 35.3%, and the 75th percentile increasing from 57% to 64.8%. Unsurprisingly, ERRs also decline from 6.2% (6.50%) to 5.97% (6.25%).

The market value of firm equity starts out at $14.9bn ($3.5bn) in the pre-period, dropping to about $13.8bn ($2.9bn) in the post-period. Similarly, the fair value of plan assets, which is $1.7bn ($297.8m) in the pre-period, drops slightly to $1.6bn ($272.6m) in the post-period. Funding ratios, however, remain steady at 83.6% (84.2%) in the pre-period and 83.2% (83.5%) in the post-period. Other fundamentals such as leverage, dividends, cash flow volatility, loss carryforwards, and plan horizon do not exhibit noteworthy trends across periods. Market returns are positive in the pre-period and negative in the post-period. Effective Fed Funds rate (*Bank Rate*) has increased from 1.4% in the pre-period to 2.3% in the post-period.

Descriptive statistics of model variables for the Canadian sample (control group)

Table 3, Panel A (Panel B) describes the Canadian sample pre- (post-) ASU 2017-07. *%EQUITY* has an interquartile range of 29%-58% in the pre-period (broadly similar to the US sample). The mean (median) of *%EQUITY* starts off slightly higher than the US, at 42.2% (45%), and drops to 38.7% (40.5%) post-ASU. *%FIXED INCOME* starts out at 46.5% (44.6%) – similar to the US sample, and increases to 49.1% (46.8%).[33]

[33] ERRs for the Canadian sample are much lower than ERRs for the US sample, with mean (median) of 4.3% (3.8%) pre-ASU and 4% (3.6%) post-ASU. As Canadian firms are subject to IAS 19R, their "ERRs" are defined differently from those of US firms – IAS 19R requires the ERR to be equal to the discount rate, which is determined from high-quality corporate bond yields matched to the duration of pension obligations.

Table 4 shows the correlation matrix of all the variables. As expected, *%EQUITY* and *%FIXED INCOME* are negatively correlated, and *ERR%* is positively (negatively) correlated with *%EQUITY* (*%FIXED INCOME*). Consistent with some inertia in rebalancing, equity *Market Returns* are positively associated with *%EQUITY*.

As equity market returns were generally negative in 2018 (the post-ASU year), the reduction in equity allocations across the board in US and Canada could be driven by broader market movements to some extent, especially if sponsors face constraints to actively rebalancing portfolios in each period. Importantly, the change in *%EQUITY* appears more negative for US firms, as we would expect. The common trends in asset allocations across US and Canada highlight the importance of our DD research design, where common macro-economic trends are differenced away. We discuss this specification next.

Coefficient Plots

We next assess whether our pre-treatment trends are parallel. In Figure 1, we plot the coefficients for the four years prior to treatment, where the coefficients are obtained from regressing *%EQUITY* on separate binary variables coded as one for US firms in years t-1 to t-4, and coded as zero otherwise. The year t-5 acts as a baseline year. We include all the firm level controls along with firm fixed effects, similar to our main regression specification. The plotted coefficients represent the difference between *%EQUITY* for US firms and Canadian firms in that period as compared to the baseline year. None of the coefficients are significant. Consistent with parallel trends, we find that the coefficients are not increasing or decreasing in the pre-treatment period.

Difference-in-differences (DD) tests of the effect of ASU 2017-07

To more confidently draw inferences on the ASU's treatment effects, we implement multivariate matching across US and Canadian samples using entropy balancing. Like other multivariate matching approaches (e.g., propensity score matching), the goal of entropy

balancing is to eliminate differences in covariates across treatment and control samples. Entropy balancing, however, has two conceptual advantages over propensity score matching (McMullin and Schonberger 2020): it ensures that higher-order moments of covariate distributions are nearly identical across treatment and control samples; and it does away with the many researcher choices that are necessary for propensity score matching and that can influence its results. McMullin and Schonberger (2020) highlight that entropy balancing has particular strengths in settings where the outcome variable is a non-linear function of the underlying controls – a feature applicable to our setting, where asset allocation is believed to be non-linearly affected by funding (Bader 1991, Amir and Benartzi 1999, Anantharaman and Lee 2014). Entropy balancing also offers the empirical advantage of allowing us to retain our full US and Canadian samples. We detail the entropy balancing procedure in Appendix C, with the pre- and post-balancing distributional properties summarized in Table C1. Table C1 shows very similar means for matching variables after entropy balancing.

In Table 5, we present results of estimating the DD specification of Equation (1) with US and Canadian firms, pre- and post-ASU 2017-07. We present results of Eq. (1) without (with) entropy balancing in Panel A (Panel B). Columns (1) and (3) [(2) and (4)] display specifications with *%EQUITY* [*%FIXED INCOME*] as the dependent variable. The *POST* indicator is strongly significant across Columns (1)-(4), indicating a drop in equity investment to the tune of 2.51%-3.44% post-ASU for all firms, and an accompanying increase in fixed income investment to the tune of 2.37%-3.53%. Importantly, our main coefficient of interest, *US*POST*, is negative and significant at the <0.01 (<0.05) level in *%EQUITY* specifications without (with) entropy balancing, while positive and significant at the <0.01 (<0.05) level in *%FIXED INCOME* specifications without (with) entropy balancing. The coefficients on *US*POST* indicate that after controlling for various determinants of asset allocation, US firms reduce equity allocations post-ASU by 2.15%-2.23% more than Canadian firms and increase

fixed-income allocations by 2.09%-2.38% more than Canadian firms, on average. As US firms are affected by ASU 2017-07 whereas Canadian firms are presumably unaffected, this provides direct evidence consistent with H1 that ASU 2017-07 engenders risk reduction.

Cross-sectional variation in the financial reporting incentives for risk-taking

The DD design helps to a large extent in ruling out omitted variables concerns arising from permanent, time-invariant differences across US and Canada, or global macroeconomic trends and market movements affecting both countries. For our results to be explained by an omitted variable, the omitted variable would have to time-vary contemporaneously with ASU 2017-07 implementation *and* affect US and Canadian plans differently.

To further verify that US risk-reduction is attributable to ASU 2017-07, we examine cross-sectional partitions varying the expected strength of the ASU's effect. In the first set of partitions, we examine subsamples in which we expect the financial reporting benefits of risk-taking to have been more pronounced pre-ASU 2017-07. If the risk reduction observed in US plans is truly attributable to our hypothesized mechanism, then we would expect it to be stronger for firms whose asset allocations were more influenced by reporting incentives to begin with (H2).

To test H2, we employ two proxies to operationalize the strength of reporting-based incentives to invest in risky assets pre-ASU 2017-07. Our first measure is the ratio of the expected return component to all other components of pension costs (Table 6). This captures sponsors for which the expected return is an economically significant component of pension expense and is hence more likely to offset the other (income-decreasing) pension cost components. We expect sponsors with more economically significant expected return components to have had stronger incentives, pre-ASU, to boost the ERR. Our second measure is the ratio of fair value of pension assets to operating income (Table 7); it captures how powerful the ERR is as a lever for boosting operating income (Bergstresser, Desai, and Rauh

2006). As the expected return component is calculated as ERR times fair value of ending pension assets, any increase in the ERR has a greater impact on operating income for a firm with large pension assets; the ratio of fair value of plan assets to operating income hence captures the extent of this multiplier effect. Sponsors with greater multipliers, we assume, have stronger incentives pre-ASU to boost the ERR.

In Tables 6 and 7, we partition the sample by median values of the proxies, creating a subsample with high incentives and a subsample with low incentives. We separately estimate Equation (1) for each of the two resulting subsamples, with Panel A (Panel B) presenting results for the subsample with high (low) incentives. Our subsamples display economically significant differences along the partitioning variables: median expected returns are 94.5% (54%) of other pension costs for the high (low) subsample; and median plan assets to operating income is 2.3 (0.4) for the high (low) subsample.

The results in Tables 6 and 7 indicate that the reduction in risk-taking is concentrated in firms with greater financial reporting benefits to holding risky pension assets prior to ASU 2017-07, consistent with H2. In Tables 6 and 7, the coefficient of interest *US*POST* is significant at the <0.01 level throughout in Panel A for the high incentive subsamples, whereas it is not significantly different from zero in Panel B, for the low incentive subsamples. Within the high-incentive subsample, the coefficients indicate an incremental reduction in US firms' equities to the tune of 5.64% and 2.51% compared to Canadian firms, in Tables 6 and 7 respectively. This translates into 26% and 11.5% respectively of one standard deviation in US *%EQUITY* from the pre-ASU period – indicating economically significant shifts.

Collectively, these results present a picture of stronger reductions in equity investment for the firms that had stronger incentives to boost the ERR – whose reporting-based incentives for risk-taking were stronger to begin with. As these types of firms likely had larger risky

positions to unwind after ASU 2017-07, these cross-sectional patterns help us to isolate the ASU's reduction of reported-based incentives as a driving factor behind the results we observe.

Cross-sectional variation in the ASU's unwinding of the financial reporting incentives for risk-taking

In our second set of cross-sectional partitions, we focus on the strength of the ASU's purported effect, of *reducing* the financial reporting benefits of risk-taking. If the reduction in risk-taking is attributable to the ASU's shifting of expected return out of operating income, we would expect a larger effect for firms for which operating income was particularly important as a summary metric of performance – and for which the financial reporting benefits of a higher expected return (in that operating income) have hence declined more significantly.

We operationalize the importance of operating income as a summary metric for valuation with two proxies. First, we isolate firms for which at least one analyst (on the I/B/E/S database) issues an explicit forecast of operating income. Analyst focus on operating income is interesting for multiple reasons – it could indicate firms for which the operating income is an intrinsically more useful summary performance measure relative to net income (for reasons associated with firm fundamentals, industry fundamentals, or firm reporting behavior).[34] Analysts' focus on operating income could also engender greater attention to that metric from other investors and market participants. Second, we directly examine the decision-usefulness of operating income, relative to net income, for equity investors' valuation. To gauge this, we estimate firm-specific regressions of price on operating income, and of price on net income, and partition firms by the ratio of the R^2s from these two models, which serves as our measure of the relative value-relevance of operating income versus net income.

We present results in Table 8 (analysts' forecasts of operating income) and Table 9 (value-relevance of operating income relative to net income). In Table 8, about 45% of our

[34] Prior research on analyst forecasting decisions suggests that analysts respond to market participants' demand for value-relevant information when choosing to provide forecasts of additional summary metrics of firm performance (e.g., Brown and Sivakumar 2003, DeFond and Hung 2003).

sample firm-years have at least one analyst forecast of operating income. In untabulated estimations for Table 9, we find that the R^2s from models of price on operating income are consistently higher than from models of price on net income – the mean R^2 from operating income (net income) models is 23.2% (14%) while the median R^2 is 15% (8.06%), with very similar statistics across US and Canadian samples. The median R^2 of operating income relative to net income is 5.2 for the high subsample, versus 0.6 for the low subsample.

The subsample results in Tables 8 and 9 are broadly consistent with our expectations: in both cases, the *US*POST* interaction is significant at least at the <0.05 level for the predicted subsample (with analysts' forecasts for operating income, and higher value-relevance of operating income), while insignificant for the other subsample. The coefficients indicate an incremental reduction in US firms' equities to the tune of 2.59% among firms with analysts' operating income forecasts, and 3.12% among firms with high value-relevance of operating income. These effects translate to 11.8% and 14.3% respectively of one standard deviation of US equities.

While analyst forecasting and value-relevance partitions capture the importance of operating income as a summary metric for valuation, we conduct a final test partitioning by the importance of operating income in contracting. The Incentive Lab dataset contains data on executive compensation, including information on which performance metrics are used in compensation contracts, such as revenue, ROA, ROE, EVA, or operating income. The dataset allows us to identify firms for which operating income is used as a performance metric for any component of an executive compensation contract, such as base salary, bonus, and stock grants. As these data are not available in machine-readable form for Canadian firms, we focus this cross-sectional test within US firms with Incentive Lab data available, presenting results in Table 10. Within US firms for which operating income explicitly features in compensation contracts of the CEO or CFO (Panel A), equity investment goes down by 8.74% between pre-

and post-ASU periods (equivalent to one-third of one standard deviation of %EQUITY). In comparison, equity investment goes down by 2.53% for remaining firms (Panel B); chi-squared tests indicate that the reduction in Panel A is significantly larger than in Panel B. Collectively, these cross-sectional results provide further evidence helping to attribute the risk-reduction to ASU 2017-07's removal of expected return from operating income.

V. CONCLUSION

We examine an accounting rule change (ASU 2017-07) in the US that alters the income statement presentation of pension expense by mandating that the expected return on pension assets (along with other non-service cost components of pension expense) be separated from pension service cost and presented outside of operating income. Following ASU 2017-07, we document a reduction in affected US firms' investment in riskier pension assets, relative to a control sample of Canadian firms that report under IFRS and are hence unaffected by the mandate. We infer from this that pre-ASU financial statement presentation – wherein expected (but not actual) returns flowed into *operating* income – incentivized pension sponsors to invest in riskier assets. This inference is supported by cross-sectional tests demonstrating that the reduction in risk-taking is concentrated in sponsoring firms (1) for which the financial reporting incentives for risk-taking, pre-ASU, were stronger to begin with, and (2) for which the ASU particularly reduced those financial reporting benefits to risk-taking. Our findings highlight the role of financial statement *presentation* in driving pension risk-taking.

Our study extends Anantharaman and Chuk (2018), who document a reduction in pension risk-taking after IAS 19R alters the *measurement* of pension expense by removing the ERR from net income. In contrast, our study examines a change in the *presentation* of pension expense. However, the reduction in risk-taking that we observe in the ASU 2017-07 setting is, strikingly, of the same order of magnitude as that documented by Anantharaman and Chuk (2018) in the IAS 19R setting. This comparison yields interesting insights: first, changes arising

from very different aspects of the conceptual framework (IAS 19R tackled the relatively thorny issue of measurement in contrast to ASU 2017-07's focus on presentation) can operate through similar but not identical mechanisms (IAS 19R removes the expected return from net income, whereas ASU 2017-07 demotes it down the income statement) to generate comparable economic consequences. Second, presentation may be a more impactful standard-setting lever than generally recognized – a timely understanding as firms gear up for major changes to income statement presentation under IFRS.

Libby and Emmett (2014) characterize earnings presentation as having received "little guidance" from standard-setters, with most standard-setting activity focusing instead on measurement and timing of recognition – a pattern that is also specifically true in the context of pension accounting.[35] In addition to demonstrating that presentation carries real economic consequences in the pension setting, our findings inform on which performance metrics "matter", and specifically, does operating income matter incrementally to net income? Mechanically, operating income is a subtotal of net income, such that any earnings component that is a part of the former is by construction also included in the latter. Thus, it is difficult to determine whether managerial actions undertaken to report a favorable number for such a subtotal are driven by incentives to report a favorable number for that subtotal (i.e., operating income) specifically, or by incentives to report favorable net income. Our setting moves us closer to such inference. While net income – the bottom line – is indisputably relevant for valuation and contracting, our findings imply that at least some of the pension risk-taking observed in the pre-ASU era was in the interest of reporting higher operating income. If

[35] Libby and Emmett (2014) base these observations on the following: (i) presentation issues on structure, classification, and disaggregation of information on the income statement have shown up only intermittently on the FASB's technical agenda; (ii) no significant standards have been issued on these topics beyond "two compromises" on OCI presentation and standards on segment reporting; (iii) the basic structure and content of the income statement under US GAAP follows SEC guidance, and has remained largely unchanged for generations; (iv) joint IASB/FASB projects on financial statement presentation have to date been placed on indefinite hold (this last point has shifted recently, with IFRS 18 on financial statement presentation and disclosure being issued).

stakeholders use operating income as a measure of "core" earnings, which reflects sustainable performance going forward, then managers could be responding to those perceptions by focusing in turn on operating income.

Our findings are perhaps most surprising when considered in context of the fact that US GAAP, to date, has not formally defined operating income or formulated any rules for how it should be measured.[36] In the setting of ASU 2017-07, many commenters observed that the FASB, by requiring certain pension cost components to be presented outside operating income, would implicitly be defining operating income (ASU 2017-07, Paragraph BC21) – for example, that it would "establish a distinction between operating and non-operating expenses that exceeds those required by other accounting standards" (Price WaterhouseCoopers 2016b). Respondents also noted inconsistencies with conceptually similar components in other topic areas.[37] As "no comprehensive framework exists in GAAP to distinguish between operating and non-operating expenses" (Price WaterhouseCoopers 2016b), respondents encouraged the FASB to "address presentation of items within or outside of operating income holistically within US GAAP" (Ernst & Young 2016).[38] Capping these developments was the FASB's next

[36] The FASB has been contemplating formally developing an operating performance measure for quite some time, e.g., at least since its Agenda Consultation (2016). User feedback indicated strong support for improving the performance reporting model, citing the increasing demand for and use of non-GAAP measures as evidence of the shortcomings of GAAP income in measuring performance. However, respondents also highlighted the complexities of defining operating income in a broadly applicable manner, given the variety of industries and business models in existence; there was no forward momentum for that initiative. https://www.fasb.org/jsp/FASB/Document_C/DocumentPage?cid=1176168357653&acceptedDisclaimer=true

[37] James L. Kroeker, FASB Board member who dissented to the issuance of ASU 2017-07, summarized some of these inconsistencies: costs associated with exit or disposal activities, as long as they do not pertain to discontinued operations, and gains or losses on disposal of long-lived assets, are required to be presented within operating income. However, under ASU 2017-07 guidance, gains/losses associated with curtailing or settling a pension plan are to be presented outside operating income. This inconsistency is amplified when considering the context that curtailments/settlements are often done as part of an exit or disposal activity. In other examples, many costs associated with the passage of time are required to be presented in operating income – e.g., the accretion component associated with asset retirement obligations or interest costs embedded in the rental payments for operating leases. However, under ASU 2017-07 guidance, the interest cost component of pension cost – also a cost associated with the passage of time – will now be presented outside operating income.

[38] Consistent with this view of a more holistic approach, Jiang, Wang, and Wangerin (2018) analyze 211 financial accounting standards issued by the FASB during a 40-year period and note that some constituents expressed a preference for the FASB to issue more comprehensive standards all at once rather than a series of standards with gradual changes.

Agenda Consultation (2021), which listed the definition of operating income as a specific question on which feedback was sought from constituents.

While the FASB and the IASB initiated their review of income statement presentation as a joint project in 2004, they have eventually taken very different approaches to improving the usefulness of financial statements. The IASB's approach is arguably more systematic and holistic, as IFRS 18 (effective in 2027) addresses the presentation of the entire income statement by formally requiring operating income to be presented on the income statement. By comparison, the FASB's approach is more targeted and piecemeal, as ASU 2017-07 and ASU 2024-03 both target specific line items on the income statement, with ASU 2017-07 separating out pension costs into operating and non-operating sections of the income statement (reminiscent of IFRS 18's rearrangement of the full income statement) and ASU 2024-03 requiring disaggregated disclosures about inventory purchases, compensation, depreciation and amortization. Using ASU 2017-07 as a setting under FASB's targeted line-item approach, our results documenting real effects establish a reference point against which the broader effects of IFRS 18 can be compared in the years to come.

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Appendix A
Description of Reporting Changes Mandated by ASU 2017-07

ASU 2017-07 under US GAAP became effective for fiscal periods beginning after December 15, 2017. Its main provisions require employers to report: (1) the service cost component of periodic pension cost in the same line item or items as other compensation costs arising from services rendered by the pertinent employees during the period, as part of operating income and (2) the other components of pension cost (besides service cost) separately from the service cost component and outside a subtotal of income from operations, if such a subtotal is presented. The FASB acknowledges that an entity may use a variety of presentations and subtotals on the face of the income statement, and therefore operating income is not always presented as a subtotal on the income statement. If operating income is not presented on the income statement, ASU 2017-07 allows the entity to have discretion to present the other components of pension cost other than service cost wherever it is appropriate in the income statement (ASU 2017-07, Paragraph BC20).

The FASB's reasoning for requiring the separation of service cost from the other components is that service cost is the component that exclusively originates from employee services during the current period, and potentially has a significantly different effect in terms of information usefulness to financial statement users. Below is a summary of the change in reporting requirements under ASU 2017-07 for each of the major components of pension cost, along with the resulting effects of whether the change increases or decreases reported operating income:

	Pre-ASU 2017-07: Typically included in operating income?	Post-ASU 2017-07: Included in operating income?	Direction of effect of ASU 2017-07 on operating income
Service cost	Yes	Yes	No change
Interest cost	Yes	No	Increase
Expected return	Yes	No	Decrease
Amortization of gains/losses	Yes	No	Increase for losses Decrease for gains
Amortization of prior service cost	Yes	No	Increase

Appendix B

Variable Definitions

Variable	Description	Source
Dependent Variables		
% FIXED INCOME	Percentage of pension assets invested in fixed income securities and cash and cash equivalents	*10-K*
% EQUITY	Percentage of pension assets invested in equity securities	*10-K*
Independent Variables - Pension Characteristics		
POST	This indicator variable is set to 1 for fiscal years ending on or after Dec 15th, 2018 and set to 0 for fiscal years ending Dec 15th, 2017 to Dec 14th 2018.	
US	This indicator variable is set to 1 for US firms, and 0 for Canadian firms	
Horizon	Investment horizon, measured as the natural log of the ratio of PBO to current service cost. If current service cost is 0 or blank, we replace the service cost by a small value of 0.000001	*pbpro, pbpru, svc*
ERR	Expected rate of return	*10-K*
FVPA ($ Million)	Fair value of plan assets at the end of the period	*10-K*
PBO ($ Million)	Projected benefit obligation at the end of the period	*10-K*
Fund Ratio	Funding ratio obtained from 10-K data, measured as the fair value of plan assets divided by the projected benefit obligation	*10-K*
Fund Ratio Square	Square of *Fund Ratio*	*10-K*

Independent Variables – Firm Characteristics		
SDCF ($Million)	Operating risk, measured as the standard deviation of the ratio of cash flow from operations to book value of equity for five years, ending in the current year	*oancf, bkvlps, csho*
Market Returns	For US firms, it is the 12-month returns to S&P 500 Index for equities. For Canadian firms, it is the 12 -month returns to S&P/TSX Index for equities.	https://www.spglobal.com/spdji/en/indices/equity/sp-500/#overview; https://www.spglobal.com/spdji/en/indices/equity/sp-tsx-composite-index/#overview
Bank Rate	For US firms, it is Effective Federal Funds rate. For Canadian firms, it is the Bank of Canada interest rate.	https://fred.stlouisfed.org/series/RIFSPFFNB; https://www.bankofcanada.ca/rates/interest-rates/canadian-interest-rates/
Market Cap ($Million)	Market capitalization. It is the product of year-end share price and number of ordinary shares outstanding	*prcc_f, csho*
Size	Natural log of market cap	*prcc_f, csho*
Leverage ($Million)	Ratio of long-term debt to total assets	*dltt, at*
NOL ($ Million)	Indicator set to one if prior period has a tax loss carry forward. Else, set to zero	*tlcf*
Dividends	Total dividends divided by total assets	*dvc, at*
Partitioning Variables		
High expected return/other pension costs	This indicator variable is set equal to one when the ratio of expected return to all other components of pension cost is greater than the median, and set equal to zero otherwise. The ratio of expected return to all other components of pension cost is computed as (-1) * Dollar value of expected return divided by the value of all components of pension cost.	*Expected return in $ = pprpa* *Other remaining pension costs = (ppic+ppsc+ppopcc)*
High fvpa/operating income	This indicator variable is set equal to one when the ratio of fair value of plan assets to operating income is greater than the median, and set equal to zero otherwise. If operating income is negative, we take the average of previous 3 years' operating income. If the 3-year average is also negative, this variable is missing.	*Operating income = OIADP* *FVPA is from 10-K*

Analyst estimate available for operating profit	This indicator variable is set to one if there is at least one analyst estimate of operating profit, and set to zero otherwise	*IBES*
High value relevance of operating income	This indicator variable is set to one when the ratio of the R-squared of the price-operating income regression to the R-squared of the price-net income regression is greater than the median, and set equal to zero otherwise. We define the median values of this ratio separately for Canadian and US firms. Both the price-operating income regression and price-net income regression are run using 16 quarters of data just prior to the beginning of the post-period. Operating Income regression: $P_{i,t+3} = \alpha_1 + \beta_1 * Operating\ Income_{i,t} + \epsilon_1$ Net Income regression: $P_{i,t+3} = \alpha_2 + \beta_2 * Net\ Income_{i,t} + \epsilon_2$ $P_{i,t+3}$ is the market value per share defined as the closing share price three months after the fiscal quarter end; Operating income and net income are per share values.	*prccm, oiadpq, niq*
Operating income in executive compensation	This indicator variable is set to one for US firms with an operating income component in the compensation contracts of its CEO or CFO in the year immediately before ASU 2017-07, and set to zero otherwise	*Incentive Lab*

Appendix C

Entropy balancing procedure

We use entropy balancing method to achieve a balance of covariates between our treated sample (i.e., US firms) and control sample (i.e., Canadian firms). Entropy balancing creates a set of weights for the control sample such that the first, second, and higher moments of the covariate distributions in the treatment and the reweighted control sample are equalized (Hainmueller 2012). To achieve this, entropy balancing places higher weights on Canadian firms that are similar to the US firms along the chosen balancing dimensions (Ferri et al. 2018; McMullin & Schonberger 2020; Shroff et al. 2017). Entropy balancing is particularly helpful in preserving the size of the control sample, which is pertinent when the size of the treated and control samples are vastly different (Laurion 2020).

We choose to balance on the mean of the following variables: *Size, Leverage, SDCF, NOL, Dividend, PBO, FVPA, Fund Ratio, Fund Ratio Square,* and *Horizon*. After entropy balancing, all variables have equivalent means between treatment and reweighted control samples.

Next, we tabulate the distribution properties of the US (treatment) firms and the Canadian (control) firms before and after applying our entropy balancing procedure.

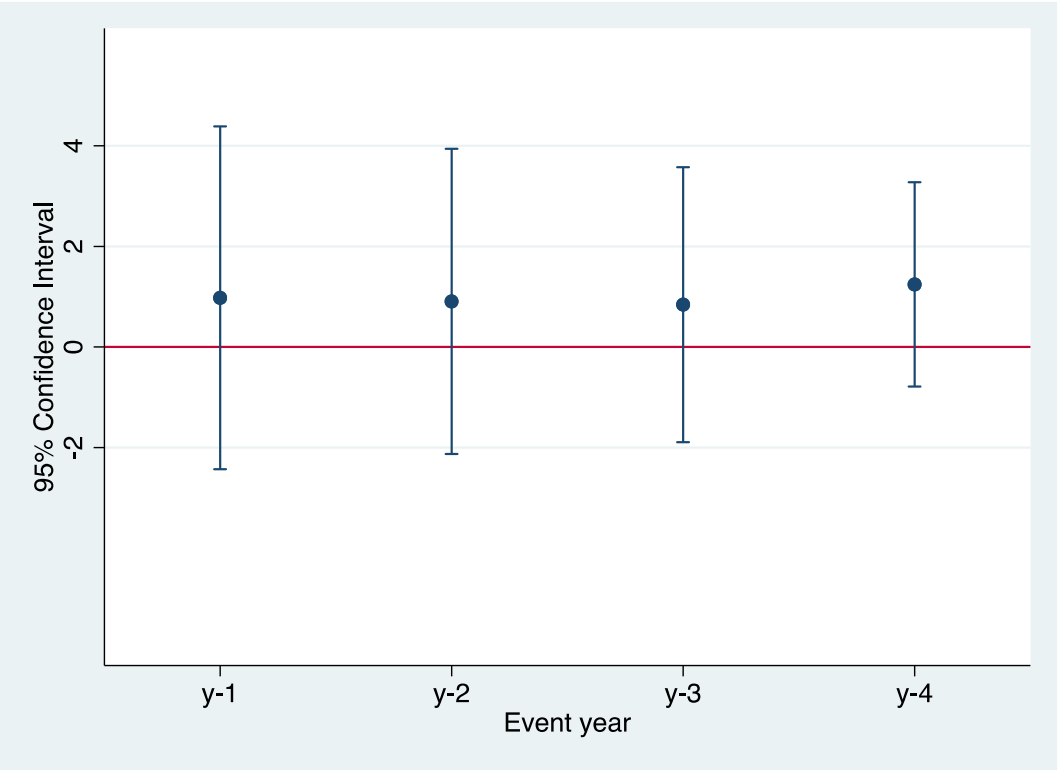
Table C1

Pre- and post-weighting distributional properties of treatment and control firms

VARIABLES	US Pre-Period			Before Entropy Balancing Canada Pre-Period			After Entropy Balancing Canada Pre-Period		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
Size	746	8.128	1.917	120	7.199	2.099	120	8.126	1.605
Leverage	746	0.252	0.189	120	0.233	0.184	120	0.252	0.155
SDCF ($'m)	746	0.338	1.201	120	0.570	1.935	120	0.339	1.220
NOL	746	0.575	0.495	120	0.542	0.500	120	0.575	0.495
Dividend	746	0.0166	0.0233	120	0.0157	0.0180	120	0.0166	0.0173
PBO (S'm)	746	1745	4187	120	1366	3020	120	1745	2997
FVPA ($'m)	746	1980	4674	120	1440	3095	120	1979	3361
Fund Ratio	746	0.836	0.194	120	0.880	0.194	120	0.836	0.194
Fund Ratio Square	746	0.737	0.328	120	0.811	0.302	120	0.737	0.276
Horizon	746	7.495	5.770	120	6.149	5.219	120	7.495	6.435

This table presents the distributional properties (mean and standard deviation) for US (treatment) and Canadian (control) firms in the original sample and after the reweighting of the control sample using entropy balancing technique. We use entropy balancing method to achieve a balance of covariates between our treated sample and control sample. We choose to balance on the mean of the variables listed in this table, using its values in the pre-period. The weights thus obtained for the control sample are used for the full period.

Figure 1
Coefficient Plot for Parallel Trends in the Pre-period



This figure plots the coefficients and 95% confidence intervals for the four years prior to the event year in order to check for parallel trends in the pre-period. We obtain these coefficients by regressing *%EQUITY* on separate binary variables coded to one for US firms in year t-1 to t-4, and 0 otherwise. The year t-5 acts as a baseline year. We include all the firm level controls along with firm fixed effects, similar to our main regression specification. The plotted coefficients represent the difference between *%EQUITY* for US firms and Canadian firms in that period as compared to the baseline year. None of the coefficients are significant. Consistent with parallel trends, we find that the coefficients are not increasing or decreasing in the pre-treatment period.

Table 1
Sample Selection

	US # Observations	Canada # Observations	Total # Observations
No of firms that sponsor a defined benefit pension plan with data for the last fiscal year before ASU2017-07	1,328	198	1,526
Less: Canadian firms reporting under US GAAP		(19)	(19)
Less: Observations with missing values for dependent variables and controls	(498)	(49)	(547)
Less: Observations dropped due to not having both pre- and post	(80)	(10)	(90)
Less: Voluntary early adopters	(4)		(4)
Number of firms in the sample	746	120	866
Number of firms X 2 (one-year before and after ASU 2017-07)	1492	240	1732

Table 2
Descriptive Statistics – USA Sample
PANEL A: USA Sample: Pre-Period

	P25	P50	P75	Mean	SD
%EQUITY	25.33	43.22	57.61	40.41	21.68
%FIXED INCOME	31.84	42.00	57.00	45.04	21.07
ERR (%)	5.580	6.500	7.070	6.198	1.352
SDCF ($'m)	0.0341	0.0648	0.133	0.338	1.201
Market Cap ($'m)	1,165	3,494	13,547	14,920	32,090
Leverage	0.0911	0.253	0.355	0.252	0.189
Horizon	3.918	4.652	7.082	7.495	5.770
Dividends	0.00110	0.00960	0.0227	0.0166	0.0233
Fund Ratio	0.747	0.842	0.937	0.836	0.194
Fund Ratio Square	0.559	0.709	0.879	0.737	0.328
NOL	0	1	1	0.575	0.495
Market Return	0.194	0.194	0.194	0.181	0.0329
Bank Rate	1.330	1.330	1.330	1.469	0.287
FVPA ($'m)	58.78	297.8	1200	1745	4187
PBO ($'m)	80.1	350.4	1351	1980	4674
Size	7.061	8.159	9.514	8.128	1.917

PANEL B: USA Sample: Post-Period

	P25	P50	P75	Mean	SD
%EQUITY	16.84	36	52	34.82	21.56
%FIXED INCOME	35.30	47.16	64.78	50.37	22.67
ERR (%)	5.202	6.250	7	5.968	1.399
SDCF ($'m)	0.0322	0.0625	0.128	0.343	1.211
Market Cap ($'m)	876.6	2,935	11,525	13,753	31,026
Leverage	0.0813	0.251	0.365	0.254	0.189
Horizon	3.878	4.683	7.610	7.605	5.872
Dividends	0.00140	0.00981	0.0230	0.0173	0.0241
Fund Ratio	0.731	0.835	0.936	0.832	0.196
Fund Ratio Square	0.534	0.698	0.877	0.731	0.332
NOL	0	1	1	0.579	0.494
Market Return	-0.0624	-0.0624	-0.0624	-0.0363	0.0527
Bank Rate	2.400	2.400	2.400	2.338	0.187
FVPA ($'m)	60.4	272.6	1132	1648	4028
PBO ($'m)	74.19	325.5	1289	1882	4511
Size	6.776	7.985	9.352	7.951	1.971

Notes: All variables are defined in Appendix B. Panel A provides the descriptive statistics for US firms in the pre-ASU 2017-07 period, while panel B provides the descriptive stats for the post period

Table 3
Descriptive Statistics – Canada Sample
PANEL A: Canada Sample: Pre-Period

	P25	P50	P75	Mean	SD
%EQUITY	29.02	45.00	58.00	42.20	21.21
%FIXED INCOME	34.39	44.60	56.85	46.49	21.15
ERR (%)	3.500	3.820	4.830	4.236	1.022
SDCF ($'m)	0.046	0.092	0.159	0.570	1.935
Market Cap ($'m)	438.4	1,183	6,066	6,262	11,826
Leverage	0.070	0.214	0.347	0.233	0.184
Horizon	3.552	4.011	5.078	6.149	5.219
Dividends	0.001	0.011	0.023	0.015	0.018
Fund Ratio	0.802	0.919	0.988	0.880	0.194
Fund Ratio Square	0.643	0.844	0.976	0.811	0.302
NOL	0	1	1	0.542	0.500
Market Return	0.135	0.135	0.135	0.106	0.0616
Bank Rate	1.250	1.250	1.250	1.352	0.216
FVPA ($'m)	39.12	145.10	991.50	1,366.00	3,020.00
PBO ($'m)	43.89	149.00	980.70	1,440.00	3,095.00
Size	6.078	7.076	8.710	7.199	2.099

PANEL B: Canada Sample: Post-Period

	P25	P50	P75	Mean	SD
%EQUITY	23.50	40.50	55.75	38.66	21.01
%FIXED INCOME	35.37	46.80	62.28	49.07	22.25
ERR (%)	3.400	3.625	4.100	3.955	0.969
SDCF ($'m)	0.053	0.092	0.175	0.575	1.932
Market Cap ($'m)	322.9	960.4	4,367	5,481	11,544
Leverage	0.087	0.223	0.363	0.243	0.189
Horizon	3.491	4.063	5.264	6.375	5.448
Dividends	0.002	0.011	0.0250	0.019	0.029
Fund Ratio	0.816	0.900	0.983	0.867	0.193
Fund Ratio Square	0.665	0.810	0.966	0.789	0.297
NOL	0	1	1	0.567	0.498
Market Return	-0.189	-0.189	-0.189	-0.142	0.0927
Bank Rate	2	2	2	2	0
FVPA ($'m)	33.50	127.30	876.20	1,245.00	2,767.00
PBO ($'m)	40.07	137.50	920.00	1,330.00	2,859.00
Size	5.777	6.866	8.382	6.915	2.178

Notes: All variables are defined in Appendix B. Panel A provides the descriptive statistics for Canadian firms in the pre-ASU 2017-07 period, while panel B provides the descriptive stats for the post period

Table 4

Correlation Matrix

	%EQUITY	%FIXED INCOME	ERR(%)	Leverage	Dividends	SDCF ($'m)	NOL	Fund Ratio	Fund Ratio Square	Horizon	Market Return	Bank Rate	FVPA ($'m)	PBO ($'m)	Market Cap ($'m)	Size
%EQUITY	1.00															
%FIXED INCOME	-0.48***	1.00														
ERR(%)	0.45***	-0.43***	1.00													
Leverage	-0.09***	0.04	-0.05**	1.00												
Dividends	-0.07***	0.03	0.04	0.15***	1.00											
SDCF ($'m)	-0.02	0.00	-0.00	0.30***	0.13***	1.00										
NOL	-0.14***	0.06**	-0.16***	0.20***	-0.03	0.06**	1.00									
Fund Ratio	-0.00	0.10***	0.16***	-0.15***	0.06**	-0.06**	-0.18***	1.00								
Fund Ratio Square	-0.01	0.10***	0.11***	-0.18***	0.04	-0.07**	-0.18***	0.97***	1.00							
Horizon	0.02	-0.04	-0.04	-0.11***	-0.12***	0.02	-0.03	0.06**	0.06**	1.00						
Market Return	0.12***	-0.11***	0.08***	0.00	-0.03	-0.02	0.01	-0.02	-0.02	-0.01	1.00					
Bank Rate	-0.13***	0.13***	-0.09***	-0.00	0.02	0.01	0.01	0.00	0.00	0.02	-0.92***	1.00				
FVPA ($'m)	-0.09***	-0.00	0.16***	0.03	0.17***	0.12***	-0.06**	0.10***	0.07**	-0.17***	0.01	-0.02	1.00			
PBO ($'m)	-0.08***	-0.01	0.17***	0.03	0.18***	0.12***	-0.04	0.06**	0.03	-0.16***	0.01	-0.02	0.99***	1.00		
Market Cap ($'m)	-0.09***	-0.05*	0.06**	0.03	0.31***	0.10***	-0.03	0.08***	0.06**	-0.15***	0.02	-0.02	0.70***	0.69***	1.00	
Size	-0.19***	0.03	-0.01	0.17***	0.32***	0.05**	-0.01	0.06**	0.05*	-0.27***	0.04	-0.05*	0.48***	0.48***	0.63***	1.00

Notes: This table presents Pearson correlation coefficients. All variables are defined in Appendix B.

*, **, *** Denote statistical significance at 10 percent, 5 percent, and 1 percent levels respectively

Table 5

Difference-In-Difference Regressions of %EQUITY or % FIXED INCOME Using US Firms (Treatment) and Canadian Firms (Control)

%EQUITY (%FIXED INCOME) = β0 + β1 POST + β2 US + β3 US * POST + Σ CONTROLS

	Panel A: No Entropy Balancing		Panel B: Entropy Balancing	
DEPENDENT VARIABLE	%EQUITY	%FIXED INCOME	%EQUITY	%FIXED INCOME
	(1)	(2)	(3)	(4)
POST	-2.507***	2.373**	-3.437***	3.538***
	(0.957)	(1.055)	(1.091)	(1.275)
US X POST	-2.238***	2.384***	-2.158**	2.091**
	(0.830)	(0.918)	(0.926)	(0.986)
Size	0.669	-0.738	1.500	-1.247
	(1.114)	(1.071)	(1.057)	(1.050)
Leverage	5.290	-5.291	1.316	-5.543
	(4.189)	(5.768)	(6.796)	(7.902)
SDCF	0.0446	-0.0607	-0.121	-0.152
	(0.453)	(0.518)	(0.452)	(0.556)
NOL	2.823***	-2.044**	2.187***	-1.870**
	(0.876)	(1.020)	(0.844)	(0.852)
Fund Ratio	-33.52	31.78	-42.67	4.650
	(42.72)	(55.08)	(51.47)	(62.96)
Fund Ratio Square	0.218	3.083	3.221	21.75
	(25.41)	(31.70)	(27.44)	(34.34)
Horizon	-0.0472	0.0696	0.0348	0.111
	(0.215)	(0.242)	(0.149)	(0.154)
Dividends	1.647	6.862	-11.57	20.66
	(20.70)	(23.53)	(20.91)	(21.55)
Market Return	8.206*	-0.996	1.410	5.303
	(4.556)	(4.655)	(5.156)	(5.763)
Bank Rate	1.030	0.440	0.468	0.897
	(1.236)	(1.099)	(1.430)	(1.383)
Constant	57.85***	23.49	59.07**	35.50
	(19.70)	(24.16)	(24.43)	(28.97)
Observations	1,732	1,732	1,732	1,732
R-squared	0.244	0.188	0.248	0.189
Number of firms	866	866	866	866
Cluster SE by firm	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES

Notes: All variables are defined in Appendix B. Standard errors are clustered by firm.
*, **, *** Denote statistical significance at 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed tests). Robust standard errors are shown in parentheses.
Panel A presents the results of the difference-in-difference specification without entropy balancing, while panel B presents the results with entropy balancing. The details of entropy balancing are presented in Appendix C. POST is an indicator variable that is set to 1 for fiscal years ending on or after Dec 15th, 2018, and set to 0 for fiscal years ending Dec 15th, 2017 to Dec 14th 2018. The variable of interest US X POST is an interactive term. Due to firm fixed-effects, the coefficient of US is suppressed.

Table 6
Difference-In-Difference Regressions of %EQUITY Using US Firms (Treatment) and Canadian Firms (Control): Partitioning on the magnitude of expected return to other pension cost components

%EQUITY = β0 + β1 POST + β2 US + β3 US * POST + Σ CONTROLS

	PANEL A: **High values of expected return/other pension costs**	**PANEL B:** **Low values of expected return/other pension costs**
POST	-2.582**	-1.097
	(1.104)	(1.670)
US X POST	-5.640***	-0.353
	(1.237)	(1.405)
Size	1.658	0.549
	(1.609)	(1.492)
Leverage	2.551	6.331
	(10.08)	(6.038)
SDCF	-0.288	2.074
	(0.528)	(1.541)
NOL	2.262*	1.676*
	(1.245)	(0.969)
FundRatio	-216.0	-14.14
	(139.2)	(50.56)
FundRatio Square	76.53	-1.967
	(69.49)	(30.62)
Horizon	0.105	-0.185
	(0.170)	(0.510)
Dividends	-1.602	-22.75
	(56.09)	(15.39)
Market Return	16.71***	7.444
	(5.534)	(8.746)
	5.306**	-1.365
	(2.237)	(1.683)
Constant	142.8**	51.75**
	(68.91)	(21.70)
Observations	820	824
R-squared	0.335	0.270
Number of firms	410	412
Cluster SE by firm	YES	YES
Firm FE	YES	YES

Notes: All variables are defined in Appendix B. Standard errors are clustered by firm.
*, **, *** Denote statistical significance at 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed tests). Robust standard errors are shown in parentheses.
Panel A contains firms with high values (i.e. above median) of the ratio of expected return to all other components of pension costs in the year immediately before ASU 2017-07, and panel B contains firms with low values (i.e. below median) of the same ratio in the year immediately before ASU 2017-07. If expected returns or any of the other costs are missing, this ratio is left undefined. We define the median values of this ratio separately for Canadian and US firms in the year immediately before ASU 2017-07. POST is an indicator variable that is set to 1 for fiscal years ending on or after Dec 15th, 2018 and set to 0 for fiscal years ending Dec 15th, 2017 to Dec 14th 2018. The variable of interest US X POST is an interactive term. Due to firm fixed-effects, the coefficient of US is suppressed.

Table 7
Difference-In-Difference Regressions of %EQUITY Using US Firms (Treatment) and Canadian Firms (Control): Partitioning on the magnitude of pension assets to operating income

%EQUITY = β0 + β1 POST + β2 US + β3 US * POST + Σ CONTROLS

	PANEL A: **High values of fvpa/operating income**	**PANEL B:** **Low values of fvpa/operating income**
POST	-2.102**	-5.030***
	(1.007)	(1.642)
US X POST	-2.513***	-1.346
	(0.716)	(1.513)
Size	0.555	0.524
	(1.544)	(1.985)
Leverage	2.723	-1.142
	(4.155)	(14.34)
SDCF	-0.415	1.481
	(0.438)	(2.012)
NOL	1.159	2.830**
	(0.954)	(1.272)
FundRatio	-60.33	-42.78
	(47.65)	(61.80)
FundRatio Square	23.81	-3.273
	(27.10)	(33.61)
Horizon	0.101	-0.182
	(0.0731)	(0.348)
Dividends	-9.907	-15.97
	(21.83)	(21.55)
Market Return	1.248	0.0555
	(4.323)	(7.425)
Bank Rate	-0.0537	0.125
	(1.047)	(2.446)
Constant	67.97***	75.01**
	(20.72)	(35.14)
Observations	832	832
R-squared	0.286	0.265
Number of firms	416	416
Cluster SE by firm	YES	YES
Firm FE	YES	YES

Notes: All variables are defined in Appendix B. Standard errors are clustered by firm.
*, **, *** Denote statistical significance at 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed tests). Robust standard errors are shown in parentheses.
Panel A contains firms with high values (i.e. above median) of the ratio of fair value of plan assets to operating income in the year immediately before ASU 2017-07, and panel B contains firms with low values (i.e. below median) of this ratio in the year immediately before ASU 2017-07. If operating income is negative, we use the average operating income in the past three years ending in the current year. If the three-year average operating income is negative, this variable is undefined and the observation is removed from this analysis. We define the median values of this ratio separately for Canadian and US firms in the year immediately before ASU 2017-07. POST is an indicator variable that is set to 1 for fiscal years ending on or after Dec 15th, 2018 and set to 0 for fiscal years ending Dec 15th, 2017 to Dec 14th 2018. The variable of interest US X POST is an interactive term. Due to firm fixed-effects, the coefficient of US is suppressed.

Table 8
Difference-In-Difference Regressions of %EQUITY Using US Firms (Treatment) and Canadian Firms (Control): Partitioning on whether analyst estimate is available for operating income

%EQUITY = β0 + β1 POST + β2 US + β3 US * POST + Σ CONTROLS

	PANEL A: Analyst estimate available for operating income	**PANEL B:** Analyst estimate not available for operating profit
POST	-2.956**	-3.776***
	(1.238)	(1.422)
US X POST	-2.593**	-1.194
	(1.096)	(5.067)
Size	2.464	-0.283
	(1.665)	(1.556)
Leverage	-4.214	8.682
	(5.352)	(7.286)
SDCF	-0.175	-0.00356
	(1.065)	(0.282)
NOL	-0.512	3.691***
	(0.814)	(1.198)
FundRatio	61.20	-77.81
	(106.3)	(64.30)
FundRatio Square	-47.24	18.19
	(61.97)	(34.12)
Horizon	-0.141	0.299**
	(0.205)	(0.138)
Dividends	-42.90**	-15.46
	(20.09)	(18.17)
Market Return	-4.303	3.782
	(5.763)	(6.063)
Bank Rate	-0.478	0.828
	(1.782)	(1.625)
Constant	2.579	90.69***
	(45.73)	(30.12)
Observations	792	942
R-squared	0.284	0.246
Number of firms	396	470
Cluster SE by firm	YES	YES
Firm FE	YES	YES

Notes: All variables are defined in Appendix B. Standard errors are clustered by firm.
*, **, *** Denote statistical significance at 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed tests). Robust standard errors are shown in parentheses.
Panel A contains firms that have at least one analyst estimate of operating profit in the year immediately before ASU 2017-07, and panel B contains firms with no analyst estimate of operating profit in the year immediately before ASU 2017-07. Firms that are not present in the IBES database are treated as not having any analyst estimate of operating profit, i.e. they are included in the Panel B sub-sample. POST is an indicator variable that is set to 1 for fiscal years ending on or after Dec 15th, 2018 and set to 0 for fiscal years ending Dec 15th, 2017 to Dec 14th 2018. The variable of interest US X POST is an interactive term. Due to firm fixed-effects, the coefficient of US is suppressed.

Table 9
Difference-In-Difference Regressions of %EQUITY Using US Firms (Treatment) and Canadian Firms (Control): Partitioning on value-relevance of operating income relative to net income

%EQUITY = β0 + β1 POST + β2 US + β3 US * POST + Σ CONTROLS

	PANEL A: **High value relevance of operating income**	**PANEL B:** **Low value relevance of operating income**
POST	-3.533***	-4.334***
	(1.306)	(1.315)
US X POST	-3.126***	-0.740
	(1.131)	(1.110)
Size	1.157	-0.00436
	(1.626)	(1.849)
Leverage	9.302	1.909
	(12.82)	(4.936)
SDCF	1.496	-0.232
	(1.939)	(0.440)
NOL	2.816***	0.720
	(0.885)	(1.364)
FundRatio	-42.01	-61.28
	(67.89)	(48.61)
FundRatio Square	3.663	11.94
	(35.67)	(27.38)
Horizon	0.244*	-0.0151
	(0.147)	(0.260)
Dividends	-0.659	-23.52
	(38.08)	(14.35)
Market Return	4.653	-4.152
	(5.419)	(6.028)
Bank Rate	2.015	-1.542
	(1.938)	(1.723)
Constant	54.59	88.22***
	(35.02)	(23.16)
Observations	866	866
R-squared	0.220	0.309
Number of firms	433	433
Cluster SE by firm	YES	YES
Firm FE	YES	YES

Notes: All variables are defined in Appendix B. Standard errors are clustered by firm.
*, **, *** Denote statistical significance at 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed tests). Robust standard errors are shown in parentheses.
Panel A contains firms with high (i.e. above median) value relevance of operating income as compared to net income, and panel B contains firms with low (i.e. below median) value relevance of operating income as compared to net income. Value relevance of operating income is calculated as the ratio of R-square of operating income regression to the R-square of net income regression using 16 quarters of data just prior to the beginning of the post-period.
We define the median values of this ratio separately for Canadian and US firms in the period immediately before ASU 2017-07. POST is an indicator variable that is set to 1 for fiscal years ending on or after Dec 15th, 2018 and set to 0 for fiscal years ending Dec 15th, 2017 to Dec 14th 2018. The variable of interest US X POST is an interactive term. Due to firm fixed-effects, the coefficient of US is suppressed.

Table 10
Regressions of %EQUITY Using US Firms in the Pre-period (Treatment) and US Firms in the Post-period (Control): Partitioning on whether operating income is used in compensation contracts

%EQUITY = β0 + β1 POST + Σ CONTROLS

	PANEL A: **Has operating income in executive compensation**	**PANEL B:** **Doesn't have operating income in executive compensation**
POST	-8.748**	-2.553***
	(3.643)	(0.884)
Size	-1.920	-0.102
	(2.133)	(1.503)
Leverage	16.90	-2.877
	(13.47)	(4.140)
SDCF	4.721**	-0.127
	(2.053)	(0.448)
NOL	3.316	2.455
	(3.296)	(1.529)
FundRatio	28.81	-82.17
	(135.7)	(130.3)
FundRatio Square	-37.92	32.83
	(93.34)	(75.12)
Horizon	0.447	-0.889**
	(0.352)	(0.445)
Dividends	81.95***	-2.097
	(25.60)	(69.56)
Market Return	20.93	20.22***
	(21.35)	(6.896)
Bank Rate	7.935	2.059
	(5.580)	(1.713)
Constant	26.55	82.23
	(52.42)	(53.60)
Difference in coefficient of POST across the two sub-samples	chi2(1) = 5.76** Prob > chi2 = 0.016	
Observations	235	611
R-squared	0.301	0.313
Number of firms	119	309
Cluster SE by firm	YES	YES
Firm FE	YES	YES

Notes: All variables are defined in Appendix B. Standard errors are clustered by firm.
*, **, *** Denote statistical significance at 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed tests). Robust standard errors are shown in parentheses.
This test is run only on US firms covered by the Incentive Lab database. Panel A contains US firms with operating income component in the compensation contracts of the CEO or CFO in the year immediately before ASU 2017-07, while US firms without operating income component in the compensation contracts of its executives are in panel B. POST is an indicator variable that is set to 1 for fiscal years ending on or after Dec 15th, 2018 and set to 0 for fiscal years ending Dec 15th, 2017 to Dec 14th 2018. The variable of interest is POST.