

# **Multiemployer Plans: Their Current Circumstances in Historical Context**

## **Final Report**

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## ABSTRACT

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Private sector multiemployer pension plans are negotiated by unions with groups of employers, typically in the same industry. As of 2014, about 10.1 million employees and retirees are covered by about 1,400 multiemployer pension plans.<sup>1</sup> These plans were well funded during the 1990s, saw funding levels collapse in the wake of the dot-com bubble bursting at the turn of the century, and have continued to decline.

The Multiemployer Pension Reform Act (MPRA) of 2014, introduced as a response to the decline in health of a significant number of multiemployer plans, has not proven to be a cure-all. As of September 2017, the Treasury has approved only three of the 15 benefit-cut requests submitted by these plans. Although five applications have been denied and three withdrawn, four applications still remain under review. So, while the ultimate effectiveness of MPRA still remains to be seen, it is clear that other solutions must be explored to meet the multiemployer challenge.

At this stage, the majority of proposed solutions to the multiemployer crisis entail (1) alleviating the burden of orphan members on plans (those whose employers have exited the system) through partitions to the Pension Benefit Guaranty Corporation (PBGC) and/or (2) providing subsidized loans, with the government lending directly at reduced rates or encouraging private sector loans through government guarantees. Whatever the ultimate solution, a case can be made for employers (tailored not to sink already fragile plans), plan participants, and taxpayers to bear some of the burden.

A concerted effort to solve the multiemployer crisis must include a recognition of how plans found themselves in this desperate plight. The plans that have already applied for benefit cuts under MPRA tend to be local or regional plans stationed in areas of decline or those that had contributions concentrated in a large, single employer that failed or withdrew from the plan. In general, the worst-off plans – those labeled “critical-and-declining” – have lower funded ratios, a larger share of inactive members, and more severe negative cash flow. They also pay less of their actuarially required contributions (ARC). One clear warning sign for plans is a negative cash-flow rate in excess of -10 percent. Based on this measure, there are 11 relatively large critical plans – covering about 86,000 members – that could become “critical-and-declining” in the near term. Early action that focuses on some of these indicators might be able to stabilize other plans heading for trouble. Any solution to the multiemployer problem must be comprehensive and forward-looking – helping not only those in serious trouble today but also staving off future problems.

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<sup>1</sup> U.S. Department of Labor (2016a).

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## EXECUTIVE SUMMARY

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Multiemployer defined benefit plans are created by collective bargaining agreements between at least one labor union and two or more employers, typically in the same industry. As of 2014, about 10.1 million employees and retirees are covered by about 1,400 multiemployer defined benefit pension plans – a small system compared to other employer-sponsored systems. For comparison, the private sector defined contribution (DC) system contains just over 90 million participants, private sector single-employer defined benefit (DB) plans cover 27.7 million, and state and local DB plans cover 29.3 million.<sup>2</sup> Participants in the multiemployer system span many industries, but almost 40 percent work in the construction industry; construction plans generally rely on a large number of small contributing employers.<sup>3</sup> About 15 percent of multiemployer plan participants are in the transportation industry and are covered by Teamster plans, which tend to be among the largest plans. Other industries in which multiemployer plans operate include manufacturing, retail trade, health care, entertainment, communication workers, print news media, printing, and mining. The number of active participants in multiemployer plans has declined in all industries since the turn of the century, with manufacturing and transportation experiencing the largest decline.

### How Did Multiemployer Plans Reach This Point?

Multiemployer plans thrived during the 1980s and 1990s; the stock market soared, participants had plenty of work, and employers were making good profits. By the late 1990s, many plans were fully funded, but unions did not want to interrupt the flow of contributions because restarting the contributions when markets cooled would require reducing other compensation components. The downside of the reluctance to cut contributions was that plans repeatedly increased benefits to ensure contributions remained tax deductible for employers. Having expanded benefits during the 1980s and 1990s, the plans saw funding levels collapse in the wake of the bursting of the dot-com bubble at the turn of the century, and they continued to decline through the 2007–2008 financial crisis and subsequent economic downturn.

The Pension Protection Act (PPA), which first took effect in 2008, classified plans into three financial risk zones: red (for those with a projected funding deficiency within four or five years, termed “critical”), yellow (for those with serious, but less imminent, problems – termed “endangered”), and green (all the other plans). Before the 2007-2008 financial crisis, 78 percent of plans were in the green zone, 13 percent in the yellow, and 9 percent in the red. The crisis caused the markets to crash and the economy to falter, causing unfunded liabilities to spike and the number of troubled plans to soar. As the economy and the stock market began to recover, a

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<sup>2</sup> See U.S. Department of Labor (2016a); and U.S. Census Bureau (2014).

<sup>3</sup> This analysis uses industry codes provided by the Pension Benefit Guaranty Corporation (PBGC) for each multiemployer plan in the 5500 database. The PBGC codes are meant to better reflect the industry of employers and unions that participate in a given plan in the case where the original industry code reported in the 5500 is too broad or vague.

large share of multiemployer plans moved from yellow back to green, but the share in the red zone declined only slightly, remaining at about 27 percent.<sup>4</sup> Today, the construction industry is best off, with only 21 percent of plans currently in the red zone, 19 percent in the yellow, and 60 percent in the green. The manufacturing, transportation, and retail industries are worst off, and the service industry is similar to the overall average.

## **Structural Challenges**

In addition to being buffeted by financial crises, the multiemployer system faces three major structural challenges, as summarized below.

*Increasing Ratio of Inactive to Total Participants.* Like single employer pension plans in the private sector – as well as state and local pension plans – multiemployer plans have seen their ratio of inactives to total participants rise over the last 20 years. In 1981, inactive participants represented about one-quarter of total participants across multiemployer plans. By 2014, this percentage had increased to 61 percent – more than double the level in 1981.<sup>5</sup> Most of today’s plan participants are older individuals, who have accumulated substantial benefits under the plan and are now retired or close to retirement. The rising proportion of inactives has been particularly challenging for multiemployer plans because, due to the funding structure of these plans, unfunded liabilities for inactives are financed through contributions that are closely linked to the relatively shrinking population of actives.

*Inadequate Withdrawal Liabilities and Burden of “Orphaned” Workers.* “Orphaned” participants are plan members that formerly worked for a company that no longer contributes to the plan. Employers in multiemployer plans are allowed to exit the plan at any time (subject to collective bargaining obligations), leaving their beneficiaries “orphaned.” While these orphaned workers no longer accrue benefits, they remain entitled to the vested benefits that they have earned to date. As of 2015, orphans represent 1.6 million participants in multiemployer plans – about 15 percent of all participants. To ensure payment of benefits to orphaned members, the law requires exiting employers to pay a withdrawal liability to cover their share of the plan’s underfunding (if any). The system, however, has serious limitations and often leaves the remaining employers burdened. To the extent that withdrawing employers do not pay enough to cover the full cost of their members who remain in the plan, the burden falls to the remaining employers. Unsurprisingly, orphans are a much larger share of total participants for plans in the red zone (27.5 percent) than for those in the yellow and green zones (3.8 percent and 10.1 percent, respectively).

*Cyclical Nature of Construction.* Some multiemployer plans in the construction industry (the largest single industry in the system) reported employment declines of 30 percent or more in the last recession. For a fully funded plan, such a reduction in contributions would not be an issue,

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<sup>4</sup> While many plans moved from yellow to green after the crisis, a plan in the green zone does not have zero risk of failure. In fact, 2 of the 3 largest “critical-and-declining” plans were in the green zone in 2010.

<sup>5</sup> U.S. Department of Labor (2016b).

because less work means fewer accrued benefits for plan participants. But for a financially troubled plan, the contributions for each active worker must cover not only the costs of the worker's future benefits but also a payment toward reducing the plan's unfunded liability. Thus, when the number of active workers declines, the unfunded liability inevitably grows.

In short, multiemployer plans, like other employer plans, have been challenged by the two financial crises since 2000. While the majority of multiemployer plans are returning to financial health, a substantial minority face serious funding problems that are exacerbated by the unique structural challenges listed above.

### **How Big Is the Hole?**

The "hole" can be defined in a number of ways – the total unfunded liability of all 1,400 multi-employer plans, the unfunded liability of plans in the red zone, or the unfunded liability of the subset of red-zone plans described as "critical-and-declining" under the Multiemployer Pension Reform Act of 2014.

As mentioned above, the PPA required trustees, employers, and unions to look past funded ratios on a single date and take an active forward-looking approach to managing their plans. Based on each plan's assessment of its financial health over the next five to 10 years, the PPA assigned them to one of three financial risk zones: red, yellow, and green. The bulk of multiemployer plans have taken remedial action and put themselves on a sustainable path, but a significant number – primarily those in the red zone – still face serious challenges going forward.

Plans in the red zone make up more than one-quarter of all multiemployer plans and cover approximately one-third of participants – the bulk of whom work in three industries (transportation, services, and manufacturing). Interestingly, the funded ratio across the three zones does not differ dramatically. The key determinant of a plan's projected financial health is inactive participants (retirees and vested members) as a percent of total members. This percentage is key because the active participants (and their employers) make the contributions, while retirees receive the benefits. A large and increasing percentage of inactives leads benefits to exceed contributions, until the source of contributions begins to disappear. For critical-and-declining plans (the worst-off subgroup of the red zone plans), inactives account for 84 percent of total members, compared with 65 percent or less for other categories. The pattern of cash flow by zone mirrors that of the inactive percentage.

The total unfunded liability for all red-zone plans is about \$187 billion.<sup>6</sup> Of the \$187 billion, \$75.9 billion is needed for the critical-and-declining plans. The 15 plans that have already applied to

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<sup>6</sup> The focus throughout this study is the current liability, even though the PPA classifications are based on the actuarial measure. The current value is the most conservative measure and similar to the one used by the PBGC. It is based on the market value of plan assets and a liability calculated using a four-year average yield on 30-year Treasuries as the discount rate. The PBGC number is also based on the reported market value of assets, but adjusts the reported vested liabilities using a standardized interest rate factor along with an assumed mortality table that



the Treasury requesting the ability to cut accrued benefits for plan participants account for \$45.3 billion of the \$75.9 billion.

### **What Are the Options for Filling the Hole?**

At this stage, the majority of proposed solutions to the problems facing critical-and-declining plans and multiemployer plans more generally involve (1) alleviating the burden associated with orphan participants (through partitions to the PBGC); and (2) providing subsidized loans.

In terms of the orphans, experts have suggested that the Pension Benefit Guaranty Corporation (PBGC) be given the authority and resources to head off insolvency by allowing partitions.<sup>7</sup> A partition would allow a plan to transfer to the PBGC some of the liability for orphan participants whose employer has left the plan. This shift would put the plan in a better position to fund ongoing costs with contributions.<sup>8</sup>

Three proposed solutions – the Keep our Pension Promises Act of 2015 (KOPPA) sponsored by Senator Bernie Sanders (I-Vt.) and Rep. Marcy Kaptur (D-Ohio), as well as two relatively similar proposals by Davey Grubbs of the of the North Carolina Committee to Protect Pensions (NCPP) and Bernie Anderson of the Wisconsin Committee to Protect Pensions (WCPP) – involve shifting a portion of the liability for the worst off plans to the PBGC.

Analysis by the Center for Retirement Research (CRR) estimates that transferring a portion of the current orphan liabilities (benefits up to the PBGC-guarantee level) to the PBGC for all critical-and-declining plans would cost \$35 billion – roughly one-half of the unfunded liability for this group. Extending this relief to all plans in the red zone would increase costs by another \$14 billion. Eliminating the burden of existing orphans for all multiemployer plans would cost about \$88 billion. Recognizing the burden that absorbing orphan liabilities would put on the PBGC, the proposals for partitioning also include additional revenue to the PGBC. Proposals by both the NCPP and the WCPP advocate for membership fees ranging from 1 to 5% of benefits, with higher

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reflects the cost of purchasing an annuity at the beginning of the year. If the liability under the current view is eliminated, the problem is really solved.

<sup>7</sup> U.S. Government Accountability Office (2013b). The Create Jobs and Save Benefits Act of 2010, which was not adopted, would have specifically authorized the use of partitions for plans meeting certain requirements. As of 2013, the PBGC had performed only three partitions: the Council 30 of the Retail, Wholesale, and Department Stores Union plan in 2010; the Chicago Truck Drivers Union Pension Plan in 2010; and former Hostess Brands' employees in the Bakery and Sales Drivers Local 33 Industry Pension Fund in 2014. In these cases, instead of administering payments for the orphaned participants, the PBGC provided funding to the plan to cover the orphaned participants' guaranteed benefits. More recently, the application for a partition of the United Furniture Workers was approved under MPRA.

<sup>8</sup> To be eligible for a partition under MPRA, the plan sponsor must show that the plan has taken all reasonable measures to avoid insolvency (including applying the maximum possible benefit suspensions allowed under MPRA) and that partition is necessary for the plan to remain solvent. Under the partition, beneficiaries would receive the minimum benefit allowable under the law – the lesser of 110% of PBGC guarantee or their accrued benefit with additional protections for the aged and disabled. However, the plan gets some relief because the PBGC is responsible for benefits up to the PBGC guarantee, leaving the plan to fund only the difference between the PBGC-guarantee and reduced benefits promised under MPRA.

fees paid by plans with more severe risk status. KOPPA focuses on changing certain tax laws – specifically the “like-kind exchange” and “minority valuation discount” provisions of the Internal Revenue Code – to come up with the additional revenue.

The key question is the impact that orphan relief would have on the financial status of critical-and-declining plans. The analysis in this report finds that, removing the orphan burden restores long-term solvency to 7 of the 15 plans seeking relief through the Multiemployer Pension Reform Act (MPRA), suggesting that alleviating the pressure of orphan costs helps, but is not a cure-all.

In terms of loans, two organizations, United Parcel Service (UPS) and the International Brotherhood of Teamsters, have suggested subsidized loans as a way to address the financial challenges facing multiemployer plans. Partially in response to their challenges with Central States Teamsters, UPS would have the government provide five-year, low-interest-rate loans to address the negative cash flows experienced by critical-and-declining plans. The International Brotherhood of Teamsters would establish a nonprofit Pension Rehabilitation Corporation to structure loans – with government guarantees and private capital – to pay off pension legacy deficits for both multiemployer and single-employer defined benefit plans.

### **Who Should Bear the Burden?**

Given the current financial constraints facing the PBGC, the chief questions are not only what parties will bear the financial burden of the multiemployer solution, but also how to forestall the insolvency of the PBGC’s multiemployer program? In the end, only three parties are available to bear the burden: (1) employers – through some form of increased contributions or increased PBGC premiums; (2) plan participants – through benefit reductions or membership fees; and (3) taxpayers – primarily through supporting the PBGC.

Under current law, the PBGC’s insurance programs must be self-supporting. Without some exogenous source of money from outside the multiemployer system – additional resources would most likely come from raising employer premiums. Based on PBGC estimates using 2014 data, doubling the PBGC insurance premium from \$26 (the 2015 premium) to \$52 would have reduced the likelihood of the PBGC facing insolvency by the end of 2024 from 43 percent to 20 percent; a six-fold increase to \$156 would have reduced the probability to zero.<sup>9</sup> However, adding this increase to what employers are already paying for may incentivize employers to withdraw. Any increase in employer PBGC premiums – without offsetting steps to alleviate financial pressures – would have to be carefully tailored to avoid accelerating the death spiral of critical-and-declining plans and pushing other red-zone plans into that category.

If nothing is done, critical-and-declining plans can pay benefits for roughly the next 10 to 15 years, on average, but then they will exhaust their assets<sup>10</sup>; and benefits for those in retirement and approaching retirement will drop to the level of the PBGC guarantee – assuming the PBGC

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<sup>9</sup> PBGC (2016b).

<sup>10</sup> Two of the three largest “critical-and-declining” plans project insolvency in less than 10 years.

has sufficient resources to satisfy that commitment. This scenario – particularly as it applied to Central States Teamsters – was the impetus behind the passage of MPRA. A welfare analysis by the CRR performed prior to passage of the MPRA found that, if the Central States Teamsters Plan achieves its assumed 7.5-percent return, benefit cuts would extend the life of the plan indefinitely and modestly improve the overall welfare of plan participants relative to plan insolvency. The analysis illustrates a key point in regard to the larger question of who should bear the burden – some plan participants are likely to gain from the continuation of the plan, even with reduced benefits. Therefore, an argument can be made that they should be willing to shoulder some portion of the solution, whether in the form of direct benefit cuts or, as proposed by those advocating for PBGC partitions, some sort of membership fee.

The fact that, to date, few of the denied or withdrawn MPRA applications have been resubmitted suggest that cutting benefits alone is not sufficient to restore solvency for some of the most troubled plans. This argues for considering an infusion of revenue as part of the solution. One argument for a tax revenue infusion is that many of the retirees and inactive vested participants are orphans who worked for companies that are no longer in the plan. Employers and workers in most distressed plans have increased their contributions to pay not only their own costs but also the funding shortfalls of others. But when orphans account for more than one-half of total participants, as is the case for Central States, the burden can become so intolerable that employers may negotiate to leave, further eroding the plan’s financing base. Thus, while increasing taxes is never popular, rationales exist for taxpayer money to be part of a broader solution.

### **Identifying Characteristics of “Critical-and-Declining” Plans**

A key step in assessing whether additional plans will fall into the “critical-and-declining” category – absent another major financial crisis – is to examine MPRA filings for reasons offered by each plan for their current status. A detailed review revealed that many were local or regional plans stationed in areas of decline or had contributions concentrated in a large, single employer that failed or withdrew from the plan. Interestingly, all the teamsters- and trucking-related plans cited the deregulation of trucking in 1980.

The next step is to track some key metrics – funded ratio, inactives as a percentage of total members, cash-flow rate, percentage of actuarially required contributions (ARC) paid<sup>11</sup>, and orphans as a percentage of total employees – for plans in each zone in 2016 to see if their levels have been significantly different over time. The trajectory of the funded ratio, the percentage of inactives, and the percentage of orphans shows a somewhat constant relationship between the zones over time, with plans currently in “critical-and-declining” status being consistently worse off throughout. The trajectory of cash flows over time is a bit more interesting, showing a sharp

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<sup>11</sup> The ARC is not a commonly used metric for assessing the adequacy of pension funding in the private sector. However, recent work by the SOA (2016) employed an ARC concept to assess the adequacy of multiemployer pension contributions and this report uses the same definition of the ARC: the normal cost plus an amount to amortize the unfunded liability over 15 years in level dollar payments.

divergence of critical-and-declining plans from the other zones during the dot-com bubble and then again during the financial collapse in 2008. Today's cash flow for these plans is about -11 percent, a drain – even with expected returns between 7 and 8 percent – from which it is extremely difficult to recover.

The high rate of negative cash flow is reflected in the percentage of ARC paid. While plans in all zones reduced their percentage of ARC paid during the stock market boom of the 1990s when plans were fully funded and could rely on strong investment returns to make up for lower contributions, most plans increased the percentage paid soon after the decline in assets due to the bursting of the dot-com bubble and the financial crisis. However, plans that ultimately ended up as "critical-and-declining" continued to pay a smaller share of the ARC, and that share declined sharply after the financial crisis. One reason for this is that these plans suffered not only a precipitous decline in assets in the financial crisis, but also a sharp decline in the number of active workers. This combination made the per-worker amortization payment unaffordable. In 2015, amortization costs per active worker for critical-and-declining plans were just over \$20,000 per year over 15 years compared to under \$5,000 for other red-zone plans.

A regression analysis – performed by the CRR – relating the factors just described to the probability of being "critical-and-declining" in 2016 reveals that negative cash flow has the most significant impact on the likelihood of being "critical-and-declining", followed closely by the percentage of inactives to total members. Both a low funded ratio and percent ARC paid have smaller impacts. For each of these variables, a one-standard deviation change correlates with between a .7 and 1.3 percent change in the probability of being "critical-and-declining". Given that only 8 percent of plans are "critical-and-declining", these relationships are meaningful.

### **Identifying Possible Future “Critical-and-Declining” Plans**

A historical look at the characteristics of plans that end up as “critical-and-declining” confirms that the factors identified earlier in the report – a declining number of participants, a low funded ratio, a high percentage of inactives to total members, and high rates of negative cash flow – make it impossible for some plans to pay their ARC in the wake of a financial crisis that decimates assets. These factors can also be used to identify potential problems going forward. A -10-percent-cash-flow filter shows a number of other red-zone plans in a precarious situation. This filter identified 32 plans that are not currently categorized as “critical-and-declining” – 15 covering at least 1,000 members – with negative cash flow representing -10 percent or more of assets. Two of these plans have more than 20,000 members. These results suggest that it is important to look beyond the most acute cases when considering solutions.

Applying the CRR's simple cash-flow model picks up 27 plans not currently categorized as “critical-and-declining” – in addition to those already identified above through the -10-percent-cash-flow filter – that are projected to become insolvent within 20 years. About half of these red-zone plans have greater than 1,000 participants. Finally, among the nation's 20 largest plans, the really troubled plans on this list – Central States Teamsters, Bakery & Confectionery Union, and United Mine Workers – have already been designated as “critical-and-declining”.

## Conclusion

Multiemployer plans are a significant component of the employer-sponsored retirement system and, like other employer plans, they have been challenged by the two financial crises since 2000. While the majority of multiemployer plans are returning to financial health, a substantial minority face serious funding problems that are exacerbated by unique structural challenges facing the multiemployer sector. These challenges include a high ratio of inactive to total participants, high rates of negative cash flows, and withdrawal penalties for exiting companies that are insufficient to cover the costs they leave behind.

MPRA represented a last-ditch effort to save a small, but significant, number of multiemployer plans from insolvency but has turned out not to be a cure-all. As of September 2017, of the 15 applications submitted to the Treasury, three have been approved – Iron Workers Local 17, New York State Teamsters, and United Furniture Workers. Four other applications are currently under review, five have been rejected, and three have been withdrawn. The fact that none of the rejected MPRA applications have been resubmitted suggests that some plans in “critical-and-declining” status cannot cut their way out of trouble.

The worst-off plans cannot rely solely on help from the PBGC’s multiemployer insurance program, given its current financial shape and modest benefit guarantee. Two options for addressing the situation are alleviating the burden of orphans and providing low-rate or government loans. Either approach costs money, and a case can be made for contributions from employers (that are tailored not to sink already fragile plans), from plan participants, and from taxpayers.

If a concerted effort is to be made to solve the multiemployer crisis, it is important to understand how plans found themselves in this desperate plight. Early action might be able to stabilize other plans in the red zone heading for trouble. Indeed, a significant number of red-zone plans have negative cash flow in excess of 10 percent of assets. Any approach to solving the multiemployer problem should be comprehensive – helping not only those in serious trouble today but also staving off future problems.

## 1. INTRODUCTION

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Multiemployer retirement benefit plans are created by collective bargaining agreements between labor unions and two or more employers. These plans are typically set up as trusts, as required by the Taft-Hartley Act and the Employee Retirement Security Act of 1974 (ERISA), and managed by a board of trustees appointed in equal numbers by the unions and the employers. The trustees, as plan fiduciaries under ERISA, have responsibility for managing the assets and administering the benefits.

The vast majority of participants in multiemployer plans are covered by defined benefit (DB) plans. These DB plans were once thought to be secure but have now become the focus of policy concern, including Congressional interest. Having expanded benefits during the stock market boom in the 1980s and 1990s, the plans became significantly underfunded in the wake of the two financial crises following 2001.

In response to mounting concerns, Congress passed the Multiemployer Pension Reform Act (MPRA) in December 2014. This law increases funding for the Pension Benefit Guaranty Corporation's (PBGC's) multiemployer program and expands the agency's ability to facilitate mergers between troubled and healthier plans. However, the most significant – and most contentious – provision of the law allows plans facing impending insolvency to cut accrued benefits for their current workers and retirees to extend the life of the plan. This provision could impact more than one million workers and retirees currently participating in "critical-and-declining" plans. The research study is comprised of three parts.<sup>12</sup>

- *Part 1.* To provide background on the universe of multiemployer pension plans, describing how they have evolved over the past three decades, assessing their current financial status, and detailing why some plans are now facing near-term insolvency.
- *Part 2.* To report on the overall size of the problem for the universe of multiemployer plans and those currently in, and at risk of falling into, "critical-and-declining" status.
- *Part 3.* To examine the risk posed by contagion to the health of multiemployer plans and discuss the specific areas of focus on multiemployer reforms that would reduce the likelihood of currently middle-risk plans falling into "critical-and-declining" status.

In this report we present the analysis pertaining to all three parts of the study as outlined above. Section 2 presents related literature and policy issues (including research gaps) and specifies the five research questions guiding the overall project. Section 3 presents the project's data sources and the methodology used. Section 4 discusses the main findings presented in this report and any conclusions to date from these findings. Section 5 discusses the conclusions of the analysis.

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<sup>12</sup> The Department of Labor's (DOL's) Employee Benefits Security Administration (EBSA) contracted with IMPAQ International, LLC (IMPAQ) and its partner, the Center for Retirement Research (CRR) at Boston College – the IMPAQ Team – to conduct this study. The opinions and conclusions expressed herein are solely those of the author(s) and do not represent the opinions or policy of the DOL, EBSA, or any other government agencies.

## 2. LITERATURE AND POLICY CONTEXT

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The majority of significant research on multiemployer plans occurred during four distinct periods. The first and second periods came after the passage of two key pieces of federal legislation – ERISA in 1974 and the Multiemployer Pension Plan Amendments Act (MPPAA) in 1980. The third period began in the mid-2000s, following the financial decline of plans after the dot-com bust of the early 2000s. The fourth, which continues today, came in the wake of the passage of the Pension Protection Act (PPA) and the 2008 financial crisis. This section includes a detailed chronological review of significant research on multiemployer plans and a brief description of the additional research needed to meet the current policy challenges.

### **The 1970s – Multiemployer Research Begins on the Heels of ERISA**

ERISA was the first comprehensive federal legislation regulating the private pension system. One of ERISA's main features was the establishment of an insurance program to guarantee the payment of certain benefits to participants of defined benefit pension plans if a plan terminated without sufficient assets to provide vested benefits. A government corporation, the Pension Benefit Guaranty Corporation, was established to administer the insurance program.

Soon after ERISA was passed, two descriptive reports on multiemployer plans were released – a short report on multiemployer plan provisions by Harry Davis in 1974 and a more comprehensive review of multiemployer plan provisions by Ronald Huling in 1979. Davis found that multiemployer plan coverage increased sevenfold from 1950 to 1973 – from 1 million to 7.5 million participants. Huling estimated that the participant population had grown to nearly 8.8 million participants covered by nearly 2,400 plans. Today, by comparison, 14.6 million participants are covered by just under 2,700 plans.<sup>13</sup> These totals include multiemployer plans that are insured by the PBGC – defined benefit plans— as well as plans that are not insured by the PBGC— defined-contribution plans. At the time of Davis' report, over 90 percent of plan participants were covered by non-contributory (for employees) DB plans. Today, just under 70 percent are covered by DB plans, and 30 percent by DC plans. Interestingly, in Davis' report, about 65 percent of DB plans stated that, in the event of employer withdrawal, the plan would honor that portion of a participant's benefits based on service earned before the employer joined the plan; only 10 percent provided for forfeiture of that portion of benefits. Mitchell and Andrews (1981) used similar data to Davis' to perform a regression analysis that quantified the administrative efficiency gains due to multiemployer plan size. They found, unsurprisingly, that larger plan size led to lower administrative costs relative to plan assets.

### **The 1980s – GAO Reports Study the Impact of the MPPAA**

In 1980, the MPPAA resulted in a significant change in contributing employers' relationships to multiemployer pension plans. Prior to MPPAA, employers were required only to contribute to

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<sup>13</sup> U.S. Department of Labor (2016a).

the plans according to their collective-bargaining agreements and could withdraw from the plans without any continuing obligation as long as the plan did not terminate within 5 years of the withdrawal. The MPPAA required withdrawn employers to pay for their portion of the plan's unfunded liabilities. From 1982 to 1986, following passage of the MPPAA in 1980, the GAO (then the General Accounting Office, now the Government Accountability Office) released eight reports – one in 1982, two in 1984, four in 1985, and one in 1986.<sup>14</sup> Most of the reports focused on the effects of MPPAA's new funding provisions – such as the withdrawal liability provision described above, as well as new minimum funding requirements – on multiemployer DB plan participants and other stakeholders. The GAO studies found that the MPPAA did two things: (1) it improved the finances of plans and lowered the risk to the PBGC's multiemployer insurance program, but (2) it also led to a decrease in the future benefits being promised to active workers because employers were on the hook for the cost even if they left the plan. Although the GAO studies did also report that the finances of the multiemployer-plan system improved in aggregate from 1978 to 1980, the funded position of multiemployer plans was estimated to be only 66 percent in 1980 (based on a sample of 1,276 plans).<sup>15</sup> However, GAO reports released in 1985 and 1986 reported the first signs of financial distress for a small number of multiemployer plans and highlighted the inability of existing MPPAA provisions to rectify the problem.<sup>16</sup> From a sample of 149 plans, 14 were identified as distressed and unable to withstand further deterioration (such as a decline in assets and/or the number of active participants from which employer contributions are based) without posing a substantial risk to the PBGC's insurance program. These distressed plans represented just under 10 percent of the 149 plans but over 20 percent of their participants.

### **The Early 2000s - GAO Reports Document the Decline of Some Plans and the Risk to the PBGC**

Since the decline of plan finances after the 2002 dot-com bust, there has been another wave of research on multiemployer plans. From 2004 to 2013, the GAO released five studies – two in 2004 that focused on the short- and long-term challenges facing multiemployer plans, and three (one in 2010 and two in 2013) that highlighted changes needed to assist acutely troubled plans and protect participant benefits.<sup>17</sup>

The two 2004 reports highlighted a number of factors – related to both the structure of multiemployer plans and larger systemic trends – that would continue to pose challenges to multiemployer plan system growth over the long term. Specifically, the reports identified two elements of multiemployer plan structure that potentially acted as deterrents to increased employer participation: (1) participating employers cannot easily adjust plan contributions in response to the firm's own financial circumstances because contribution rates are often fixed while the current collective bargaining agreement remains in effect, and (2) multiemployer sponsors risk additional costs if one or more contributing employers are unable to fund their share of the plan's vested benefits.

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<sup>14</sup> GAO (1982, 1984a, 1984b, 1985a, 1985b, 1985c, 1985d, 1986).

<sup>15</sup> GAO (1985d).

<sup>16</sup> GAO (1985a, 1986).

<sup>17</sup> GAO (2004a, 2004b, 2010, 2013a, 2013b).



In terms of the broader systemic challenges, the reports cited the long-term decline of collective bargaining as a key factor adversely affecting multiemployer defined benefit plan growth, resulting in fewer employers and workers to support creation of new plans or expansion of existing ones. From 1980 to 2001, the number of plans dropped by more than one-quarter, from 2,244 to 1,623. The number of workers covered also fell, by 1.4 million over the same period, with the percentage of the private sector labor force covered by multiemployer plans declining from 7.7 percent to 4.1 percent. Other factors cited as adding to the long-term challenges included the growing trend among employers to choose DC plans, the increasing life expectancy of American workers (which increases plan costs), and continuing increases in health insurance costs (which affect overall compensation costs).

In addition to these future challenges, the 2004 studies cited a worrying reversal of the overall positive trends in multiemployer funding that had occurred from 1980 to 2000. At the close of the 1990s, the majority of multiemployer plans had reported assets exceeding 90 percent of total liabilities, with average funding reaching 105 percent in 2000. At the time of the GAO's 2004 reports, complete Form 5500 data on multiemployer plans was only available up to 2001, but the GAO report cited three more recent statistics released by the PBGC that indicated a decline in multiemployer funding after the turn of the century. First, the PBGC's 2003 annual report estimated that underfunded multiemployer plans faced an aggregate unfunded liability of \$100 billion, up from \$21 billion in 2000. Second, the PBGC increased its forecast of the number of plans that would likely need financial assistance from 56 plans in 2001 to 62 in 2003. Finally, the PBGC reported that its multiemployer program had an accumulated net deficit of \$261 million at the end of 2003, the program's first deficit since 1981.

### **2010–2017 – The GAO, the PBGC, Actuaries, and Academics Study Multiemployer Plans in the Wake of the Financial Crisis**

*The GAO.* In 2010 the GAO released a study that confirmed the suspected decline in funding that it suggested in its 2004 reports, finding that U.S. multiemployer plans had not been fully funded in aggregate since 2000 and that most multiemployer plans showed large funding shortfalls. Importantly, the report noted that the 2009 recession played a major role in the decline. The report concluded that some plans might be able to improve their funded status as the economy improved, but that many would continue to face demographic challenges that threatened their financial outlook, such as an aging workforce and few opportunities to attract new employers and workers into plans. The 2010 report also studied private pensions in other countries that faced similar challenges to those faced by U.S. multiemployer plans and found that plans in those countries were subject to a range of funding, reporting, and regulatory requirements that force plans to interact frequently with pension regulators. Unlike U.S. multiemployer plans at the time, these plans also had a number of tools available to improve and maintain their funded status, such as increasing contributions and reducing the rate of benefit accruals. The report concluded that, without new tools to address plan underfunding or attract new employers to contribute, the worst-off U.S. multiemployer plans were likely to require financial assistance from the PBGC's multiemployer insurance program.

The two 2013 GAO studies, building on the findings from the 2010 report, found that a considerable number of plans, including some very large plans, were facing severe financial difficulties. For these plans, according to the report, the existing tools for increasing employer contributions or reducing certain adjustable benefits (such as recent benefit increases, early retirement subsidies, and other benefit features) were insufficient to address their underfunding and demographic challenges. For many of these plans, near-term insolvency was likely. Further, the PBGC would be unable to sustain them after insolvency, resulting in a dramatic loss of old-age income for those relying on these plans. While both studies reported similar findings regarding the status of troubled plans and the PBGC, the second study went one step further by recommending swift Congressional action, outlined in two key policy options suggested by stakeholders interviewed about the issue. The first option was for Congress to enact legislation permitting plans – subject to certain limitations, protections, and oversight – to reduce accrued benefits of both working participants and retirees. The second option was for Congress to give PBGC the authority and resources to assist the most severely underfunded plans.<sup>18</sup>

The report made clear that each of these options posed tradeoffs. A decision by Congress to help fund the PBGC would place an additional strain on the federal budget. Similarly, reducing accrued benefits, especially for those already in retirement, could result in significant reductions in retirement income for a group that may have limited alternatives. The report also indicated that such an option would stray from a founding principle of ERISA – that accrued benefits cannot be reduced. Ultimately, the report found that if timely action of whatever type was not taken, more costly and intrusive measures would be required later.

*The PBGC.* In recent years, the PBGC has broadened its own data and analyses to include more on multiemployer plans. In 2012, the PBGC released its first projections report, which provided estimates of the solvency and sustainability of the PBGC’s insurance programs. Since then, the series has tracked the potential insolvency of at-risk multiemployer plans and reported on the increasing liability facing the PBGC’s multiemployer insurance program. The most recent report – based on data as of fiscal year 2016 – finds that the PBGC’s multiemployer program has a 10-year deficit of \$58.6 billion.<sup>19</sup> Also, in terms of data, a multiemployer supplement was included as part of the PBGC Insurance Databook in 2013 and 2015.

In addition broadening its annual analysis and data, the PBGC has also released two research reports focused specifically on multiemployer plans – the Multiemployer Guarantee in 2015 and the MPRA Report in 2016. The report on the Multiemployer Guarantee found that the PBGC multiemployer program had provided full-coverage slightly less often than the single-employer program – 79 percent of multiemployer participants received benefits equal to what they would have received from the plan versus 84 percent of single-employer participants. The report also found that coverage was likely to drop dramatically for plans projected to require financial assistance from the PBGC in the future. The 2016 MPRA report focused on whether current

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<sup>18</sup> GAO (2013b).

<sup>19</sup> PBGC (2017d)

premium levels were sufficient to meet PBGC obligations through the end of FY 2025 and 2035.<sup>20</sup> The report found that PBGC would be unable to meet its obligations under the existing premium structure and that the program would likely fail to meet its obligations during FY 2024. The report indicated that premium increases of 363 to 552 percent of current levels would be required for the PBGC multiemployer program to stay solvent over the next 20 years.

*Actuaries.* After the 2008 financial crisis, the actuarial community that serves multiemployer plans began to produce analytical reports and research for the public. In 2011, Mazo and Greenblum (Segal Consulting) found that multiemployer plans were responding to the financial crisis through a mix of benefit reductions and contribution increases aimed at stabilizing their finances, rather than phasing out their DB programs. In 2014, Segal – which counts about 25 percent of all multiemployer plans among its clients – began producing regular analyses tracking the PPA zone (or risk status) of the plans it serves.<sup>21</sup> Their analyses showed a dramatic increase in the red- and yellow-zone plans in the wake of the 2007–2008 financial crisis. By 2011, many of the yellow plans had improved to green status, and a small number of the red plans had also improved. However, since 2012, the universe has remained relatively constant, with 26–27 percent of plans in the red zone, 16–17 percent in the yellow, and 56–57 percent in the green. A 2016 study by Milliman found that aggregate multiemployer pension funding dropped dramatically in 2008 but bounced back in 2009–2010, remaining relatively flat since – standing at 75 percent as of December 2015 (only 10 percentage points below the pre-crisis level of 85 percent in 2007). The study was based on funded ratios reported in the Form 5500 filings, using the plans’ own discount rates (generally 7.5 percent) rather than the rates used by PBGC, which tend to be more conservative. Regardless of the absolute level of funding reported, the trend shows that overall plan finances have improved somewhat since the financial crisis. Finally, both the American Academy of Actuaries and the Society of Actuaries released studies in 2016 making the case for increased funding for the PBGC multiemployer program and showing the inadequacy of employer contributions to the multiemployer plans, respectively.

*Academics.* In more recent years, academics have also begun to focus on multiemployer plans. Even and Macpherson (2014) found that multiemployer plans were among the worst-performing plans in terms of their risk-adjusted investment returns. The paper relied on an Ordinary Least Squares (OLS) regression analysis of panel data for over 38,000 pension plans, drawn from Form 5500 filings between 1988 and 2008. Because the sample excluded most small plans, the sample of plans covered only about 4 percent of plans but 46 percent of the active participants and 56 percent of the assets. The paper separately analyzed DB and DC plans. For each plan type, the dependent variable for the regression was the risk-adjusted return and the independent variables were: dummy variables for whether the plan was a single-employer union plan, a multiemployer plan, or a non-union plan; number of plan participants; assets per participant; age of plan; year and industry dummies; and whether the plan sponsor offers other plans. The analysis showed

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<sup>20</sup> PBGC (2016d)

<sup>21</sup> Segal (2014a, 2014b, 2014c, 2015, 2016). The Pension Protection Act, passed in 2008, introduced a categorization scheme – based on each plan’s assessment of its financial health over the next five or 10 years – that classified plans into one of three zones: green, yellow, or red.

that, for DB plans, multiemployer plans underperformed non-union plans by 76 basis points, compared to only a 3.6-basis-point underperformance for single-employer union plans. For DC plans, multiemployer union plans underperformed non-union plans by 36 basis points, while single-employer union plans *outperformed* non-union plans by 14 basis points.

Chen et al. (2015) investigated whether stock and debt holders perceived a firm's share of the underfunding in its multiemployer pension plan to be a debt-like obligation and whether the Financial Accounting Standards Board's (FASB's) new accounting standard requiring greater multiemployer disclosures was useful for valuing this obligation. The analysis focused on 160 publicly listed U.S. firms that participated in multiemployer pension plans from 2000 to 2012. Importantly, the sample period spanned the change in FASB standards for multiemployer reporting in 2011. Under the old FASB rules, a firm reported all its contributions to multiemployer plans in aggregate. But under the new FASB standards set in 2011, the plan name, plan number, and firm's contributions to each of the firm's material multiemployer plans were reported individually, as well as the firm's aggregate contributions to all its non-material multiemployer plans. For the sample years prior to the new FASB rules, the authors estimated a firm's portion of multiemployer underfunding by multiplying the firm's aggregate contributions to all its multiemployer pension plans by the corresponding industry underfunding multiple – the average funding deficit per dollar of contributions for the multiemployer plans in the firm's industry. For the sample years after the FASB ruling, the authors estimated a firm's portion of the underfunding for a material multiemployer plan by linking the firm's contribution to the plan-level data from the King of Pensions database.<sup>22</sup> For non-material plans, the firm's underfunding was estimated by multiplying the aggregate contribution by the industry's underfunding multiple. Ultimately, after controlling for other factors – such as liability for single-employer pension – the authors found that shareholders and creditors did, in fact, view a firm's portion of multiemployer underfunding as a debt-like obligation that negatively impacts both credit worthiness and stock valuations of participating employers. The authors further found that the new FASB standards appeared useful to shareholders and creditors in enabling them to better assess the value implications of plan underfunding.

Finally, the Center for Retirement Research (CRR) produced a series of issue-briefs in the fall of 2014 focused on multiemployer DB pension plans.<sup>23</sup> Beginning with a simple primer on multiemployer plans, the briefs then covered the challenges of the PGBC multiemployer program, looked more closely at the declining financial status of plans, and culminated with an analysis of a National Coordinating Committee for Multiemployer Plans (NCCMP) proposal to allow some plans to reduce accrued benefits to stave off insolvency (Defrehn and Shapiro, 2013). The series confirmed the statistics highlighted in prior studies by the GAO and actuarial firms regarding the current woes of multiemployer plans – declining membership, negative cash flows, an increasing number of plans in “critical” status, with nearly 25 percent of critical plans in danger of becoming insolvent, and the PBGC's inability to sustain these plans. The series also showed

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<sup>22</sup> The King of Pension Database is maintained by Judy Diamond Associates and compiles information on every pension and retirement plan that was reported on a Form 5500 filed with the U.S. Department of Labor.

<sup>23</sup> Munnell et al. (2014a, 2014b, 2014c, 2014d).

that some elements of the NCCMP's new proposal, which were similar to some provisions of the MPRA law, had the potential to stave off insolvency for the Central States Teamsters, one of the most prominent of the critical plans, if the plan achieved its 7.5 percent assumed return.

## **2017 – New Research to Meet the Current Policy Needs**

Although a sizable amount of research on the trends and status of multiemployer plans already exists and is reasonably up to date, additional research is needed to inform policy makers about viable solutions. Further, it is critical that research focus on solutions to the financial woes of the worst-off plans and the risk of decline for the currently better-off plans.

Existing analyses similar to those by the GAO are relevant to understanding the larger trends affecting all multiemployer plans but do not provide insights into the specific factors underlying the current status of the worst-off plans. Detailed analyses by actuarial firms like Segal often analyze only the plans the firm serves, and so do not provide a complete assessment. The current policy challenge requires research and analysis that:

- Focus on documenting the size of the current problem for troubled plans.
- Present options for managing the problem going forward.
- Obtain a clearer understanding of the factors underlying the decline of the worst-off plans, to inform policies for how the situation of those plans might be avoided by others.

To do this, new research must address the following questions:

1. How did red-zone multiemployer plans reach this point?
2. How large is the potential funding shortfall?
3. What rationales might exist for determining how to distribute the burden of the shortfall among the only three possible parties – participants, employers, and the public (through taxes)?
4. What is the risk posed by contagion to the health of the multiemployer plans?
5. What are the specific areas to focus on for multiemployer reforms that would reduce the likelihood of other plans facing insolvency going forward?

## 3. DATA AND METHODOLOGY

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### 3.1 Data

This report relies primarily on data from the following sources:

- The Department of Labor (DOL) electronic database of information extracted from the Form 5500 filings
- The actuarial and financial attachments to the Form 5500 submissions
- Detailed qualitative information from the applications submitted to Treasury from the specific multiemployer plans seeking relief through MPRA
- Critical, Critical-and-Declining, Endangered, and WRERA Status Notices submitted to the DOL

#### Form 5500 Data

This analysis relies on the Form 5500 filings of defined benefit multiemployer plans. Form 5500 data prior to 1999 were generated from raw ASCII-format data DOL provided to the Center for Retirement Research for formatting and cleaning. These older datasets were created through a code produced by the CRR that parsed the ASCII files and generated variables intended to match the raw variables contained in the more recent databases on the DOL website. For the most part, tabulations in this report use the raw 5500 variables in both the CRR-5500 (pre-1999) and the DOL-5500 (post-1999) datasets. However, certain tabulations either: (1) are generated by combining the raw 5500 variables or (2) require a choice among many possible raw variables. The key information presented in this report and the raw 5500 variables on which they are based are as follows:

- Actuarial assets: MB\_AST\_FNDNG\_STD\_AMT
- Actuarial liabilities: max of MB\_ACCR\_LIAB\_GAIN\_MTHD\_AMT, MB\_ACCR\_LIAB\_AGE\_MTHD\_AMT, and MB\_ACC\_LIA\_UNIT\_CRED\_MTHD\_AMT
- Actuarial funded ratio: actuarial assets/actuarial liabilities
- Current assets/Market Assets: MB\_CURR\_VALUE\_AST\_01\_AMT
- Current liabilities: sum of MB\_CURR\_LIAB\_RTD\_AMT, MB\_CURR\_LIAB\_TERM\_AMT, and MB\_CURR\_LIAB\_ACT\_AMT.
- Current funded ratio: current assets/current liabilities
- Cash Flows:  $(TOT\_CONTRIB\_AMT\_OT\_DISTRIB\_BNFT\_AMT) / MB\_CURR\_VALUE\_AST\_01\_AMT$

Industry categories for this report are based on PBGC industry definitions and recodes of mis-categorized plans done in 2011. In addition to correcting miscoded plans, the PBGC code

creates six major industry categories that include the following specific industries based on North American Industry Classification System (NAICS) codes:

1. *Construction.* Building construction, heavy construction, plumbing heating a/c, electrical contractors, building finishing contractors, foundation structure exterior, and other construction.
2. *Manufacturing.* Food beverage tobacco, apparel textile, paper manufacturing, printing and related, furniture and related, machinery electrical equipment, and other manufacturing.
3. *Transportation and public utilities.* Truck transportation, water transportation, and other transportation and utilities.
4. *Retail trade.* Retail trade.
5. *Service.* Financial/insurance/real estate, other services, administrative services, health/social assistance, and accommodation/food services.
6. *Other.* Agriculture/forestry/fishing, mining, information, and wholesale trade.

### **Actuarial and Financial Attachments to the Form 5500 Submissions**

Most Form 5500 submissions include attachments that provide supplementary actuarial and financial data on the plan that are not included in the electronic 5500 database maintained by the DOL. These attachments can be accessed through the Form 5500 EFAST2 filing search. Importantly, for this project, the attachments generally include the plan's financial statements and accompanying notes. The financial statements and notes provide detailed data on the withdrawal liability of plans: separating total employer contributions into regular contributions and withdrawal payments, reporting on the present value of future withdrawal payments still to be received, and discussing major withdrawals and their provisions. Sometimes, the attachments also include actuarial projections of contribution and benefits for plans. These projections are integral to projections of plan insolvency performed in this report.

### **Applications for Relief through MPRA**

The applications for benefit suspension submitted to Treasury from the specific multiemployer plans seeking relief through MPRA are publicly available on the Treasury's new MPRA website as .pdf documents. The findings reported within this report are based on detailed qualitative data concerning the reasons for a plan's decline – poor returns, a large employer leaving the plan, inadequate withdrawal payments, industry decline, etc. These narratives help inform the various areas of risk for multiemployer plans, potentially exposing risk factors not initially considered. All potential risk factors were tested during the project to determine the usefulness of each.

## **Critical, Critical-and-Declining, Endangered, and WRERA Status Notices**

Under federal pension law, if a multiemployer pension plan is determined to be in “critical” or “endangered” status, the plan must provide notice of this status to participants, beneficiaries, the bargaining parties, the Pension Benefit Guaranty Corporation, and the Department of Labor. This requirement applies when a plan has funding or liquidity problems or both as described in the federal law. The DOL publishes copies of the notices it receives online at: <https://www.dol.gov/agencies/ebsa/about-ebsa/our-activities/public-disclosure/critical-status-notices>. We opened each notice published on the site to confirm the status of plans in each year. The categorizations resulting from the status notices published by the DOL were cross-referenced with data from the PBGC based on notices they received to ensure a complete list of critical, critical-and-declining, and endangered plans as of 2016.

### **3.2 Methodology**

In addition to descriptive analysis based on the electronic 5500 data and details of the MPRAs applications, the report also includes regression analysis to identify factors that correlate to plans currently in “critical-and-declining” status, cash flow projections to highlight additional plans that are at risk of becoming “critical-and-declining”, and a pension actuarial model of Central States Teamsters to test the impact of various policy solutions on a large critical-and-declining plan.

#### **Regression Analysis to Identify Factors Correlated with “Critical-and-Declining” Plans**

The analysis uses a probit regression to relate the likelihood of being “critical-and-declining” in 2016 to the plan’s most recent funded ratio, percent of ARC paid, cash flow, and the ratio of inactives to total members. The dependent variable is a binary that is set to 1 if the plan is “critical-and-declining” in 2016 and zero otherwise. The funded ratio is based on the current valuation method (market assets and the current value of liabilities) rather than the actuarial valuation method (actuarially smoothed assets and actuarial liabilities). For the percent of ARC paid, the ARC is equal to the employer normal cost reported in the 5500 plus a CRR-calculated amortization payment equal to the amount necessary to pay off the actuarial unfunded liabilities in 15 years using a level-dollar amortization method. Because of the close correlation between the percentage of inactives and cash flows, the cash-flow term is entered as a binary variable set equal to 1 if the negative cash-flow rate exceeds -7.4 percent (the average assumed return for multiemployer plans in 2015) and zero otherwise. All other independent variables are continuous. A variable for orphans is not included because it is so closely correlated with the inactive variable.

#### **Cash Flow Projections to Highlight Additional Plans at Risk of Becoming Critical and Declining**

The CRR’s simple cash-flow model projects the annual contributions, benefits, and asset levels for each of the multiemployer plans in the Form 5500 in order to determine the likelihood of plan exhaustion within the next 20 years. On the contributions side, total employer contributions reported by the plan are separated into withdrawal payments and regular contributions, and



then only regular employer contributions are used for the projections. The rationale for excluding withdrawal payments is that they are irregular and often come in large lump sums that do not accurately reflect the expected long-term employer contributions. The projection model assumes that contributions remain at current dollar levels. For benefits, about 550 of the 1,400 multiemployer plans include benefit projections produced by the plan's actuary as an attachment to their 5500 filing. The majority of these plans are in the red zone. For these mostly red zone plans, the analysis relies directly upon the actuary's projections. Benefits for the remaining 850 plans must be estimated. Using the actuarial projections from the 550 plans, an equation is estimated that relates the shape of future benefits payments to key actuarial characteristics, such as the ratio of active to retiree liability and the normal cost. The equation results are used to estimate the projected benefits for the remaining 850 plans based on their own actuarial characteristics. This method produces benefits that grow at about 2 to 3 percent – depending on the actuarial characteristics of the plan. Assets are projected to grow at the plan's assumed rate of return.

Because it is mostly red zone plans that provide the actuarial projections used to determine the relationship between projected benefits and actuarial characteristics, the resulting estimates of projected benefits are likely to be more accurate for other red-zone plans. Additionally, the true exhaustion dates for the worst-off plans are less sensitive to small errors in the projected cash flows (the worst-off plans will exhaust in the near term in all but the most extreme scenarios). As such, the model is most accurate for plans that are currently in the red zone – precisely those that we are most concerned about declining further.

### **Pension Actuarial Model of Central States Teamsters**

Modeling the Central States Teamsters involves projecting annual contributions, benefits, and asset levels for the plan. Because these items depend primarily on the number of participants, the first step is to project actives, separators, and retirees in each year. Data used in the modeling exercise primarily come from the plan's 1/1/2014 actuarial report submitted with Central States Teamsters' MPRA application. The report provides the total number of existing participants and the distribution by age and tenure for current active employees. Because no data on the age distribution of current separated and retired members is available for Central States Teamsters, the age distribution is based on another large teamsters plan for which data was available – the New York State Teamsters plan.<sup>24</sup> For new employees, the age distribution is assumed to equal that of the current actives with one year or less of tenure. The analysis assumes that the total number of active participants declines by 1 percent each year, equivalent to the most recent annual decline in active employment. The annual population of actives, separators, and retirees

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<sup>24</sup> Data on the age distribution of plan members can often be found in a plan's annual actuarial valuation, but most multiemployer plans do not release their actuarial valuations publicly. While we were able to locate a copy of Central States actuarial valuation, it did not contain the age distribution of separated and retired members. We used data from the New York Teamsters – another large teamster plan – because it was one of the few plans with a publicly available valuation that also contained data on the age distribution of its separated and retired members.

is projected over time using the plan's age/tenure-specific assumptions for separation, retirement, and mortality.

For contributions, the analysis assumes that the average contribution per active does not change in the future. To project the future contributions in each year, the projected active population in each year is multiplied by the average annual contribution per active reported in the plan's actuarial valuation. Future annual benefits paid to existing active workers and new hires are based on their projected tenure at retirement and the plan's benefit formula described in the valuation. For existing separated workers, future benefits are based on their tenure at separation. And for existing retirees, future benefits are equal to the current level of benefit payments reported in the actuarial valuation. This process yields liabilities for existing active workers, separated workers, and retirees that are very close to those reported in the actuarial valuation. To check the accuracy of our model, the CRR projects exhaustion assuming that the plan achieves actuarially assumed return of 7.5 percent each year. Under this deterministic approach, the CRR projects Central States Teamsters' assets will be exhausted 12 years from the date of the valuation (1/1/2014), which aligns perfectly with the 2026 exhaustion date reported in the Central States Teamsters' actuarial valuation.

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## 4. FINDINGS

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Private sector multiemployer pension plans, having expanded benefits during the stock market boom in the 1980s and 1990s, became significantly underfunded in the wake of the two financial crises in the first decade of this century. The great majority of troubled multiemployer plans responded to the financial pressures by cutting the rate of future benefit accruals and requiring the bargaining parties to negotiate higher contribution rates – thus enabling them to navigate to relatively secure footing. But a significant number of plans, covering at least 2 million of the 10 million participants, could run out of money within the next 20 years. Further, the Pension Benefit Guaranty Corporation, which is the backstop for defunct plans, expects its multiemployer insurance program to run out of money within the next 10 years.

### 4.1 An Overview of Multiemployer Plans

Multiemployer defined benefit plans are created by collective bargaining agreements between at least one labor union and two or more employers. These plans are typically set up as trusts, as required by the Taft-Hartley Act and the Employee Retirement Income Security Act of 1974, and managed by a board of trustees appointed in equal numbers by the union and the employers. The trustees, as plan fiduciaries under ERISA, have responsibility for managing the assets and administering the benefits.

The contributions to the plan are negotiated in the bargaining agreements between an employer and its union. A typical amount might be \$5 for each hour that a participant works. The trustees then, working with a given revenue stream, set the benefits. Multiemployer plans generally pay a dollar amount per month for each year of service, say \$60, so a worker with 30 years of service would receive \$1,800 a month at age 65 for life. Alternatively, benefits could be a specified percentage of the employer's required contributions. For example, a monthly benefit could be set at 2 percent of total required contributions, so that a participant with 1,500 hours of work at a \$2 hourly contribution rate would accrue \$60 of monthly benefits. Some multiemployer plans have had changes in their benefit formula over time, so participants accrue different benefits for different years. Unlike single-employer plans, multiemployer plans offer portability if participants move from one contributing employer within a plan to another within the same plan.<sup>25</sup>

Multiemployer plans typically exist in industries with many small employers – employers that would not ordinarily establish a defined benefit plan on their own – and where it is common to move from one employer to another. Exhibit 1 shows that most participants are covered by the relatively few large plans (10,000+ participants), but the system also has many small plans (fewer than 1,000 participants).

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<sup>25</sup> Further, many plans maintain reciprocity agreements by which participants can aggregate service under multiple plans to qualify for benefits.

**Exhibit 1. Distribution of Multiemployer Plans and Participants, 2015**

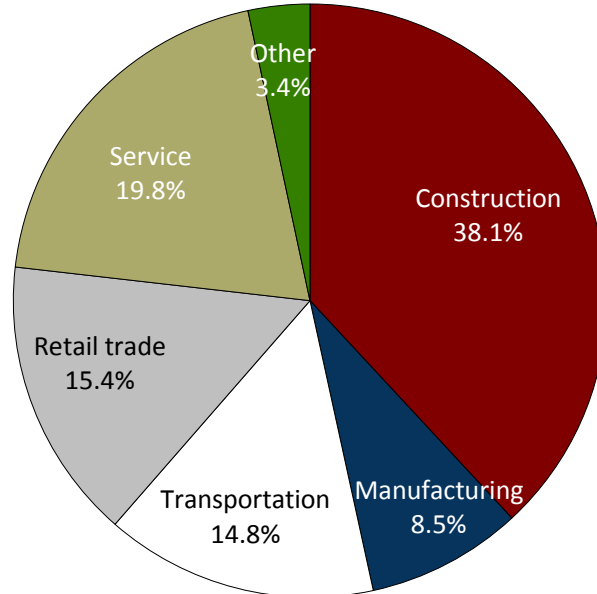
Plan size (number of participants)	Percentage of total participants	Number of:	
		Plans	Employers per plan
Large (10,000 or more)	79.3%	176	693
Medium (1,000-9,999)	18.4%	631	111
Small (fewer than 1,000)	2.3%	474	29
Total	100.0%	1,281 <sup>a</sup>	164

<sup>a</sup>The number of plans reflects the total number of observations available for plan-level analysis in the Form 5500 database.

Source: Authors' calculations from U.S. Department of Labor, *Form 5500* (2015).

Exhibit 2 shows the distribution of plan participants by industry. Almost 40 percent of multiemployer plan participants work in the construction industry; construction plans generally rely on a large number of small contributing employers. Fifteen percent of multiemployer plan participants are in the transportation industry, half of which are covered by Teamster plans which tend to be among the largest plans. Other industries in which multiemployer plans operate include manufacturing, retail trade, health care, entertainment, communication workers, print news media, printing, and mining.

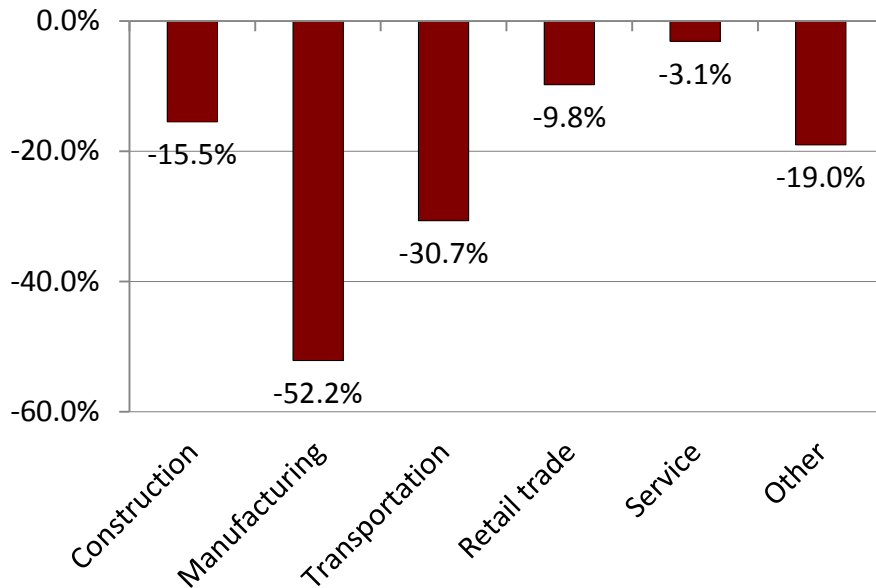
**Exhibit 2. Multiemployer Plan Participants by Industry, 2015**



Sources: Authors' calculations from U.S. Department of Labor, *Form 5500* (2015) using the PBGC's industry codes for multiemployer DB plans.

Exhibit 3 demonstrates that the number of active participants in multiemployer plans has declined in all industries since the turn of the century, with manufacturing and transportation experiencing the largest decline.

**Exhibit 3. Percentage Change in Active Members in Multiemployer Plans by Industry, 2001–2015**



Source: Authors' calculations from U.S. Department of Labor, *Form 5500* (2001–2015).

Exhibit 4 compares multiemployer plans to other components of the employer-sponsored retirement system, using data from the Form 5500 database and the U.S. Census Bureau's *Survey of Public Pensions*. Several factors stand out. First, as of 2014, multiemployer plans had 10.1 million participants, making them a small but significant segment of the retirement system. Second, these plans (as well as private single-employer defined benefit plans) have a high percentage of inactive participants (retirees and terminated vested workers) relative to total members. Finally, multiemployer plans have modest benefits, less than one-half of those in the state/local sector and about 60 percent of those provided by single-employer defined benefit plans.<sup>26</sup> Given the large number of workers involved and the modest benefits, it is crucial to understand how some multiemployer plans ran into serious trouble and what can be done about it.

<sup>26</sup> The average benefit is total benefits divided by the number of retirees.

**Exhibit 4. Multiemployer Plans in the Employer-Sponsored Retirement System, 2014**

Plan Type	Participants		Plans	Assets		Average Benefit
	Total (Millions)	Percent Inactive <sup>a</sup>		Total (Trillions)	Per Participant	
Private single-employer DC	90.1	20%	639,066	\$5.10	\$56,795	N/A
Private single-employer DB	27.7	62%	43,466	\$2.50	\$89,860	\$20,625
State/local DB	29.3	51%	3,972	\$3.70	\$126,459	\$26,458
Private multiemployer DB	10.1	61%	1,403 <sup>b</sup>	\$0.50	\$49,572	\$12,547

<sup>a</sup> The DC and DB numbers are not quite comparable. The Form 5500 defines active participants in a DC plan to include all eligible workers, even in the absence of employee or employer contributions. On the other hand, most DB participants stay in the plan through retirement, while most DC participants take a cashout or rollover and leave the plan when they separate from an employer.

<sup>b</sup> This total reflects the total number of plans published in the Employee Benefits Security Administration's (EBSA's) most recent Private Pension Plan Bulletin. It exceeds the 1,281 observations available in the 2015 Form 5500 database that is used for plan-level analysis.

Sources: Authors' calculations from U.S. Department of Labor (2016a); and U.S. Census Bureau (2014).

## 4.2 How Did Multiemployer Plans Reach This Point?

The finances of multiemployer plans have been driven by both fluctuations in the financial markets and structural considerations.

### Financial Markets

Multiemployer plans thrived during the 1980s and 1990s; the stock market soared, participants had plenty of work, and employers were making good profits. By the late 1990s, many plans were fully funded. In this environment, unions were concerned that employers would stop contributing to the plans due to limits on the tax deductibility of employer contributions to fully funded pension plans. They were wary of interrupting the flow of contributions because restarting contributions when markets cooled would require reducing other components of compensation.<sup>27</sup> In order to ensure that contributions remained tax deductible for employers, plans offset the increased funded levels by repeatedly increasing benefits.

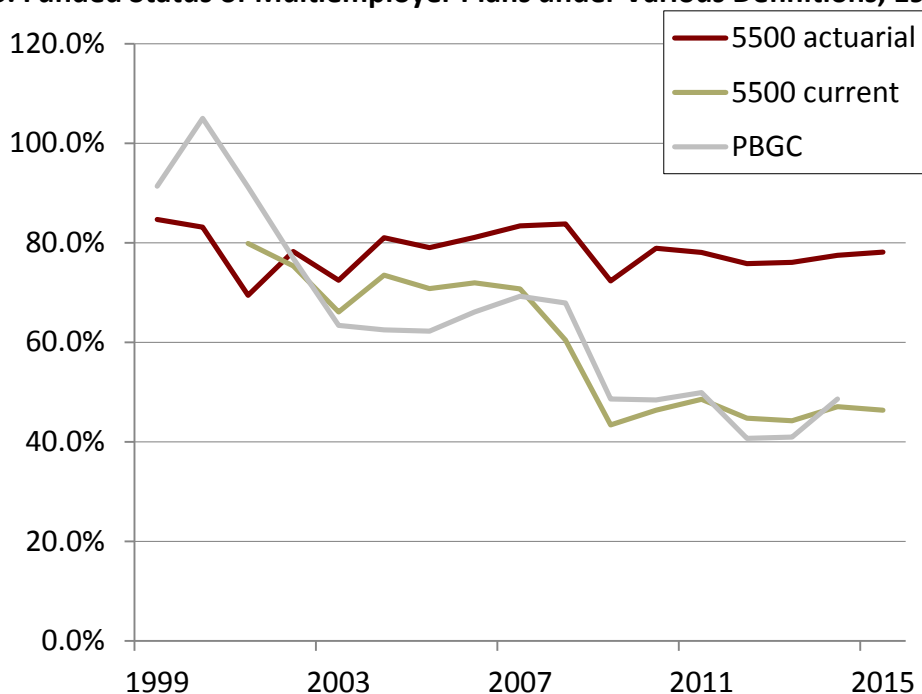
The good times ended with the bursting of the dot-com bubble in 2000. All pension plans were hurt, but the collapse of stock prices was particularly painful for multiemployer plans, which – with many retirees and declining numbers of active participants – had been living off investment returns.<sup>28</sup> As the returns turned negative, funded levels plummeted.

<sup>27</sup> Mazo and Greenblum (2011).

<sup>28</sup> Solis, Geithner, and Gotbaum (2013).

Three sets of funded ratios are available for multiemployer plans – two from the Form 5500 and one from the PBGC (see Exhibit 5). The Form 5500 presents both a current view and an actuarial smoothed view. The actuarial view averages asset values over a period of time and uses the expected return on plan assets as the discount rate. The current view is based on the market value of plan assets and a liability calculated using a four-year average yield on 30-year Treasuries as the discount rate. The PBGC number is also based on the reported market value of assets, but adjusts the reported vested liabilities using a standardized interest rate factor along with an assumed mortality table that reflects the cost of purchasing an annuity at the beginning of the year. Regardless of the definition, Exhibit 4 shows that multiemployer plans were well funded during the 1990s and then saw funded levels collapse in the wake of the bursting of the dot-com bubble at the turn of the century.

**Exhibit 5. Funded Status of Multiemployer Plans under Various Definitions, 1999–2015**



Note: The most recent PBGC data tables are from 2015, reporting 2014 data.

Sources: PBGC (2015); and authors' calculations from U.S. Department of Labor, *Form 5500* (1999–2015).

Although by 2004 multiemployer plans appeared to have weathered the storm, the multiemployer plan community worked with Congress to update funding rules.<sup>29</sup> This effort culminated in the passage of the Pension Protection Act of 2006, the key innovation of which was to require trustees to look past valuations on a single date and assess where the plan is headed. Plans with a projected funding deficiency within four or five years, or a near-term cash-flow problem, are deemed “critical”; those with less serious problems are categorized as “endangered”. Critical plans are characterized as being in the red zone, endangered plans in the yellow zone, and all other plans in the green zone. Plans in the red or yellow zones must take

<sup>29</sup> Mazo and Greenblum (2011).

corrective action. The law also provided multiemployer plans with new tools to achieve these goals.<sup>30</sup>

Exhibit 6 shows the zone status of multiemployer plans over the period 2008–2016 using data from the Form 5500 and DOL. In 2008, when the PPA first took effect and before the financial crisis, 78 percent of plans were in the green zone, 13 percent in the yellow zone, and 9 percent in the red zone.<sup>31</sup> Then the markets crashed and the economy tanked, causing unfunded liabilities to spike and the number of troubled plans to soar. As the economy and the stock market began to recover, a large share of multiemployer plans moved from the yellow zone back to the green, but the share in the red zone declined only slightly.<sup>32</sup> This pattern should not be surprising. Most plans are the red zone because they anticipate failure to meet the minimum funding requirements, an outlook that does not change materially with an uptick in stock prices. From 2011 to 2016, the percentage of plans in the red zone has changed very little.

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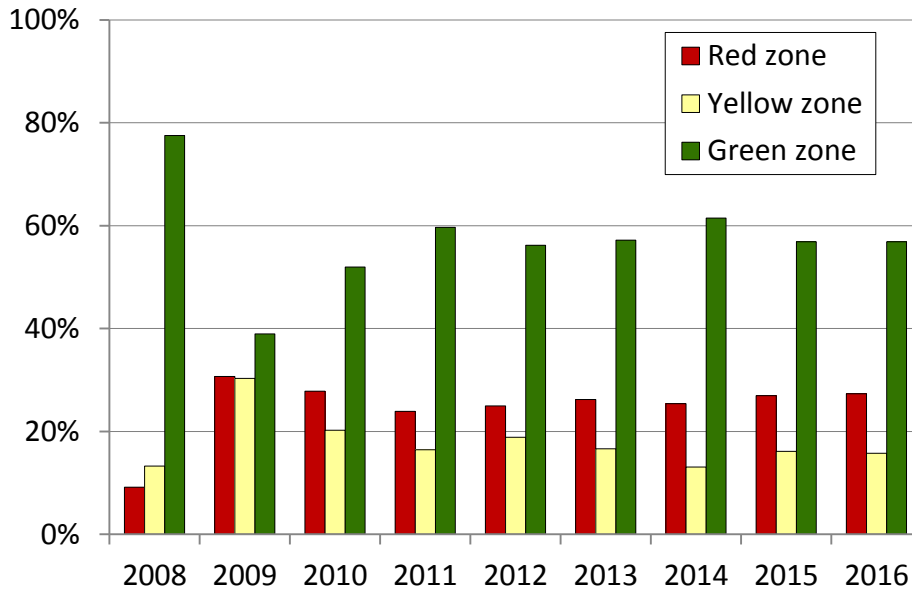
<sup>30</sup> When a plan goes into the yellow zone, the PPA restricts contribution reductions and benefit increases and requires that the trustees come up with a plan to close the funding gap by at least one-third over a 10-year period. When a plan goes into the red zone, in addition to restrictions on contribution cuts and benefit increases, the plan must stop paying lump sums or other front-loaded benefits to new retirees and devise a plan to get out of the red zone within a 10-year period. Once in the red zone, plan trustees can cut benefits for current workers that are usually protected from cutbacks – so-called ‘adjustable benefits’, such as recent benefit increases, early retirement subsidies, and other benefit features. Importantly, no cuts to adjustable benefits can be made without first providing notice (See IRC 432(e)(8)(C)). If the trustees determine that, after adopting all reasonable measures, they will not be able to recover in the statutory period, they must adopt a program that may take longer but that they believe is likely to work. If they believe that they cannot reasonably turn the situation around, they must design a plan to forestall insolvency.

<sup>31</sup> Data on plans’ 2008 risk status are not currently available in the 5500 online database. Data on risk status were collected from the pdf copies of 2008 schedule MBs that were submitted to the DOL by plans.

<sup>32</sup> While many plans moved from yellow to green after the crisis, the fact that a plan is in the Green zone does not indicate zero risk of failure. In fact, 2 of the 3 largest “critical-and-declining” plans were actually green in 2010.



**Exhibit 6. Sample of Multiemployer Plans by Risk Status, 2008–2016**

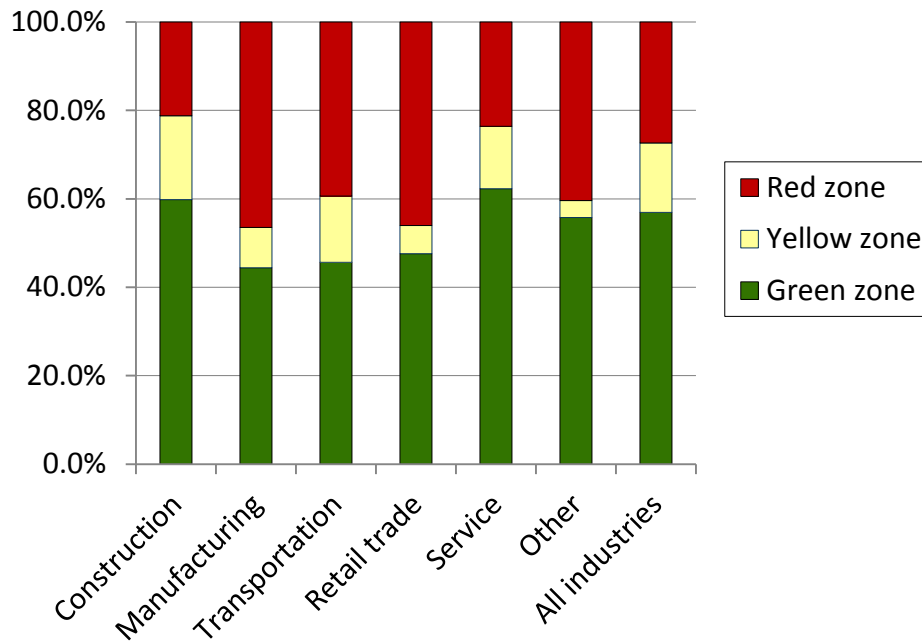


Sources: U.S. Department of Labor, *Form 5500* (2008–2015); and U.S. Department of Labor (2017).

Exhibit 7 presents the current risk status of multiemployer plans by industry. The construction industry is best off with only 21 percent of plans currently in the red zone, 19 percent in the yellow, and 60 percent in the green. The manufacturing and retail industries are worst off, with red-zone plans making up just under 50 percent of their plans. The service industry aligns closely with the overall average, with about one-quarter of its plans currently in the red zone. The distribution in terms of participants reveals a relatively similar story.<sup>33</sup>

<sup>33</sup> In terms of the distribution of plan participants, about one-quarter of multiemployer participants are currently in the red zone – which is similar to the percentage of plans in the red zone. The construction industry is still best off with only 13 percent of participants currently in the red zone. The manufacturing and retail industries are still worst off, with red-zone plans make up just *over* 50 percent of their participants. The one material difference in the distribution of plans in comparison to the distribution of participants, is in the service industry where more than 40 percent of participants are in the red zone compared to only about 25 percent plans.

**Exhibit 7. Distribution of Plans by 2016 Risk Status and Industry, 2015**



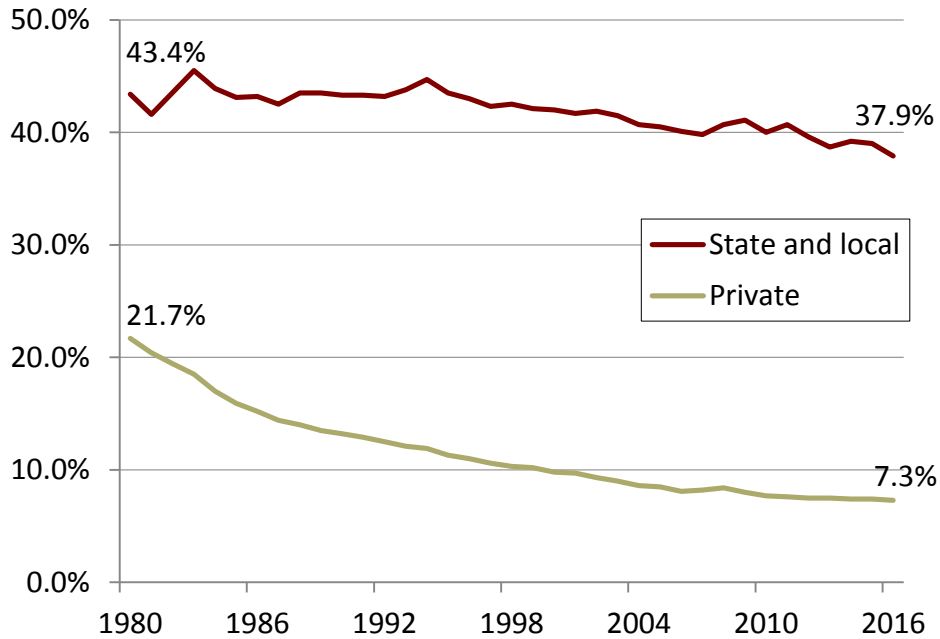
Sources: Authors' calculations from U.S. Department of Labor, *Form 5500* (2015) using the PBGC's industry codes for multiemployer DB plans; and U.S. Department of Labor (2017).

### Structural Challenges

In addition to being buffeted by financial crises, multiemployer plans face up to three major structural challenges. First, the lack of new entrants leads to a very high percentage of inactive members. Second, withdrawal liability (the payments required when an employer exits a plan) is often inadequate, such that “orphaned” participants (those left behind when employers exit) create a burden for remaining employers. Finally, the construction industry, which supports the largest component of multiemployer participants, is highly cyclical.

*Increasing Percentage of Inactives to Total Members.* The number of new participants has increased only slightly in the last two decades. The reason is twofold. First, private sector unions, which are prime movers behind multiemployer plans, have seen their membership drop from 22 percent of the workforce in 1980 to 7 percent in 2016 (see Exhibit 8). Second, many of the industries where multiemployer plans exist, such as manufacturing, have declined.

**Exhibit 8. Percentage of Wage and Salary Workers in Unions, 1980–2016**



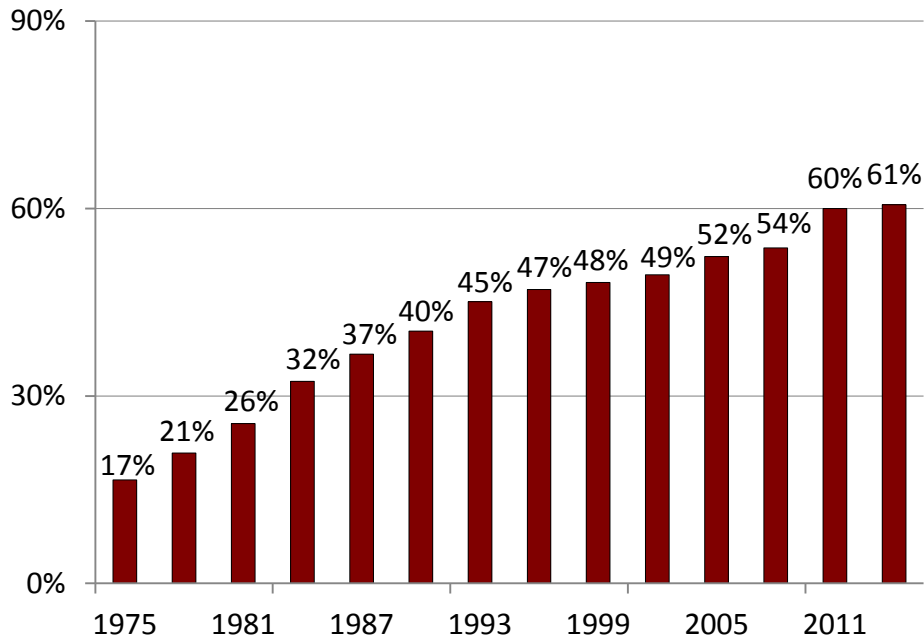
Source: Hirsch and Macpherson (1980-2016).

These trends are unlikely to reverse. First, employers negotiating collective bargaining agreements are now reluctant to enter defined benefit plans because they effectively are assuming some portion of the plan’s unfunded liability. Even if their plan is currently fully funded, they expose themselves to future risk if market conditions deteriorate and the plan becomes underfunded as a result. Second, some employers with a plan are strategically negotiating withdrawals, based on the conclusion that the plan will eventually become insolvent and that it is better to withdraw now before liabilities increase.<sup>34</sup>

The lack of new blood has led to the rapid maturation of these plans. Multiemployer plans now have a relatively large number of inactives to total members (see Exhibit 9). In 1975, inactive participants represented 17 percent of total participants across multiemployer plans; by 2014, this share had increased to 61 percent. That is, most of today’s participants are older individuals, who have accumulated substantial benefits under the plan and are now retired or close to retirement.

<sup>34</sup> U.S. Government Accountability Office (2013).

**Exhibit 9. Inactive Members as a Percentage of Total Members in Multiemployer Plans, 1975–2014**



Source: Authors' calculations based on U.S. Department of Labor (2016b).

Both private sector single-employer DBs and state and local pension plans have experienced similar rises in the proportion of inactives. However, this trend is particularly challenging for multiemployer plans because unfunded liabilities related to inactives are financed through contributions that are closely linked to the relatively shrinking population of actives. Take the example of a plan with \$1 billion in assets that experienced a return of minus 10 percent instead of plus 7 percent. If the \$170 million (17 percent x \$1 billion) loss were amortized over 15 years, required contributions would rise by \$17 million per year to cover the shortfall.<sup>35</sup> If the plan had 10,000 active workers, the required increase to amortize the actuarial loss would be \$1,700 per participant. If the plan had only 5,000 active workers, the annual contribution per active worker would have to increase by over \$3,000.

*Inadequate Withdrawal Liabilities and Burden of Orphan Workers.* Employers who participate in multiemployer plans are generally allowed to exit the plan at any time (subject to collective bargaining obligations). In this case, their “orphan” workers no longer accrue benefits, but are entitled to vested benefits earned to date. To ensure the payment of benefits to these workers, the law requires exiting employers to pay a withdrawal liability to cover their share of the plan’s underfunding (if any).

The system, however, has serious limitations and often leaves the remaining employers burdened. First, up to 2000, when plans were typically fully funded, withdrawing employers did

<sup>35</sup> This analysis assumes a level-dollar amortization and a 5.5-percent interest rate.

not face any liability when they left, even though financial markets collapsed shortly thereafter.<sup>36</sup> Second, in situations where unfunded liabilities did exist, collections could be minimal if employer exits were due to bankruptcies. Third, even in the absence of bankruptcy, when the withdrawal liability represents the employer’s share of unfunded vested benefits, employer payments may not capture their full liabilities because the payments are based on past contributions rather than attributed liabilities and are capped by law at 20 years. Fourth, plans have the option to calculate an employer’s withdrawal liability using the plan’s funding rate, typically 7.5 percent, which may be fine for an ongoing plan but is too high for a termination liability. Finally, special rules allow employers in the construction and entertainment industries to avoid any withdrawal liability under certain circumstances.<sup>37</sup> To the extent that withdrawing employers did not pay enough to cover the full cost of their workers who remain in the plan, the burden falls to the remaining employers.

Orphan participants constitute a significant share of total multiemployer participants. Based on the most recent 5500 data, orphans represent 1.6 million participants in multiemployer plans – about 15 percent. Not surprisingly, orphans constitute a much larger share of total participants for plans in the red zone than for those in the yellow and green zones (see Exhibit 10).

**Exhibit 10. “Orphaned” Plan Members by 2016 Risk Status, 2015**

Risk Status	Orphans	
	Number	Percentage of Total Plan Participants
Red Zone	984,246	27.5%
Yellow Zone	56,589	3.8%
Green Zone	572,770	10.1%
Total	1,613,605	15.0%

Notes: While the percentage of orphans in yellow-zone plans appears surprisingly low, the values are consistent with 2010 data reported by the PBGC. About 25 percent of multiemployer-plan membership resides in plans that provide no data on orphans, and this analysis assumes that these plans have no orphans. For this reason, the numbers shown above may underestimate the true number of orphans as a percentage of total members.

Sources: Authors’ calculations from U.S. Department of Labor, *Form 5500* (2015); and U.S. Department of Labor, “Critical, Critical-and-Declining, Endangered and WRERA Status Notices” (2017).

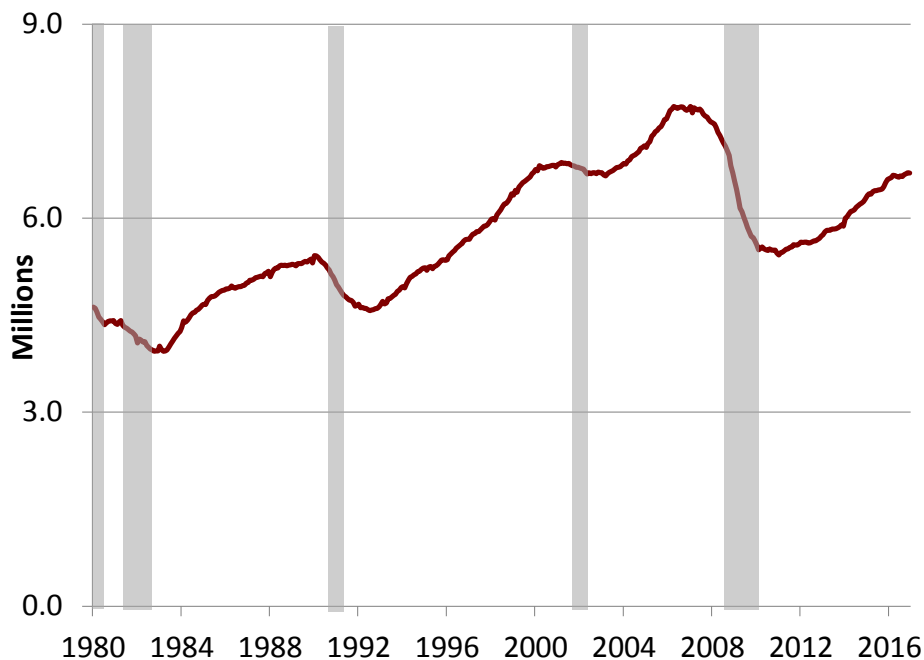
*Cyclical Nature of Construction.* Work in the construction industry, which accounts for about 40 percent of the multiemployer participants and 55 percent of all plans, is highly cyclical (see Exhibit

<sup>36</sup> Additionally, the assets accumulated to pay for the liabilities associated with withdrawn employers remained invested in risky securities, rather than being used to purchase an annuity to finance the future benefits.

<sup>37</sup> In the case of plans operating in the construction or entertainment industries, an employer is not required to pay a withdrawal liability if the employer is no longer obligated to contribute under the plan and ceases to operate within the jurisdiction of the collective bargaining agreement (or plan) or does not resume operations within five years without renewing its obligation to contribute. Slightly different rules apply to the trucking, household goods, moving, and public warehousing industries and – for partial withdrawal – to the retail food industry. See McMurdy (2009).

11). Some multiemployer plans in this industry reported employment declines of 30 percent or more in the last recession. For a fully funded plan, such a reduction in contributions would not be an issue, because less work means less accrued benefits for plan participants. But for a financially troubled plan, the contributions for each active worker cover not only the costs of the worker’s future benefits but also a payment toward reducing the plan’s unfunded liability. Thus, when the number of active workers declines, the unfunded liability tends to grow.

**Exhibit 11. Construction Employment over the Business Cycle, 1980–2016, Millions of Employees**



Note: Shaded areas represent recessions.

Sources: Bureau of Labor Statistics (1980-2016); and National Bureau of Economic Research (2016).

In short, multiemployer plans, like other employer plans, have been challenged by two financial crises since 2000. While the majority of multiemployer plans are returning to financial health, a substantial minority face serious funding problems that are exacerbated by unique structural challenges – a declining ratio of active to total participants that increases the burden on underfunded plans, withdrawal penalties for exiting companies that are insufficient to cover the costs they leave behind, and cyclical employment patterns that interrupt the paying off of unfunded liabilities. The result of these financial and structural forces is a persistent group of distressed plans, some of which are projected to become insolvent in the foreseeable future. The question is how much money is required to cover the liabilities of these plans and who will provide that money – participants through benefit cuts, employers through increased contributions, or the public through increased taxes.

### 4.3 How Large Is the “Hole”?

The “hole” can be defined in a number of ways – the total unfunded liability of all 1,400 multi-employer plans, the unfunded liability of plans in the red zone, or the unfunded liability of the subset of red-zone plans described as “critical-and-declining” under the Multiemployer Pension Reform Act of 2014.

As discussed earlier, the Pension Protection Act of 2006 required trustees, employers, and unions to look past funded ratios on a single date and take an active, forward-looking approach to managing their plans. Based on a plan’s assessment of its financial health over the next five or ten years, as noted, the PPA assigns it to one of three zones: red, yellow, or green.<sup>38</sup> The other major innovation of the PPA is that it requires plans in the yellow or red zones to take corrective action (see Exhibit 12).

**Exhibit 12. Triggers and Required Action for “Critical” and “Endangered” Status**

Zone Status	Criteria	Required Action
<p style="text-align: center;"><b>Yellow</b></p> <p>Endangered</p> <p>Seriously Endangered</p>	<p>Less than 80% funded <i>or</i> funding deficiency within 7 years.</p> <p>Less than 80% funded <i>and</i> funding deficiency within 7 years.</p>	<p>“Funding Improvement Plan” to close one-third of gap over 10 years.</p> <p>“Funding Improvement Plan” to close one-fifth of gap over 15 years.</p>
<p style="text-align: center;"><b>Red</b></p> <p>Critical</p>	<p>Funding deficiency within 4 years (5 years if less than 65 percent funded), <i>or</i> insolvency within 5 years (7 years if less than 65 percent funded), <i>or</i></p> <p>Liabilities for inactives greater than for actives; contributions less than normal cost plus interest on the unfunded liability and funding deficiency within 5 years.</p>	<p>“Rehabilitation Plan” to remedy “critical” status within 10 years.</p>

Notes: A plan’s status is determined at the beginning of the plan year, and the criteria shown include the current plan year in their provisions. Alternatively, the criteria can be written excluding the current plan year and only reporting provisions for succeeding years, thus showing one fewer year for each criterion.

Source: Solis, Geithner, and Gotbaum (2013).

MPRA further refined the classification of multiemployer plans in that it allows plans in “critical” status (that is, red-zone plans) that are also in “declining” status to apply for benefit suspensions, partitions, and PBGC financial assistance and mergers. A plan is deemed “critical-and-declining”

<sup>38</sup> A plan has a funding deficiency if projections indicate that the plan does not have sufficient funds to meet the legislated minimum required contributions.

if it is projected to become insolvent within 15 years (20 years if the ratio of inactive to active participants is greater than 2 to 1 or if the plan is less than 80 percent funded).<sup>39</sup>

Exhibit 13 shows plans and participants in 2015, by their 2016 zone status. While only about one-quarter of plans are in the red zone, these plans cover one-third of participants. The bulk of these participants work in three industries – transportation, services, and manufacturing.

**Exhibit 13. Multiemployer Plans and Participants by 2016 Risk Status, 2015**

PPA Category	Plans		Participants	
	Number	Percent	Number (millions)	Percent
Red	351	27.5%	3.6	33.3 %
Critical and Declining	102	8.0%	1.2	11.1 %
Critical	249	19.5%	2.4	22.3 %
Yellow	202	15.8%	1.5	13.9 %
Green	725	56.7%	5.7	52.8 %
<b>All</b>	<b>1,278<sup>a</sup></b>	<b>100%</b>	<b>10.7</b>	<b>100.0 %</b>

<sup>a</sup> The number of plans reflects the total number of observations available for plan-level analysis in the Form 5500 database that have a known risk status. “Red zone: critical” does not include the “critical-and-declining” plans. Sources: Authors’ calculations from U.S. Department of Labor, *Form 5500* (2015); and U.S. Department of Labor (2017).

For the plans in each category, Exhibit 14 presents two measures of funded status and unfunded liabilities reported in DOL’s Form 5500 – a current view and an actuarial smoothed view.<sup>40</sup> The focus throughout this study is the current liability, even though the PPA classifications are based on the actuarial measure. The current value is the most conservative measure and the one used by the PBGC; if the liability is eliminated based on these assumptions, the problem is really solved. The current funded ratio overall for multiemployer plans is 46 percent. The 2015 funded ratio for those in the green zone averages 53 percent; plans in the yellow zone average 41 percent; and those in the red zone average 37 percent.

<sup>39</sup> MPRA also requires plans in the yellow and green zones to project whether they will become critical and move to the red zone in the next five years. If so, the trustees can opt to be in the red zone in the current year. Moving early enables plans to take advantage of the special rules for red-zone plans and avoid adopting a Funding Improvement Plan required of yellow-zone plans before eventually adopting a Rehabilitation Plan required of red-zone plans. On the other hand, remaining in their current status provides plans with the freedom to solve their funding challenge outside of the statutory framework associated with being a red plan. According to Segal Consulting (2016), in 2015 and 2016, only about one-quarter of the plans that were projected to be in the red zone in the next five years opted to change their classification immediately.

<sup>40</sup> As discussed, the actuarial view averages asset values over a period of time and uses the expected return on plan assets as the discount rate to value liabilities. The current view is based on the market value of plan assets and a liability calculated using a four-year average yield on 30-year Treasuries as the discount rate.



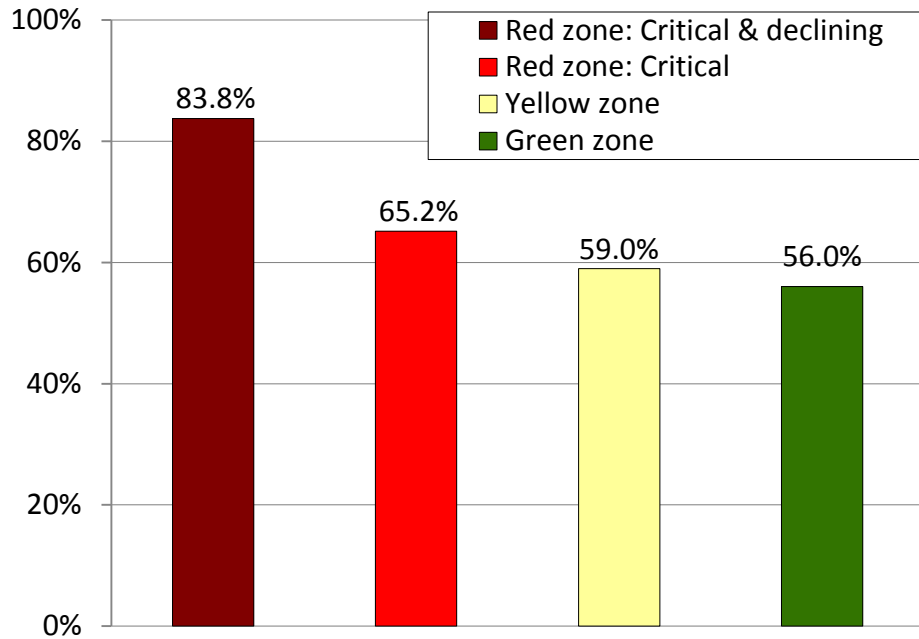
**Exhibit 14. Funded Status of Multiemployer Plans by 2016 Zone Status, 2015**

PPA Category	Assets as a Percent of Liabilities		Unfunded Liabilities (Billions)	
	Current	Actuarial	Current	Actuarial
Red	37.4 %	61.6 %	\$187.0	\$71.1
Critical and Declining	35.3 %	53.7 %	\$75.9	\$35.3
Critical	38.7 %	67.1 %	\$111.2	\$35.8
Yellow	41.4 %	72.9 %	\$118.3	\$32.1
Green	53.3 %	89.4 %	\$248.0	\$34.3
<b>All</b>	<b>46.4 %</b>	<b>78.1 %</b>	<b>\$553.4</b>	<b>\$137.6</b>

Sources: Authors' calculations from U.S. Department of Labor, *Form 5500* (2015); and U.S. Department of Labor (2017).

As the funded status for plans in the red and yellow zones is very similar, it clearly is not the factor that distinguishes the two groups. The key determinant of those projections is inactive participants (retirees and vested members who are no longer active workers participating in the plan but are not yet receiving benefits) as a percentage of total participants. This percentage is key because union contracts generally set employer contributions to multiemployer plans on a per-employee basis so that a decline in actives means a decline in contributions, while an increase in retirees means an increase in benefit payments. With a large percentage of retirees, benefits exceed contributions; and as that percentage increases over time, the source of contributions begins to disappear. Exhibit 15 shows that the percentage of inactives is the real differentiator between critical-and-declining plans and those in other zones. For critical-and-declining plans, inactives account for 84 percent of total members, compared to 65 percent or less for other groups.

**Exhibit 15. Inactive Members as a Percentage of Total Members by 2016 Risk Status, 2015**

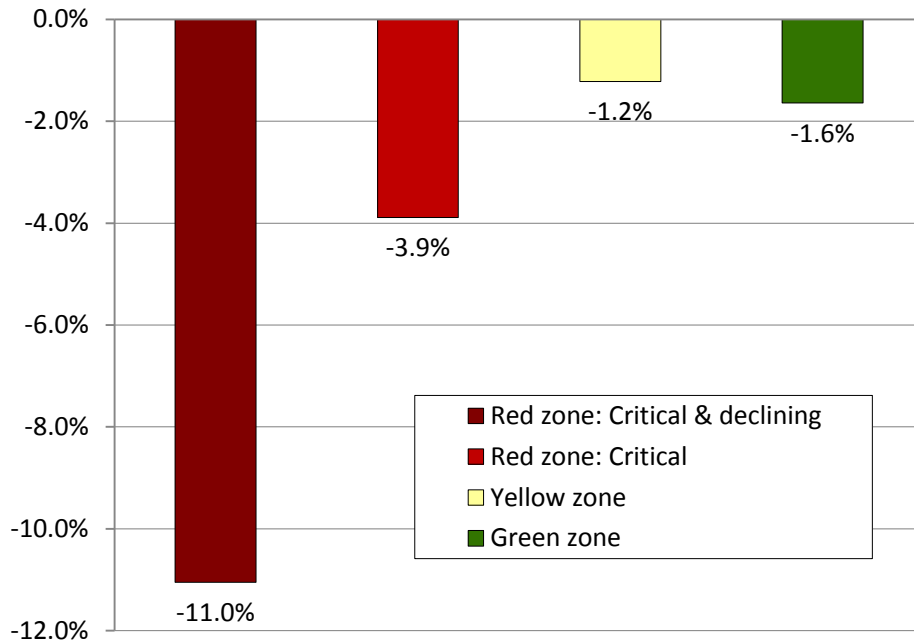


*Note:* “Red zone: critical” does not include the critical and declining plans.

*Sources:* Authors’ calculations from U.S. Department of Labor, *Form 5500* (2015); and U.S. Department of Labor (2017).

Once benefits exceed contributions, cash flow is negative – more money is going out than coming in. Exhibit 16 presents cash flows (contributions minus benefits) as a percentage of market assets. The pattern of cash flow by zone mirrors that of the inactives as a percentage of total members, ranging from -11 percent of assets for plans categorized as “critical-and-declining”, compared to under -4 percent for other groups.

**Exhibit 16. Cash Flow as a Percentage of Assets by 2016 Risk Status, 2015**



Note: "Red zone: critical" does not include the "critical-and-declining" plans.

Sources: Authors' calculations from U.S. Department of Labor, *Form 5500* (2015); and U.S. Department of Labor (2017).

A negative cash flow is not a problem if a plan is fully funded and drawing down its accumulated assets to pay benefits. In that case, assets decline in step with liabilities, and the plan remains fully funded. However, if a plan is not fully funded – like many multiemployer plans today – a large negative cash flow causes assets to decline more rapidly than liabilities. This dynamic is hastened by the fact that the gap between benefits and contributions tends to rise over time for mature plans. As a result, the plan falls into a downward spiral, and assets are depleted before all promised benefits are paid.

Both a large share of inactives and negative cash-flow rates are a serious problem for the three largest "critical-and-declining" multiemployer plans – Central States Teamsters, Bakery & Confectionery Pension Fund, and the United Mine Workers (see Exhibit 17). For each, about 80 percent or more of their members are inactive. More importantly, they all are underfunded with negative cash flow rates that exceed their expected investment return. This means that they expect to dig into their existing assets to pay benefits each year. The negative cash flows for Central States and United Mineworkers are particularly extreme, with rates at or below -13 percent.

**Exhibit 17. Central States, Bakery and Confectionery, and United Mine Workers Plans, 2015**

Plan	Zone	Funded ratios		Percent inactive	Cash flows			Expected return
		Actuarial	Current		Benefits (millions)	Contributions (millions)	(B-C) / assets	
Central States	Red	47.9 %	33.0%	83.8%	\$2,814	\$587	-12.5%	7.5%
Bakery & Confectionery	Red	61.2 %	42.6%	79.9%	\$615	\$192	-8.8%	6.5%
United Mine Workers	Red	66.7 %	39.8 %	92.1%	\$622	\$55	-14.9%	7.5%

Sources: Authors' calculations from U.S. Department of Labor, *Form 5500* (2015); and U.S. Department of Labor (2017).

Central States Teamsters is one – and by far the largest – of the 15 critical-and-declining plans that have submitted applications to the Treasury (as of September 28, 2017) requesting to cut accrued benefits for current members in order to stave off insolvency. Thus far, three requests to cut benefits have been approved, five have been denied, four are under review, and three have been withdrawn. In almost every case, the plan reports a high rate of negative cash flow – a rate in excess of the return they expect on their investments (see Exhibit 18). The aggregate unfunded liability for plans that have applied to the Treasury for benefit reductions is \$45 billion, equal to approximately 60 percent of the total unfunded liability for all critical-and-declining plans.

**Exhibit 18. Key Statistics for MPRA Plans as of September 2017, 2015 Data**

Plan Name	Total Participants	Percent Inactive	Funded Ratio		Current Unfunded Liability (millions)	Assumed Return	Cash Flow	Status
			Actuarial	Current				
Alaska Ironworkers	824	80.6%	58.7%	44.7%	\$70	6.25%	-9.11%	In review
Automotive Industries	25,834	84.4%	60.3%	41.6%	\$1,830	7.25%	-8.20%	Denied
Bricklayers Local 5 New York	930	80.1%	33.7%	24.4%	\$73	6.75%	-13.83%	Withdrawn
Bricklayers Local 7	484	70.0%	49.4%	29.0%	\$43	7.75%	-13.69%	Withdrawn
Central States Teamsters	397,492	83.8%	47.9%	33.0%	\$36,200	7.50%	-12.47%	Denied
Intl Assoc. of Machinists Motor City	1,228	84.0%	55.9%	32.0%	\$109	7.50%	2.18%	In review
Iron Workers Local 17	2,015	66.8%	32.4%	23.2%	\$283	6.50%	-8.78%	Approved
Ironworkers Local 16	1,183	71.4%	63.1%	44.4%	\$108	7.00%	-9.08%	Denied
Local 805	2,065	76.2%	43.3%	27.8%	\$161	6.75%	-16.29%	Withdrawn
New York State Teamsters	34,526	66.2%	49.0%	26.7%	\$4,290	8.50%	-10.34%	Approved
Road Carriers Local 707	4,571	83.6%	9.4%	7.6%	\$815	5.75%	-62.38%	Denied
Southwest Ohio Regional Council of Carpenters	5,614	69.0%	59.9%	33.3%	\$442	7.50%	-5.94%	In review
Teamsters Local 469	1,822	91.8%	60.3%	43.3%	\$158	7.25%	-8.64%	Denied

Plan Name	Total Participants	Percent Inactive	Funded Ratio		Current Unfunded Liability (millions)	Assumed Return	Cash Flow	Status
			Actuarial	Current				
United Furniture Workers	10,110	89.4%	38.5%	24.4%	\$220	6.75%	-13.74%	Approved
Western States Office & Professional Employees	7,781	87.0%	65.8%	44.8%	\$443	7.25%	-7.57%	In review
<b>Total</b>	<b>496,479</b>				<b>\$45,245</b>			

Sources: Authors' calculations from U.S. Department of Labor, *Form 5500* (2015); and U.S. Department of the Treasury (2017).

In summary, the “hole” for critical-and-declining plans is \$76 billion, based on the current view of funding that uses the market value of assets and values liabilities using a four-year average yield on 30-year Treasuries for the discount rate. Of this amount, about \$45 billion is for plans that have already applied to the Treasury requesting the ability to cut accrued benefits for plan participants. For all plans in the red zone, both “critical” and “critical-and-declining”, the hole is \$187 billion. And, for all multiemployer plans, the hole is \$553 billion. Most multiemployer plans have taken remedial action and have put themselves on a sustainable path. However, the critical-and-declining plans face large negative cash flows and a potential death spiral. What options exist for addressing the underfunding in critical-and-declining plans and for distributing the burden of the \$76 billion shortfall among plan participants, employers, and taxpayers?

#### 4.4 What Are the Options for Filling the “Hole” for “Critical-and-Declining” Plans?

At this stage, the majority of proposed solutions for addressing the problems facing “critical-and-declining” plans and multiemployer plans focus more on alleviating the burden associated with orphan participants (mainly through partitions with the PBGC) and/or providing subsidized loans.<sup>41</sup>

##### Address the Orphan Problem

Three proposed solutions – the Keep our Pension Promises Act of 2015 (KOPPA) sponsored by Senator Bernie Sanders (I-Vt.) and Rep. Marcy Kaptur (D-Ohio), as well as two relatively similar proposals by Davey Grubbs of the of the North Carolina Committee to Protect Pensions (NCPP) and Bernie Anderson of the Wisconsin Committee to Protect Pensions (WCPP) – involve shifting a portion of the liability for the worst off plans to the PBGC.<sup>42</sup>

<sup>41</sup> Internal data and analysis by the Pension Rights Center.

<sup>42</sup> Internal data and analysis by the Pension Rights Center.

Experts have suggested that the PBGC be given the authority and resources to head off insolvency by allowing partitions.<sup>43</sup> A partition would allow a plan to transfer to the PBGC some of the liability for orphan participants whose employer has left the plan. This shift would put the plan in a better position to fund ongoing costs with contributions.

MPRA gave plans that are deemed “critical-and-declining” the right to ask the PBGC to approve a partition.<sup>44</sup> In order for a plan to be eligible for a partition, the plan sponsor must show that the plan has taken all reasonable measures to avoid insolvency – including the maximum possible benefit suspensions – and that partition is necessary for the plan to remain solvent without impairing PBGC’s ability to help other troubled plans – that is, for the plan to have the ability to pay benefits over the long term at levels above the amounts guaranteed by the PBGC multiemployer program (see Box 1).<sup>45</sup>

### **Box 1. PBGC Guaranteed Amounts Are Very Low for Multiemployer Plans**

The PBGC’s benefit guarantee for participants in multiemployer plans is significantly lower than for those in single-employer plans. For an individual with 30 years of service in a multiemployer plan, the PBGC guarantees 100 percent of the pension benefit up to \$3,960 and guarantees 75 percent of benefits in excess of that level but only up to \$12,870 (see Exhibit 19). And, the PBGC multiemployer guarantee is prorated based on years of service, so that those with only 10 years of service are guaranteed 100 percent of the pension benefit up to only \$1,320 and 75 percent of benefits in excess of that level but only up to \$4,290. By comparison, for single-employer plans, the maximum guaranteed annual benefit is much higher. For example, for 2017 at age 65, the single employer guarantee is \$64,432 and is actuarially increased for retirement after age 65. And, the single-employer guarantee does not change whether a participant has 10 or 40 years of service. Finally, the PBGC guarantees are indexed for inflation in single-employer plans, but not in multiemployer plans. Through 2015 about 80 percent of participants in terminated single-employer plans and insolvent multiemployer plans received their full vested benefits. But, the PBGC estimates that only half of participants in multiemployer plans that become insolvent in the future will receive full benefits.<sup>46</sup>

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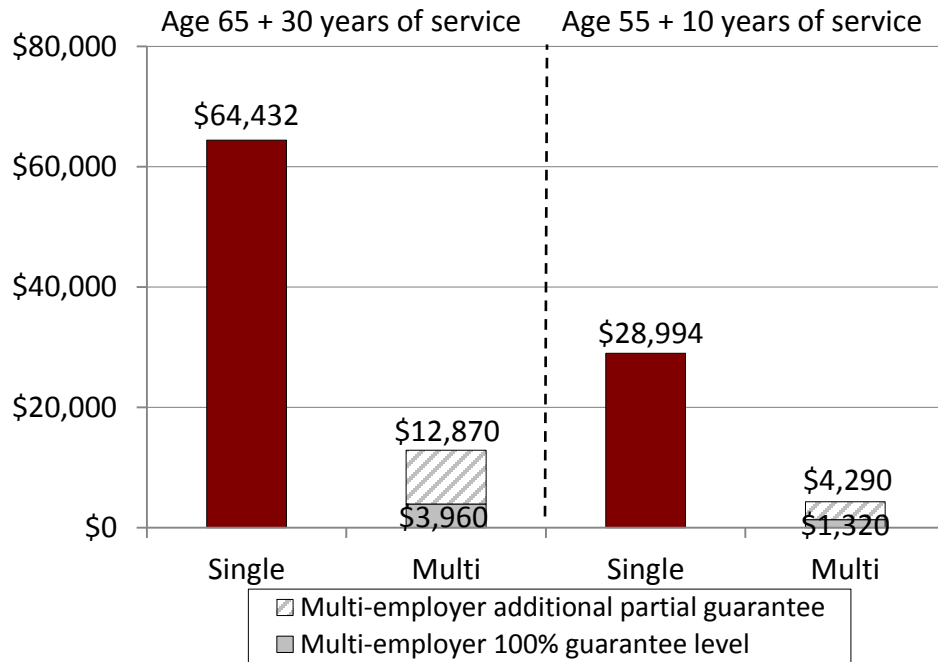
<sup>43</sup> U.S. Government Accountability Office (2013). To date, the PBGC has performed only three partitions: the Council 30 of the Retail, Wholesale, and Department Stores Union plan in 2010; the Chicago Truck Drivers Union Pension Plan in 2010; and former Hostess Brands’ employees in the Bakery and Sales Drivers Local 33 Industry Pension Fund in 2014. In these cases, instead of administering payments for the orphaned participants, the PBGC provided the funding to the plan to cover the orphaned participants’ guaranteed benefits. The Create Jobs and Save Benefits Act of 2010, which was not adopted, would have specifically authorized the use of partitions for plans meeting certain requirements.

<sup>44</sup> Before approving a partition, the PBGC has to certify to Congress that the partition will not impair PBGC’s ability to pay current financial assistance.

<sup>45</sup> Under MPRA, the PBGC has received four applications for partition; one has been denied, two have been withdrawn, and one has been approved.

<sup>46</sup> Pension Benefit Guaranty Corporation (2015).

**Exhibit 19. PBGC Maximum Benefit Guarantees for Single-Employer and Multiemployer Plans, 2017**



Source: PBGC (2017).

Removing the burden associated with orphaned participants has some evident appeal; it has been clear for decades that the withdrawal liability procedure is flawed, and bankrupt firms often pay little to nothing.<sup>47</sup> One could argue that it is unfair to burden current workers and their employers with legacy costs over which they had no control. The partition approach, however, also raises some issues. Most importantly, the data on orphans is far from perfect.<sup>48</sup> Second, if the case is so strong for removing orphans from multiemployer plans, why limit the relief to only critical-and-declining plans? If the data were available, the analysis would be straightforward. Simply subtract from total liabilities the unfunded liability associated with each orphaned participant and recalculate funded ratios and exhaustion dates. Unfortunately, orphan liabilities are not reported on the Form 5500 or anywhere else. The Form 5500 provides data on the number of orphans in each plan but no information on how well each orphan is funded through the withdrawal liability paid by former employers, nor on the age and service of each orphan. Thus, a measure of orphan liabilities must be estimated based on the limited amount of orphan data available in the 5500.<sup>49</sup>

<sup>47</sup> U.S. General Accounting Office (1984a).

<sup>48</sup> To reduce recordkeeping burdens, PBGC guidance permits plans to report as orphan participants those participants whose most recent contributing employer had withdrawn from the plan, even if an employer with whom the participant earned earlier service credit continues to participate in the plan. Alternatively, a plan may report as orphan participants those who have no former employers with a continuing obligation to contribute to the plan.

<sup>49</sup> Further complicating matters is the fact that the existing questions regarding the number of orphans in the plan are worded in a way that leaves open the possibility that responses could also include inactive members who have severed ties with an employer that is still participating in a plan.

In our approach, the first step is to estimate the total liability associated with orphans. Since orphans are by definition inactives, orphan liability for each plan is calculated by multiplying the total inactive liability by the ratio of orphans to total inactives. This approach assumes that the average orphan is no different from the average inactive in a given plan.<sup>50</sup> The second step is to estimate the share of orphan liability that would be transferred to the PBGC. (The plan would pay the remainder of the benefit owed to the orphan participant.) This calculation requires estimating the ratio of the PBGC guarantee for each plan to the plan's average benefit and applying that ratio to the orphan liability. For example, in the case of Central States Teamsters, the average annual benefit is \$13,659 and the estimated average PBGC guaranteed benefit is \$8,580, which means that the PBGC would take on 63 percent ( $\$8,580/\$13,659$ ) of the orphan liability.<sup>51</sup>

The results of these calculations are displayed in Exhibit 20 for each zone. Eliminating the burden of orphans in the fashion described above for all critical-and-declining plans would cost \$35 billion – roughly one-half of the unfunded liability for this group. Extending this relief to all plans in the red zone would increase costs by another \$14 billion. Eliminating the burden of orphans for all multiemployer plans would cost about \$88 billion.

**Exhibit 20. Cost of Providing the PBGC Guarantee for Orphaned Participants, 2015**

Risk status	Liability			Orphan Benefits			Orphan PBGC Costs
	1	2	1 x 2 = 3	4	5	5 / 4 = 6	3 x 6 = 7
	Inactive Liability (billions)	Ratio of Orphans to Inactive Members	Orphan Liability (billions)	Avg. Benefit	Avg. PBGC Guarantee	Ratio of PBGC Guarantee to Avg. Benefit	Liability for PBGC Guarantee (billions)
Red Zone: All	\$191.6	42.3 %	\$69.8	\$7,342	\$5,173	70.5 %	\$49.2
Red Zone: Critical and declining	93.4	52.7	50.0	10,169	7,084	69.7	34.8
Red Zone: Critical	98.2	35.0	19.8	4,362	3,159	72.4	14.3
Yellow Zone	119.8	9.0	11.4	15,304	8,012	52.4	6.0
Green Zone	295.3	19.1	42.9	8,422	6,381	75.8	32.5
Total	606.7		124.1				87.7

Note: "Red zone: critical" does not include the "critical-and-declining" plans.

Sources: Authors' calculations from U.S. Department of Labor, *Form 5500* (2015); and U.S. Department of Labor (2017).

<sup>50</sup> If the average orphan – due to an abrupt exit of their employer – accrues less service than the average inactive, the assumption that they are like other inactives may overstate orphan liabilities. At the same time, due to a complete lack of data, the analysis excludes any orphan liabilities related to currently active members that have past service with an employer who withdrew and did not pay its obligations. It's quite possible that these two effects offset each other.

<sup>51</sup> See Munnell et al. (2014d).



Recognizing the burden that absorbing orphan liabilities would put on the PBGC, the proposals for partitioning also include additional revenue to the PGBC. Proposals by both the NCPP and the WCPP advocate for membership fees ranging from 1 to 5 percent of benefits, with higher fees paid by plans with more severe risk status. KOPPA focuses on changing certain tax laws – specifically the “like-kind exchange” and “minority valuation discount” provisions of the Internal Revenue Code – to come up with the additional revenue. But, the key question is the impact that orphan relief would have on the financial status of critical-and-declining plans. Exhibit 21 shows funded ratios and exhaustion dates for the 15 critical-and-declining plans that have applied for MPRA relief. The new funded ratio is simply the old one with liabilities reduced by the orphan relief. The new exhaustion date for each plan is calculated by reducing expected benefit payouts by the ratio of the liability assumed by the PBGC and the plan’s total liability.<sup>52</sup> As can be seen, for most plans where orphans account for more than 30 percent of total members, removing the orphan burden restores long-term solvency. While relieving the orphan burden would restore solvency to 7 of the 15 MPRA plans, the analysis suggests that it is not a cure-all for every plan.

**Exhibit 21. Status of MPRA Plans as of September 2017 with and without Orphans, 2015 Data**

Plan	Orphans / Total Members	PBGC Liability for Orphans / Liability	Funded Ratio		Insolvency Date	
			Orphans	No Orphans	Orphans	No Orphans
Alaska Ironworkers Pension Plan	80.6 %	59.3 %	44.7 %	109.8 %	2032	Never
Automotive Industries	0.5	0.4	41.6	41.7	2031	2032
Bricklayers Local 5 New York	NR	NR	24.4	24.4	2023	2023
Bricklayers Local 7	63.2	41.8	29.0	49.7	2025	Never
Central States Teamsters	52.6	32.3	33.0	48.8	2028	Never
Intl Assoc. of Machinists Motor City	NR	NR	32.0	32.0	2025	2025
Iron Workers Local 17	NR	NR	23.2	23.2	2028	2028
Ironworkers Local 16	34.4	20.0	44.4	55.5	2035	Never
Local 805	40.3	30.2	27.8	39.9	2022	2027
New York State Teamsters	26.8	14.4	26.7	31.2	2031	Never
Road Carriers Local 707	24.7	12.4	7.6	8.7	2019	2019
Southwest Ohio Regional Council of Carpenters	NR	NR	33.3	33.3	2015	2015
Teamsters Local 469	84.1	52.3	43.3	90.9	2030	Never
United Furniture Workers	72.5	67.4	24.4	74.9	2022	Never
Western States Office & Professional Employees	20.0	16.2	44.8	53.4	2030	2036

Note: “NR” represents plan data that are not reported.

Sources: Authors’ calculations from U.S. Department of Labor, *Form 5500* (2015); and the U.S. Department of the Treasury (2017).

<sup>52</sup> The analysis uses the ratio of orphan liability to total liability – active, terminated vested, and retirees – because the projected benefit payouts include those that will be made to both current and future retirees.

## Provide Loans

Two organizations, United Parcel Service (UPS) and the International Brotherhood of Teamsters, have suggested subsidized loans as a way to address the financial challenges facing multiemployer plans.<sup>53</sup> Partially in response to their challenges with Central States (see Box 2), UPS would have the government provide five-year, low-interest-rate loans to address the negative cash flows experienced by critical-and-declining plans. The International Brotherhood of Teamsters would establish a nonprofit Pension Rehabilitation Corporation to structure loans – with government guarantees and private capital – to pay off pension legacy deficits for both multiemployer and single-employer defined benefit plans. The following discussion covers each proposal in further detail.

*The UPS Proposal.* As discussed above, once unfunded plans hit high levels of negative cash flow, they enter a death spiral. UPS proposed low-interest-rate loans aimed directly at the negative cash flow.<sup>54</sup> Loans would be made at a 1-percent interest rate and amortized over 30 years, but borrowers would only pay interest for the first 5 years. To be eligible for the loan, the plan's actuary must certify that the loan will correct the funding issue and can be repaid from investment earnings and a 20-percent reduction in benefits.<sup>55</sup> At the end of the five-year loan period, if the plan remains in "critical-and-declining" status, the shortfall is recalculated and a new five-year loan amount provided. If the plan is no longer in "critical-and-declining" status, then the loan principal begins to be repaid. Troubled plans may only apply for three consecutive loans. At the end of the third loan cycle, the principal and interest on the loan begin to be repaid regardless of the plan's financial condition at that time.

### Box 2. UPS and Central States Teamsters

UPS exited the Central States Teamsters plan in 2007, paying the fund about \$8 billion in lump-sum payments for withdrawal liability. However, in the collective bargaining agreement with the International Brotherhood of Teamsters in which UPS negotiated its withdrawal, it agreed to a backstop whereby if Central States ever lawfully cut benefits, UPS would provide a supplemental retiree benefit. While the MPRA legislation was being considered, UPS sought some protection from this commitment in the negotiations on MPRA, and the resulting legislation provided for a tiered benefit-cutting arrangement whereby the benefits of UPS retirees would be cut only after: (1) the benefits of those associated with companies that did

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<sup>53</sup> Internal data and analysis by the Pension Rights Center.

<sup>54</sup> Loans would amount to the plan's projected "shortfall" over the next five years. The shortfall would equal five times the projected income from contributions and earnings minus the projected benefit payments. The earnings are based on projected assets multiplied by the statutory rate of return assumption.

<sup>55</sup> Benefits would be reduced so that the combination of lower liabilities and an infusion of cash would enable the plan to grow its asset base, which in turn increases future investment earnings to shore up the cash flows. For both actives and those already receiving benefits, benefits would be reduced 20 percent. Because the amount of the reduced benefit payments is not included when calculating the shortfall, the fund has the opportunity to improve its funded status through investment performance.

not pay their full employer withdrawal liability; and (2) the benefits of those associated with all other companies in the plan. Based on estimates from UPS, it appears that UPS would have been on the hook for \$3.2 to \$3.8 billion under the plan proposed by Central States Teamsters and about \$2 billion under the tiered benefit-cutting arrangement.

UPS has net income of about \$4 billion per year and stockholders' equity of about \$2 billion. It is unclear how much a required payment of \$2–\$4 billion would damage the company. Nevertheless, it is useful to look at the role of UPS as a contributor to multiemployer plans more generally. Exhibit 22 shows that the company contributes more than 5 percent to 25 plans. In 9 of those plans, UPS' share exceeds 75 percent, and in 13 plans it exceeds 50 percent. The average size of these plans is about 10,000 participants. UPS accounts for almost 40 percent of contributions to the large Western Conference plan with about 585,000 participants and 25 percent of contributions to the New England Teamsters plan with about 73,000 participants.

**Box 2 (continued)**

**Exhibit 22. Multiemployer Plans with UPS Contributing 5 Percent or More, 2014**

Plan Status	Contribution Share		Participants
Plan Name			
<b>Red Zone: Critical and Declining</b>			
New York State Teamsters Conference Pension & Retirement	72.4	%	34,526
Southwestern Pennsylvania & Western Maryland Area Teamsters	32.5		3,050
Automotive Industries Pension Plan	12.1		25,834
<b>Red Zone: Critical</b>			
Local 177 IBT – UPS	100		7,805
Local 804 IBT and Local 447 IAM - UPS	99.4		10,832
Hagerstown Motor Carriers And Teamsters Pension Plan	82.5		1,735
Local 705 IBT	81.3		16,115
Employer-Teamsters Local No. 175 & 505	65.9		5,561
New England Teamsters & Trucking Industry Pension	24.9		73,221
Alaska Teamsters - Employer Pension Plan	13.6		9,352
Local 295/Local 851 IBT Employer Group Pension Trust Fund	10.6		5,085
Automotive Machinists Pension Plan	7.9		9,171
<b>Yellow Zone</b>			
Teamsters Joint Council No. 83 of Virginia Pension Fund	91.2		7,652
Teamsters Negotiated Pension Plan	85.9		6,403
Truck Drivers & Helpers Local Union No. 355	75.1		4,180
Teamsters Pension Trust Fund of Philadelphia & Vicinity	30.7		26,143
<b>Green Zone</b>			
Eastern Shore Teamsters Pension Fund	98.0		583
Milwaukee Drivers Pension Plan	96.9		4,385

Teamsters Local 639 Employers Pension Trust Fund	85.5	8,355
Hawaii Truckers Teamsters Union Pension Plan	85.1	992
IBT Union Local No. 710 Pension Fund	77.1	21,043
Central Pennsylvania Teamsters Defined Benefit Plan	56.0	29,838
Western Conference of Teamsters Pension Plan	39.7	591,619
District 9 International Machinists & Aerospace Workers	7.6	16,178

Note: "Red zone: critical" does not include the "critical-and-declining" plans.  
Source: Authors' calculations from U.S. Department of Labor, *Form 5500* (2015); and U.S. Department of Labor (2017).

If this approach is to have a meaningful impact on the stability of the multiemployer system, it must be able to help Central States Teamsters, the largest plan in "critical-and-declining" status. The CRR used its existing model of the Central States Teamsters to project contributions and benefits for the plan based on data and assumptions provided in the plan's most recent actuarial valuation that was submitted with its MPRA application.<sup>56</sup> The CRR model for the Central States plan shows the path for market assets and liability for three return scenarios *assuming a 20-percent cut in benefits* (see Exhibit 23).<sup>57</sup> In all but the 7.5-percent-return scenario, the plan exhausts its assets.<sup>58</sup> Lower rates of return would require higher benefit cuts to keep the plan solvent. For example, an assumed rate of return of 6.5 percent would require a benefit cut of 29 percent to ensure solvency.

<sup>56</sup> For further detail on the CRR model of Central States, please see Munnell et al. (2014d).

<sup>57</sup> Market Assets for the borrowing period (first 15 years) were calculated as:

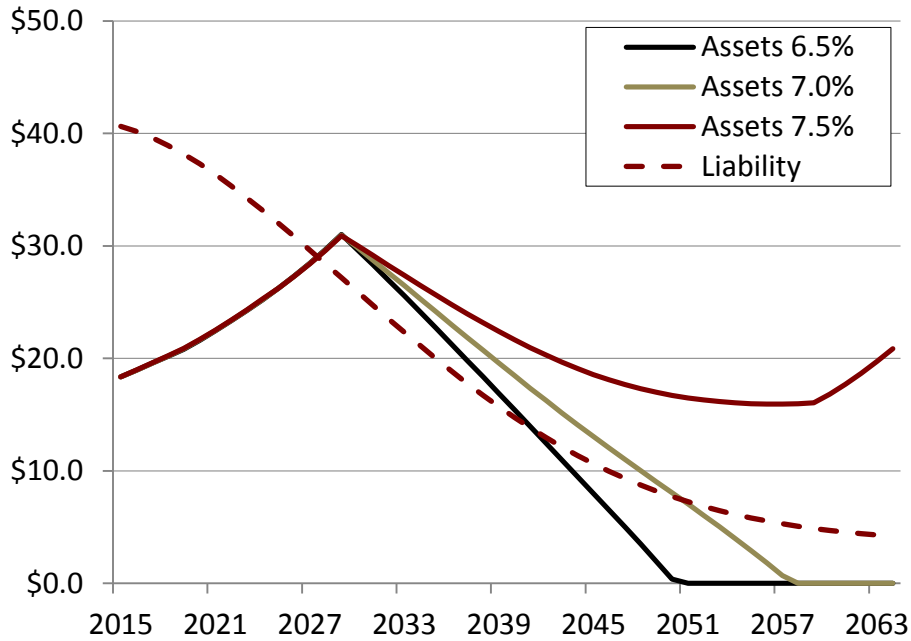
Markets Assets  $t+1$  = (Markets Assets  $t$  + Annual Contribution + Annual Loan amount) – (Reduced Annual Benefit Payments + 1% Interest Payment on loan) + Investment Return

Market Assets for the borrowing period (after the first 15 years) were calculated as:

Markets Assets  $t+1$  = (Markets Assets  $t$  + Contribution) – (Unreduced Annual Benefit Payments + Annual Payment to payoff loan in 30 years) + Investment Return.

<sup>58</sup> For the first 15 years, the path for market assets is the same in all three scenarios because the loan program is designed to make up for any cash-flow shortfalls. After the first 15 years, when the loan program ends, under the lower-return scenarios the plan would have borrowed more, face higher loan repayments, and receive lower investment returns than under the 7.5-percent scenario. As a result, assets decline more quickly. The projected liability, which is the same for all scenarios, declines rapidly because the incoming retiree population is shrinking. Also, the assumption is that new hires coming into the plan decline by 1 percent each year, such that fewer and fewer new employees are entering the system.

**Exhibit 23. Market Assets and Liability for Central States under Loan Program and 20-Percent Benefit Cut, 2015–2064**



Source: Authors' estimates.

The remaining issue is the cost of the loan program. If all loans were repaid, the cost of the program would simply be the present discounted value of the difference between a market loan rate and the proposed 1 percent. The government would face a substantial expense only if the loans were not repaid, but using conservative investment-return and benefit-cut assumptions at the outset would minimize the likelihood of failure. Extrapolating from the Central States example to the total for all multiemployer plans that currently have negative cash flows, the cost of the program would be about \$1.4 billion if the loans were repaid and about \$73 billion if the loans were not repaid.<sup>59</sup>

*The International Brotherhood of Teamsters Proposal.* The International Brotherhood of Teamsters loan proposal goes further than the UPS program by covering liabilities rather than just near-term negative cash flows. Under the current proposal, loans are made directly to red-zone plans to pay for retiree liabilities and to employers participating in yellow- and green-zone plans to pay for the employer’s portion of the plan’s unfunded liability – much like a Pension Obligation Bond (POB).<sup>60</sup> Plans that participate in the loan program will be asked to revise their

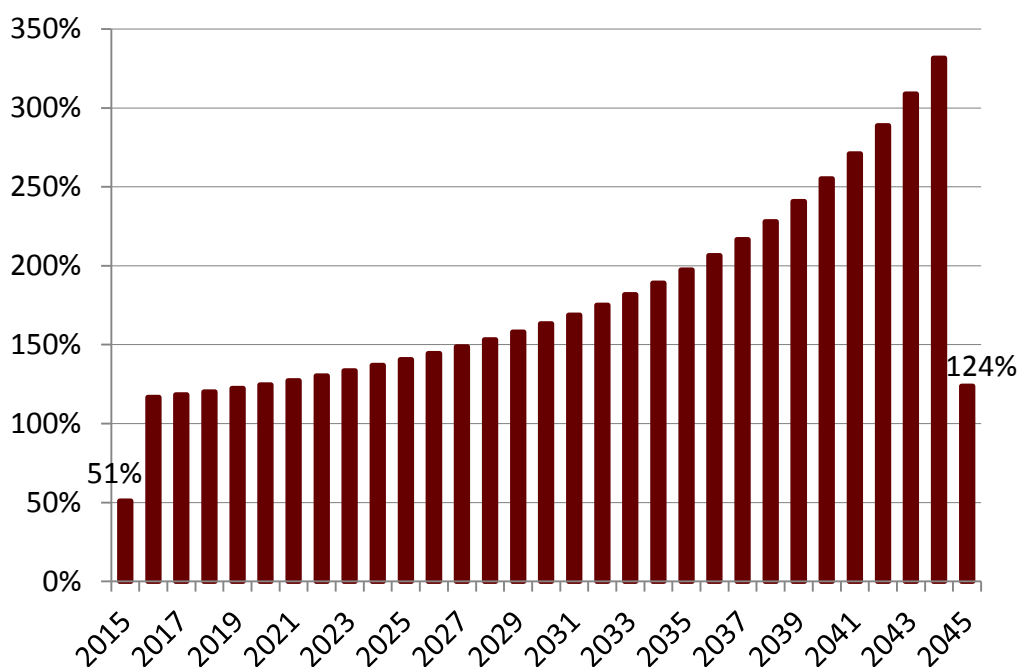
<sup>59</sup> To estimate the total loan amount for all multiemployer plans, the \$11 billion loan for Central States Teamsters (assuming it achieves its assumed return) is multiplied by 6.6 – the ratio of the total negative cash flow for all multiemployer plans in 2015 relative to that of Central States Teamsters in 2015. The analysis assumes a Treasury rate of 2.9 percent based on the yield for 30-year Treasury bonds as of 5/31/2017. Interest cost on the loans is 1.9 percent, the difference between the Treasury rate and the 1-percent loan rate.

<sup>60</sup> The International Brotherhood of Teamsters proposal also includes loans to employers that sponsor a single-employer plan.

plan designs and make changes to their investment strategy to reduce the probability of future unfunded liabilities.

As with the UPS proposal, Central States Teamsters is a good litmus test for the ability for this idea to stabilize the multiemployer system. Under the proposal, Central States would borrow an amount sufficient to cover its retiree liabilities, make interest-only payments for the first 29 years of the loan, and then repay the full loan amount in a balloon payment in year 30. Using the CRR's existing model for Central States, Exhibit 24 shows the funded ratio over time if Central States Teamsters borrows \$23 billion – the actuarial value of retiree benefits – and realizes its assumed return of 7.5-percent. Under these rather optimistic assumptions, the CRR model shows that the loan immediately increases the plan's funded ratio from 51 percent to 115 percent, continues to increase, and results in the plan maintaining solvency over the 30-year loan period. In year 30, after the loan is repaid, the funded ratio drops to 124 percent, and the plan is projected to remain solvent indefinitely.

**Exhibit 24. Funded Ratio for Central States under the International Brotherhood of Teamsters Loan Program, 2015–2045**



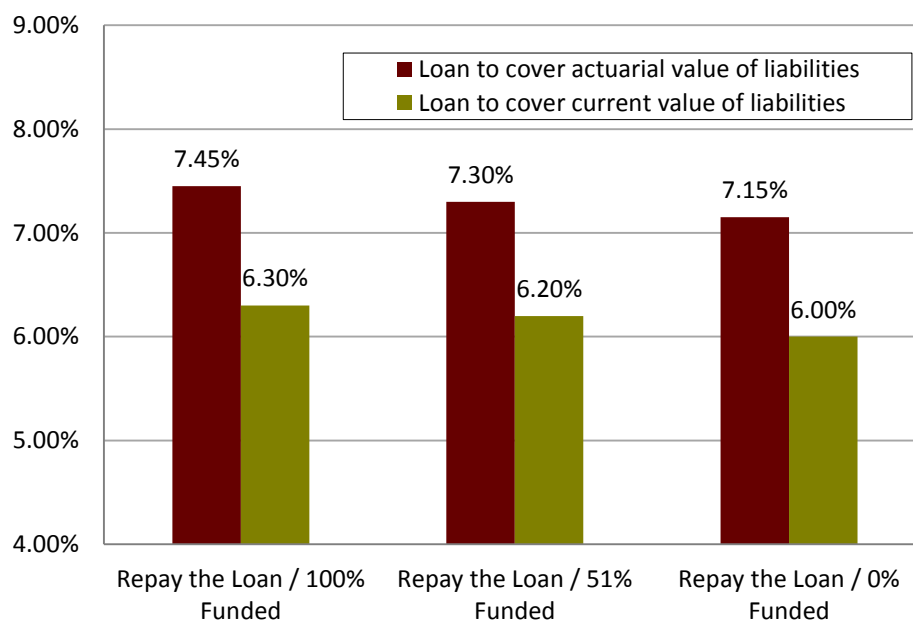
Source: Authors' estimates.

Not shown in Exhibit 24 is the fact that if Central States Teamsters earns less than 7.15 percent, the plan is unable to pay back the loan in full in year 30.<sup>61</sup> To ensure loan repayment and subsequent improved funding, the loan amounts would need to be based on conservative valuations of the liabilities – meaning that a low interest rate should be used. Exhibit 25 shows the minimum investment return required to repay the loan and achieve various funded levels in

<sup>61</sup> Other analyses have found that the program is successful at lower rates of return. The difference likely stems from more optimistic assumptions of future cash flow and liability growth.

year 30. If the Central States Teamsters borrows \$23 billion – the actuarial value of retiree liabilities (the value reported in the plan’s actuarial valuation based on a 7.5-percent discount rate) – the plan must realize at least a 7.45-percent return to be fully funded in year 30 after it repays the loan. If the plan instead borrows \$35 billion – the current value of Central States Teamsters’ retiree liability (the retiree liability reported in the plan’s schedule MB based on a 3.5-percent discount rate) – the Central States Teamsters would only need 6.3 percent returns to be fully funded in year 30. Thus, while valuing liabilities at a more conservative rate requires a larger initial loan, it decreases the minimum return required for the program to succeed.

**Exhibit 25. Minimum Annual Return Required for Central States Teamsters to Repay Loan and Achieve Various Funded Levels in Year 30**



Source: Authors’ estimates.

The final issue is the total cost of the program. If all plans and employers take advantage of the program, loans would amount to all of the retiree liability of red-zone plans plus all the unfunded liability of yellow- and green-zone plans. The loans to plans are meant to immunize retiree liabilities, completely securing retiree benefits. Loans to employers are meant to cover the withdrawal liability – after proceeds from the bonds are contributed to the pension fund, the employer is assured of no further contributions to pay for accrued liabilities (those earned for past service).<sup>62</sup> Using the more conservative current value of liabilities to ensure the program succeeds, total retiree liability of red-zone plans plus total unfunded liability of yellow- and green-zone plans amounts to approximately \$529 billion. However, the main focus of the program is to provide loans to cover the retiree liability of red-zone plans, which amounts to \$160 billion.

<sup>62</sup> Employers will continue to make contributions for future service earned by plan members, but the proposal envisions reforms to benefits and funding that will limit the potential for unfunded liabilities related to these obligations.

Unlike the UPS plan, the International Brotherhood of Teamsters proposal does not intend for the federal government to lend directly, but instead to guarantee the loans. The guarantee lowers the cost of borrowing for all those who participate in the program. While it may be desirable policy to reduce the burden of borrowing for small or struggling employers to save multiemployer plans, the guarantee has real costs to the government. The Office of Management and Budget (OMB) regularly values the cost of federal loan guarantees in areas such as home ownership, higher education, agriculture, and energy.<sup>63</sup> The loan guarantee may benefit some perfectly healthy employers, providing them an advantage over competitors that do not participate in a multiemployer plan.

#### **4.5 Who Will Bear the Burden of the Costs?**

After considering options for filling the hole, the question then becomes who will pay for these initiatives. In the end, only three parties are available to bear the burden: (1) employers – through increased contributions or increased PBGC premiums; (2) plan participants – through benefit reductions; and (3) taxpayers – primarily through propping up the PBGC.

#### **PBGC Does Not Have the Resources to Rescue “Critical-and-Declining” Plans**

Several of the proposed solutions to abate the risk of plan failures rely on funding from PBGC. Yet PBGC resources are finite. PBGC assistance to multiemployer plans has increased sharply since the turn of the century (see Exhibit 26).<sup>64</sup> Loans to insolvent plans account for the bulk of payments, but the PBGC has also helped a couple of partitions.<sup>65</sup> A small amount of funds in 2011 also went to help plan sponsors merge their plans, which can reduce administrative costs.

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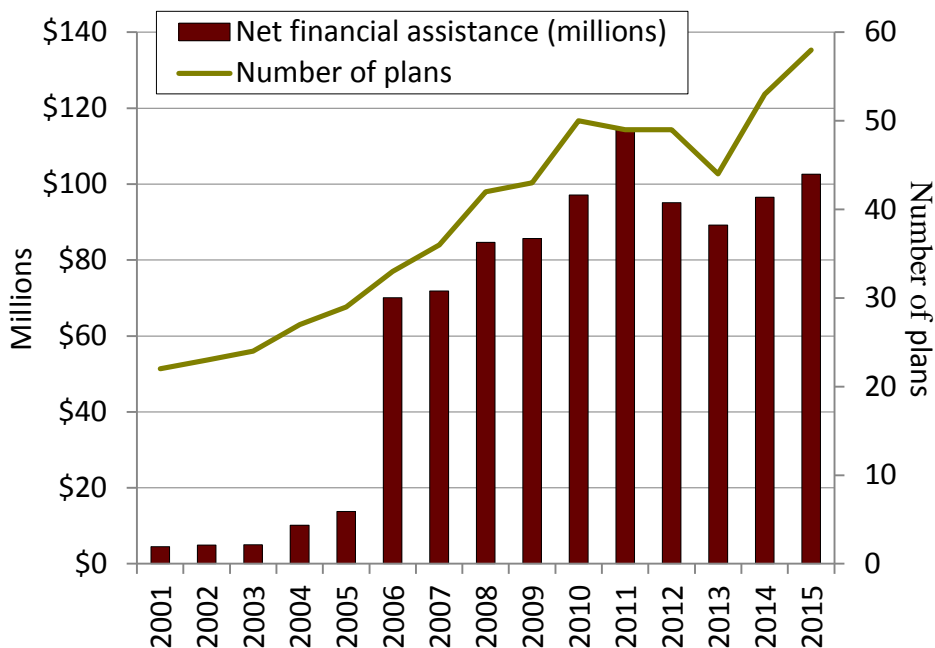
<sup>63</sup> Bickley (2012).

<sup>64</sup> PBGC (2014).

<sup>65</sup> PBGC (2015).



**Exhibit 26. Multiemployer Plans Receiving PBGC Financial Assistance and Amounts Received, 2001–2015**



Note: This exhibit represents periodic payments made to insolvent plans by the PBGC. Periodic assistance payments include payments following a plan partition. Not pictured are one-time or non-periodic payments to purchase annuities or to facilitate a merger.

Source: PBGC (2014) and PBGC (2015).

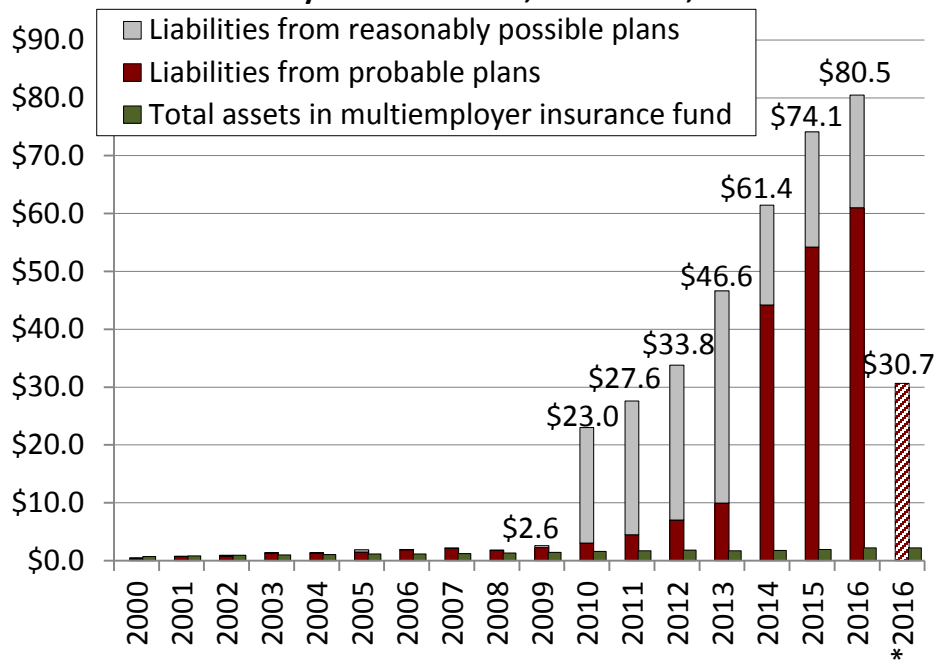
The PBGC projects its finances into the future in terms of both “probable” and “reasonably possible” insolvencies. Probable plans fall into three categories: (1) plans where PBGC payments have already begun; (2) terminated plans where benefits exceed assets plus revenues; and (3) ongoing plans that are likely to terminate in the next 10 years.<sup>66</sup> The “reasonably possible” plans are ongoing entities with a projected insolvency date between 10 and 20 years of the valuation. Exhibit 27 shows the PBGC assets, as well as liabilities for the “probable” and “reasonably possible” plans, from 2000 to 2016. Three important details of the exhibit should be highlighted. First, in 2014, there is a big switch in the liability for “reasonably possible” and “probable” plans. This reflects Central States Teamsters and United Mine Workers being downgraded from “reasonably possible” to “probable.”<sup>67</sup> Second, the total liability facing the PBGC as a result of both “probable” and “reasonably possible” insolvencies has increased sharply since the financial crisis, and these amounts now dwarf the assets in the PBGC’s multiemployer insurance fund.<sup>68</sup> Finally, the CRR estimates that while nearly \$50 billion of the 2016 PBGC liability is related to MPRA plans and the UMWA, nearly \$31 billion – or 38 percent – is related to lesser-known troubled plans.

<sup>66</sup> A plan can terminate by mass employer withdrawal or by plan amendment. A mass withdrawal termination occurs when all employers withdraw or are no longer obligated to contribute to the plan. A plan amendment termination occurs when the plan stipulates that participants will receive no credit for service after a specified date.

<sup>67</sup> PBGC Annual Report (2014).

<sup>68</sup> PBGC (2014; 2000–2016).

**Exhibit 27. PBGC Assets in Multiemployer Insurance Fund and Liabilities from “Probable” and “Reasonably Possible” Plans, 2000–2016, Billions**



Note: The \*2016 bar represents the estimated PBGC liability remaining after removing the liability of the 15 MPRA plans and United Mine Workers.  
 Sources: PBGC (2014; 2000–2016).

The PBGC also makes projections for the next decade and beyond using its Multiemployer Pension Insurance Modeling System, running 500 simulations of the economy and how plans react.<sup>69</sup> The most recent results for this model – assuming no plans elect suspensions or partitions – show that the PBGC’s multiemployer program has a mean 10-year projected deficit (present value of projected benefits minus assets on hand and present value of future contributions) of \$58.6 billion and is more likely than not to be insolvent by 2025.

Once the PBGC’s multiemployer fund is exhausted, the PBGC would have to rely on annual premium receipts and would be forced to pay only a fraction of its guaranteed benefit. One estimate is that a retiree who once received a monthly benefit of \$2,000 and whose benefit was reduced to \$1,251 under the PBGC guarantee would see the monthly benefit decline to \$125 after the PBGC multiemployer fund is exhausted.<sup>70</sup>

Given the financial constraints facing the PBGC, it is important to consider the impact of any policy proposals on its solvency.

<sup>69</sup> Pension Benefit Guaranty Corporation (2016a, 2016b).

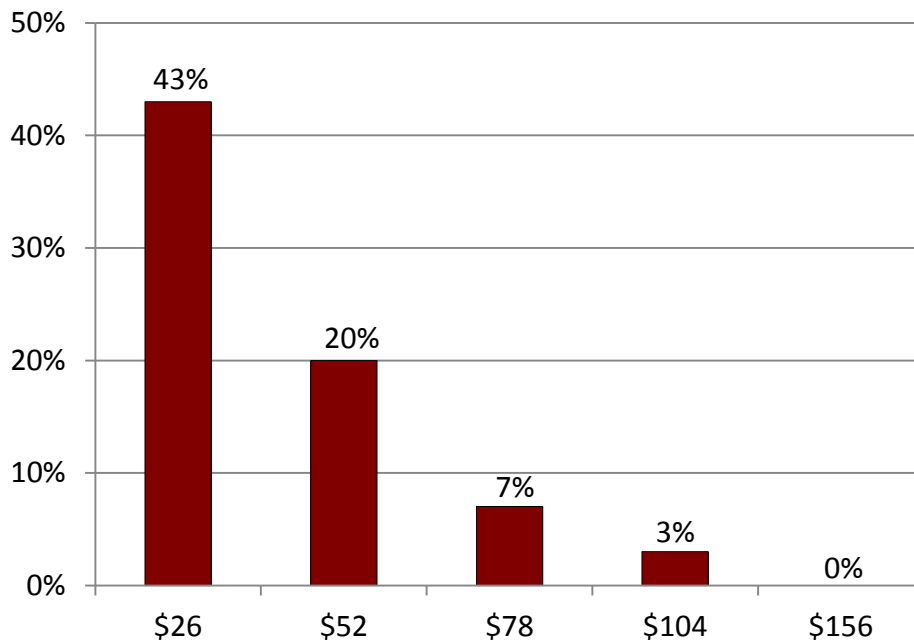
<sup>70</sup> U.S. Government Accountability Office (2013a).

## Increasing Contributions from Employers

Since by law the PBGC's insurance programs must be self-supporting – without some exogenous source of money from outside the multiemployer system – additional resources would most likely come from raising employer premiums. In 2017, multiemployer plans pay an insurance premium of \$28 per participant to the PBGC, while single-employers pay \$69.<sup>71</sup> Both premiums are indexed for inflation. In addition, single-employer plans pay a variable rate premium of \$34 per \$1,000 of unfunded vested liabilities, with a cap of \$517 per participant. Multiemployer plans do not pay an additional variable rate premium.

The most recent estimates – based on 2014 data – suggest that the required increase in premiums to forestall insolvency (assuming no future suspensions or partitions) would be substantial. Doubling the PBGC insurance premium from \$26 (the 2015 premium) to \$52 would reduce the likelihood of ten-year insolvency from 43 percent to 20 percent; a six-fold increase to \$156 would reduce the probability to zero (see Exhibit 28).<sup>72</sup> But, even then, the PBGC would have a deficit of \$31 billion ten years hence.

**Exhibit 28. By Premium Level, Probability of Multiemployer Program Insolvency by 2024**



Source: PBGC (2016b).

While current premiums are not a significant percentage of plan costs, premiums of \$156 could place a burden on severely underfunded plans where employers have already seen substantial

<sup>71</sup> PBGC (2017).

<sup>72</sup> PBGC (2016b).

contribution increases. Adding this increase to what employers are already paying for their rehabilitation plan may induce more employers to withdraw.

The Central States Teamsters plan provides a good example of the fragility of some major participating employers and the potential impact that these employers can have on multiple plans – a concept known as contagion.<sup>73</sup> Three companies that contribute more than 5 percent to Central States Teamsters – ABF Freight System Inc., Jack Cooper Transport Company Inc., and YRC Inc. – have very low profit margins and their debt is classified as either junk or slightly above (see Exhibit 29). These employers may not be in a position to pay higher PBGC premiums. If these companies should go bankrupt, they would harm the finances of not only Central States, but also of the other plans to which they are major contributors (see Exhibit 30). In short, any increase in employer PBGC premiums – without offsetting steps to alleviate financial pressures – would have to be carefully tailored to avoid accelerating the death spiral of critical-and-declining plans and pushing other red-zone plans into that category.

**Exhibit 29. Employers Contributing 5 Percent or More to Central States Teamsters, 2015**

Employer Name	Contribution Share to Central States	Financial Information (Parent Company)	
		Profit Margin	Bond Rating
UPS	N/A	5.63 %	A1
ABF Freight System, Inc.	13.2%	0.69%	Baa1
Jack Cooper Transport Company, Inc.	5.2%	NA	Ca
YRC Inc.	5.3%	0.46%	B3

Note: ABF Freight System, Inc. is the major subsidiary of ArcBest Corporation, and YRC Inc. is the major subsidiary of YRC Worldwide Inc.

Sources: Authors' calculations from U.S. Department of Labor, *Form 5500* (2015); 2016 10-K Annual Reports; and Moody's Investors Service (2014–2016).

<sup>73</sup> While the Form 5500 Schedule R provides information on the employers who contribute more than 5 percent to each plan, the data are difficult to manage because plans often report either the employer's names or employer's identification numbers (EIN) inconsistently. This makes it very difficult to track employers across plans. Thus, for this analysis, one large plan (CST) with well-known employers was chosen to provide an example of the potential for contagion among multiemployer plans and their contributing employers. See Appendix B for a further discussion on the difficulty on mapping potential contagion using the 5500.

**Exhibit 30. Contributions of Central States' Top Employers to Other Multiemployer Plans,  
2015**

<b>ABF Freight System, Inc.</b>		
<b>Plan Status</b>	<b>Share of Total</b>	<b>Participants</b>
<b>Plan Name</b>	<b>Contributions to Plan</b>	
Red Zone: Critical and Declining		
Road Carriers Local 707 Pension	33.8%	4,571
Fund Freight Drivers & Helpers Local 557	33.7	2,764
Trucking Employees Of North Jersey Pension Fund	6.3	6,853
Red Zone: Critical		
Hagerstown Motor Carriers & Teamsters Plan	5.5	1,735
Pension Fund Local 445	3.5	3,409
Green Zone		
Western Conference of Teamsters Supplemental Plan	46.2	33,066
Central Pennsylvania Teamsters Defined Benefit Plan	20.5	29,838
International Brotherhood of Teamsters Local 710	7.2	21,043
Pension Plan of the Welfare and Pension Mid-Jersey Trucking	5.9	2,067
<b>Jack Cooper Transport Company, Inc.</b>		
<b>Plan Status</b>	<b>Share of Total</b>	<b>Participants</b>
<b>Plan Name</b>	<b>Contributions to Plan</b>	
Red Zone: Critical and Declining		
Freight Drivers & Helpers Local 557	24.4%	2,764
Trucking Employees of North Jersey Pension Fund	3.6	6,853
<b>YRC, Inc.</b>		
<b>Plan Status</b>	<b>Share of Total</b>	<b>Participants</b>
<b>Plan Name</b>	<b>Contributions to Plan</b>	
Red Zone: Critical and Declining		
Management-Labor Pension Fund Local 1730 ILA	66.4%	533
Teamsters Local 641 Pension Fund	27.2	4,038
I.A. of M. Motor City Pension Fund	1.6	1,228
Green Zone		
Western Conference of Teamsters Supplemental Plan	24.8	33,066
Pension Plan of the Welfare and Pension Mid-Jersey Trucking	8.0	2,067

Note: "Red zone: critical" does not include the "critical-and-declining" plans.  
Sources: Authors' calculations from U.S. Department of Labor, *Form 5500* (2015).

## Cut Benefits of Participants

If nothing is done, the burden of the shortfall in critical-and-declining plans will fall on participants. These plans can pay benefits for roughly the next 10–15 years on average, but then they will exhaust their assets. Benefits for those in retirement and approaching retirement will drop to the level of the PBGC guarantee – which, under current law, will be reduced from today’s level if the PBGC has insufficient resources to satisfy that commitment. Trying to avoid this scenario – particularly as it applied to Central States Teamsters – may have been one motivation for the passage of MPRA in 2014.

The notion was that the overall welfare of participants would be higher in a world where accrued benefits of all participants were reduced in order to return the plan to solvency. Indeed, a welfare analysis of the Central States Teamsters pension fund performed by the CRR shows that, in the aggregate, participants are better off if the plan avoids insolvency by cutting the accrued benefits of all participants than if the plan exhausts its assets in 10 to 15 years.<sup>74</sup> The analysis requires first projecting benefits that will be paid to members of Central States under the current arrangement and under one that reduces accrued benefits for existing workers and retirees.

In the CRR’s welfare analysis, under the base case, the pension fund becomes insolvent in 11 years and active workers accrue no further benefits. After insolvency, the assumption is that employers pay withdrawal liability in the form of continuing contributions. The base case is then compared with one where benefit payments are cut by 30 percent – the average cut required to ensure solvency for the plan. The reduction is applied to the benefits of active and separated participants, as well as retirees.

Exhibit 31 shows the impact of the benefit cut on the present value of benefits for five specific groups. Compared to the base case, the reform does not change the total expected present value of benefits, but – by spreading the pain – it does affect the outcome for different groups. The expected present value of (mostly younger) retirees’ benefits declines substantially, while the present values of the lifetime benefits payable to current participants and new hires all increase.

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<sup>74</sup> A welfare analysis is a method that allows one to measure the economic value that a change creates for those affected. Crucially, it assumes that a unit of change means more to some individuals than others. For example, if individual A has low income – and therefore a high marginal utility of consumption – relative to individual B, then the increase in utility that individual A experiences by receiving a dollar from individual B exceeds the welfare loss that individual B experiences from giving away that dollar. In that way, total welfare for the two individuals has been increased, even though the total amount of money between the two has not changed.

**Exhibit 31. Impact of “Spreading the Pain” for Central States Teamsters Plan Compared to Base Case on Present Value of Benefits, Billions**



Source: Munnell et al. (2014d).

However, simply comparing the present value of benefits under the status quo and the benefit cut may provide a misleading indication of the effect on the total welfare of plan participants. For welfare, it matters how much people value their benefits. For example, if current retirees have low incomes – and therefore high marginal utilities of consumption – relative to future retirees, then the welfare losses they experience from benefit cuts may exceed the welfare gains of future retirees, and total welfare will decline, even though the total present value of benefits increases.

The welfare analysis assumes that preferences are represented by a conventional utility function with diminishing marginal utility. This assumption means that the first unit of consumption yields more utility than the second and subsequent units.<sup>75</sup> The actuarial model uses a constant 7.5-percent nominal return and does not incorporate investment risk.<sup>76</sup>

Applying a welfare analysis alters the picture. While retirees see their benefits decline in net present-value terms, their welfare under a MPRA-type approach – in the aggregate – is essentially

<sup>75</sup> It is a constant relative risk aversion (CRRA) utility function with a coefficient of risk aversion of 2. A coefficient of risk aversion of 2 lies at the low end of the range reported in the literature, which tends to cluster between 2 and 10 depending in part on whether the estimates are derived from portfolio theory, purchases of insurance, economic experiments, or preferences over lotteries (Chetty 2003).

<sup>76</sup> A few additional assumptions are required to make the welfare calculations. First, the analysis assumes that plan members receive Social Security benefits. Second, if vested members separate from the plan before age 62, they take a second job and retire at age 62, claiming both Social Security and pension benefits at that time. Third, the analysis disregards any savings that the employees might undertake on their own.

unchanged (see Exhibit 32). The reason is that retirees receive smaller but steady benefits, which allows them to better smooth consumption over their lifetimes.

**Exhibit 32. Impact of “Spreading the Pain” for Central States Teamsters Plan Compared to Base Case on Present Value of Benefits and Welfare**

Member Type	Impact	
	Present Value	Welfare
Retirees		
Age 75 and older	-	No change
Under age 75	-	No change
Current separators	+	+
Current actives	+	+
New hires	+	+
Total	No change	+

Source: Munnell et al. (2014d).

To obtain a sense of whether the increase in aggregate welfare is meaningful or not, it can be expressed in terms of a lump-sum payment to all participants. The approach is to essentially reduce the benefits of those who enjoy an increase in utility until the total level of utility for the population as a whole equals that of the status quo. The present value of these benefits is then distributed among all the participants as a lump sum.<sup>77</sup> It turns out that the overall welfare gain is equivalent to each participant receiving a one-time payment of \$3,000. The magnitude of this “extra money” suggests that the average welfare gain for each employee from keeping the plan solvent is modest.<sup>78</sup>

As noted earlier, despite the welfare-enhancing potential of benefit cuts, the Treasury turned down Central States’ application to cut benefits under MPRA for a number of reasons. One of the key reasons is that the Treasury was unconvinced – given the sensitivity of outcomes to the assumed rate of return – that the proscribed cuts would ensure the solvency of the plan, a key requirement of the legislation.

A welfare analysis can be helpful for thinking about how a policy option would affect certain parties and how that relates to what parties will bear how much burden. This welfare analysis suggests that, overall, participants are likely to gain from long-term plan solvency achieved by cutting accrued benefits rather than receiving full benefits that lead to plan insolvency. . Therefore, an argument can be made that participants should be willing to shoulder some portion of the solution – either in the form of direct benefit cuts or, as proposed by those advocating for PBGC partitions, some type of membership fee.

<sup>77</sup> An alternative, which yields a similar result, is to make equal percentage cuts in all members’ post-reform benefits until post-reform utility has been reduced to the pre-reform level.

<sup>78</sup> Maintaining solvency also brings additional benefits to participants not incorporated in the analysis, such as mortality risk pooling and professional investment management.



## **Raise Taxes**

The assumption throughout the policy debate about multiemployer plans has usually been that Congress was not going to allocate any money to solve the problem. The question is whether any rationale exists for taxpayer support.

The results of recent MPRA applications suggest that cutting benefits alone is not sufficient for restoring solvency for many troubled plans. Without an infusion of money, one of the largest troubled plan, Central States, will likely become insolvent and around 400,000 people will lose some or all of their promised benefits. The insolvency of Central States Teamsters would drain much of the PBGC's multiemployer reserves, potentially cutting participants' benefits far below the guarantee levels. The fact that Central States, and perhaps most of the other plans in "critical-and-declining" status, cannot "cut" their way out of trouble argues for an infusion of tax revenue.

The other argument for tax revenue is that many of the retirees and inactive vested participants are orphans who worked for companies that are no longer in the plan. As a result, companies and workers still in the plan are being asked to pay not only their own costs but also the funding shortfalls of others. Employers in most distressed plans have increased their contributions. But when orphans account for more than one-half of total participants – as is the case for Central States – the burden can become intolerable, and more employers may negotiate to leave, further eroding the contribution base and potentially creating additional orphans.

Thus, while increasing taxes is never popular, rationales exist for taxpayer money to be part of a broader solution.

## **4.6 Possibility of Further Decline**

This section identifies the key characteristics of plans that have ended up as "critical-and-declining" and presents historical data to learn when their paths diverged from those of healthier plans. We then use this information, as well as a simple cash-flow model, to see if other plans are likely to become "critical-and-declining" in the near future. Finally, we take a closer look at the 20 largest multiemployer plans to determine whether another situation like Central States Teamsters is on the horizon.

## Identify Characteristics of Plans in “Critical-and-Declining” Status

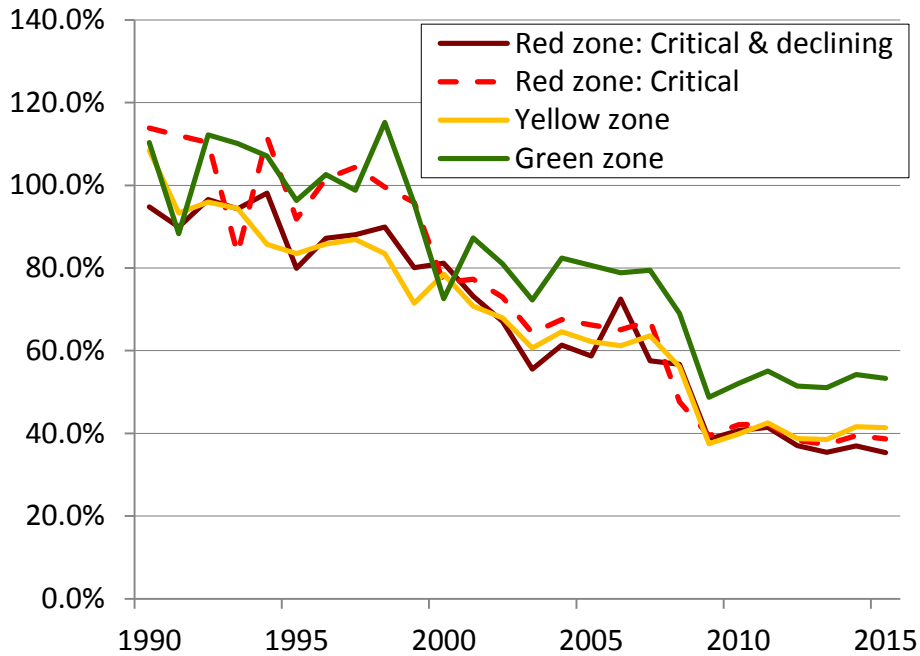
A key step in assessing whether additional plans will fall into the “critical-and-declining” category – absent another major financial crisis – is to examine MPRA filings for reasons offered by each plan for their current status.

*Reasons Offered by MPRA Plans for Their Situation.* Appendix A Exhibit A1 documents key factors that the plans themselves highlight as reasons for their decline. Unsurprisingly, almost all plans report that the financial downturn in 2002 and the crisis in 2007-2009 are major factors in their decline, in addition to the broader decline in unionization. The teamsters- and trucking-related plans cite the deregulation of trucking in 1980, while the United Furniture Workers cite the rapid increase in competition from furniture makers abroad. Seven of the plans – Central States, Road Carriers 707, Iron Workers 16, New York State Teamsters, Automotive Industries, International Association of Machinists Motor City, and Western States Office and Professional Employees – also cite the financial decline of major employers as a key factor contributing to the plan’s current situation. Interestingly, eight of the 15 plans serve locally based unions that rely on the economic viability of small areas. This situation can be risky for a plan because it is not well protected against a regional economic downturn that might decrease its funding base. These histories suggest that local or regional plans with contributions concentrated in a large single employer are at risk.

*Characteristics.* The next step is to look at some key characteristics – funded ratio, inactives as a percentage of total members, cash-flow rate, percentage of ARC paid, and orphans as a percentage of total employees – for those in each zone in 2016 to see if their levels have been significantly different over time. The trends provide a window into how plans arrived at their current status. Persistent differences between the groups help identify the potential pre-cursors to later trouble, and differences that emerge later help explain where things went wrong that led to a dramatic decline. The results are shown in Exhibits 33 through 37.

Exhibit 33 depicts the funded ratio of plans classified by their 2016 zone status. As recognized in the PPA, the PPA funded ratio indicated very little about where plans were headed. Those ending up “critical-and-declining” were only slightly less well funded both before and after the financial crises than those ending up in the green zone.

**Exhibit 33. Funded Ratio by 2016 Risk Status, 1990–2015**

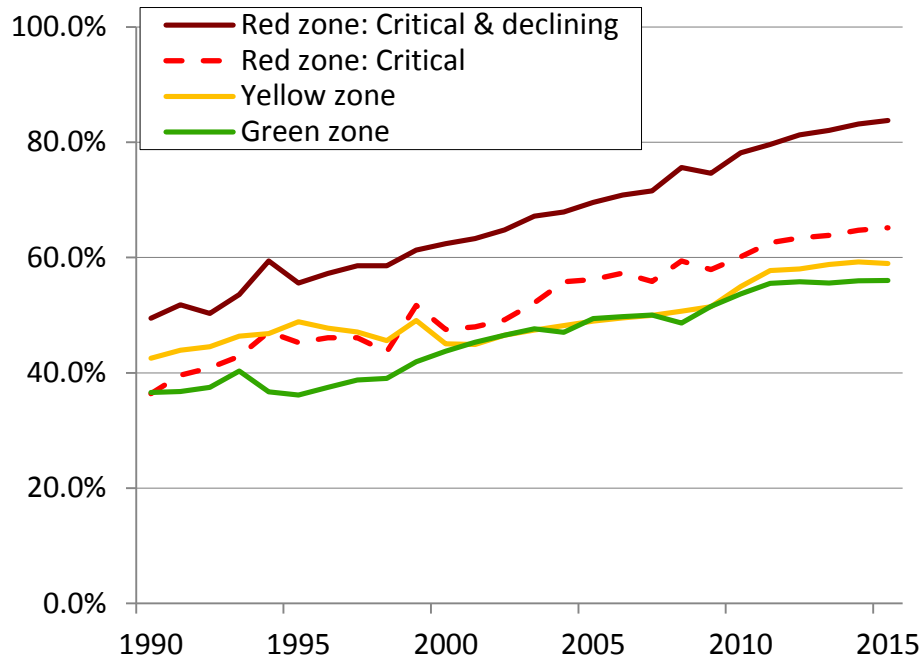


Note: "Red zone: critical" does not include the "critical-and-declining" plans.

Sources: Authors' calculations from U.S. Department of Labor, *Form 5500* (1990-2015); and U.S. Department of Labor (2017).

The important difference between critical-and-declining plans and the rest of the plans centers on the percentage of inactive members and the impact of that ratio on cash flow. In terms of inactives, plans in all zones have seen their percentage increase since the turn of the century, but plans that identified as "critical-and-declining" had a significantly higher percentage of inactives to total members throughout the period (see Exhibit 34).

**Exhibit 34. Inactive Members as a Percentage of Total Members by 2016 Risk Status, 1990–2015**

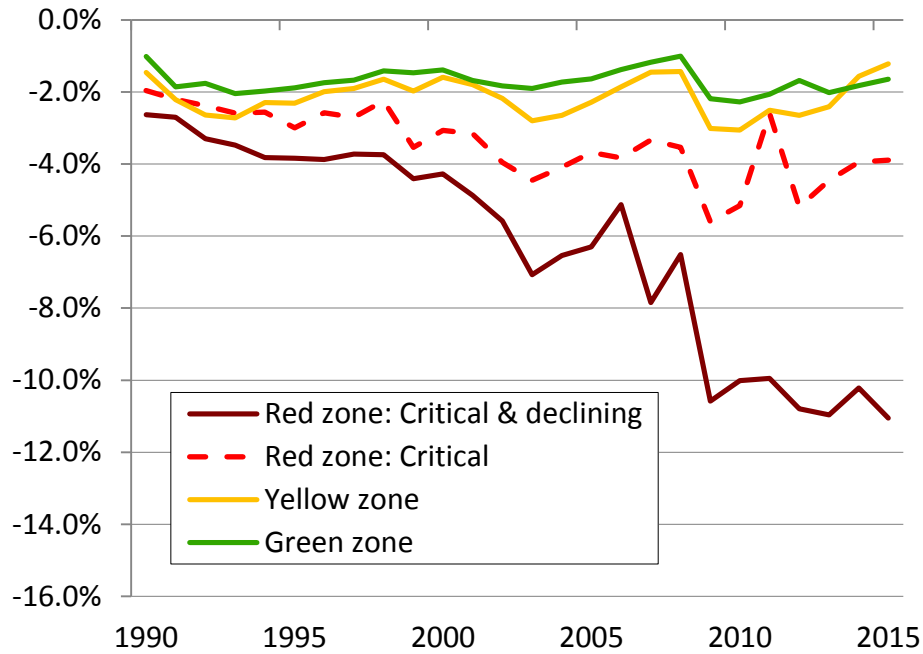


Note: “Red zone: critical” does not include the critical and declining plans.

Sources: Authors’ calculations from U.S. Department of Labor, *Form 5500* (1990-2015); and U.S. Department of Labor (2017).

The cash-flow chart is even more dramatic (see Exhibit 35). Reflecting the higher percentage of inactives, the plans ultimately classified as “critical-and-declining” had a somewhat higher rate of negative cash flow than did those in other zones until the financial crises. With the bursting of the dot-com bubble at the turn of the century, however, the trajectory of the critical-and-declining plans diverged sharply from plans in other zones. Then as the market recovered, they headed back to roughly where they would have been absent this century’s first financial crisis. With the financial collapse in 2008, however, these plans were thrown dramatically and irreparably off course and have leveled out with a negative cash flow of about -11 percent, a drain – even with expected returns between 7 and 8 percent – from which it is extremely difficult to recover.

**Exhibit 35. Cash Flow by 2016 Risk Status, 1990–2015**

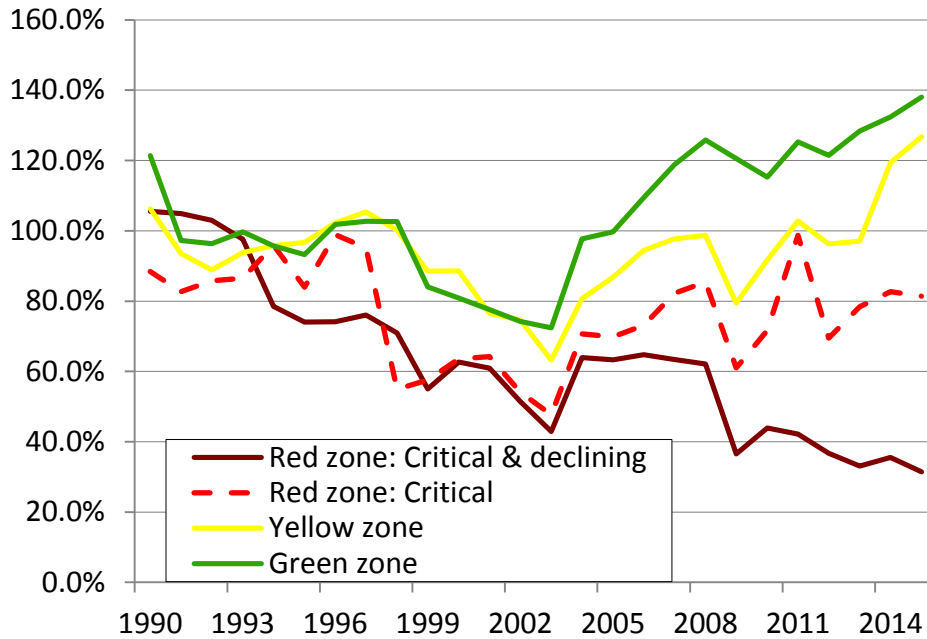


Note: "Red zone: critical" does not include the "critical-and-declining" plans.

Sources: Authors' calculations from U.S. Department of Labor, *Form 5500* (1990–2015); and U.S. Department of Labor (2017).

The high rate of negative cash flow is reflected in the percentage of annual required contribution (ARC) paid. (Because the definition of the ARC changes frequently over the period, the numbers shown are based on an ARC that combines the normal cost with a 15-year level-dollar amortization payment). While plans in all zones reduced their percentage of ARC paid during the stock market boom of the 1990s, most improved their percentage of ARC paid in the wake of the loss of assets due to the bursting of the dot-com bubble and the financial crisis. Plans that ultimately ended up as "critical-and-declining", however, continued to pay a smaller and smaller share of the ARC, and that share declined sharply in the wake of the financial crisis.

**Exhibit 36. Percentage of Annual Required Contribution Paid by 2016 Risk Status, 1995–2015**

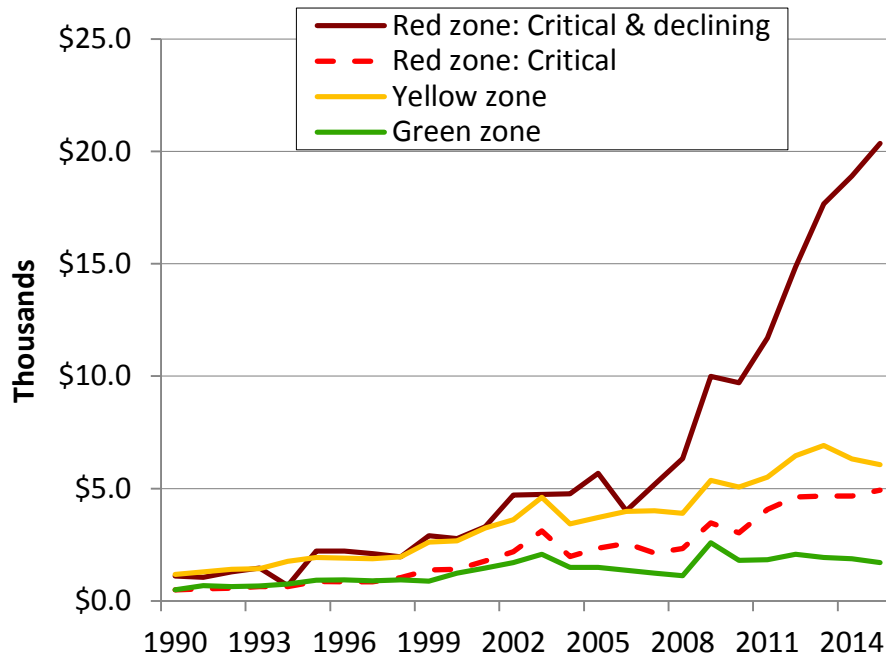


Notes: Estimates assume a 15-year amortization using level-dollar payments of unfunded liabilities at market value. "Red zone: critical" does not include the "critical-and-declining" plans.

Sources: Authors' calculations from U.S. Department of Labor, *Form 5500* (1990–2015); and U.S. Department of Labor (2017).

One reason that plans that ended up "critical-and-declining" began to pay a smaller and smaller percentage of the ARC appears to be that they not only suffered a precipitous decline in assets during the financial crisis – like all other plans –but they also saw a sharp decline in the number of active workers. This combination made the per-worker amortization payment unaffordable (see Exhibit 37).

**Exhibit 37. Average Amortization Payment per Active Member by 2016 Risk Status, 1990–2015, Thousands**



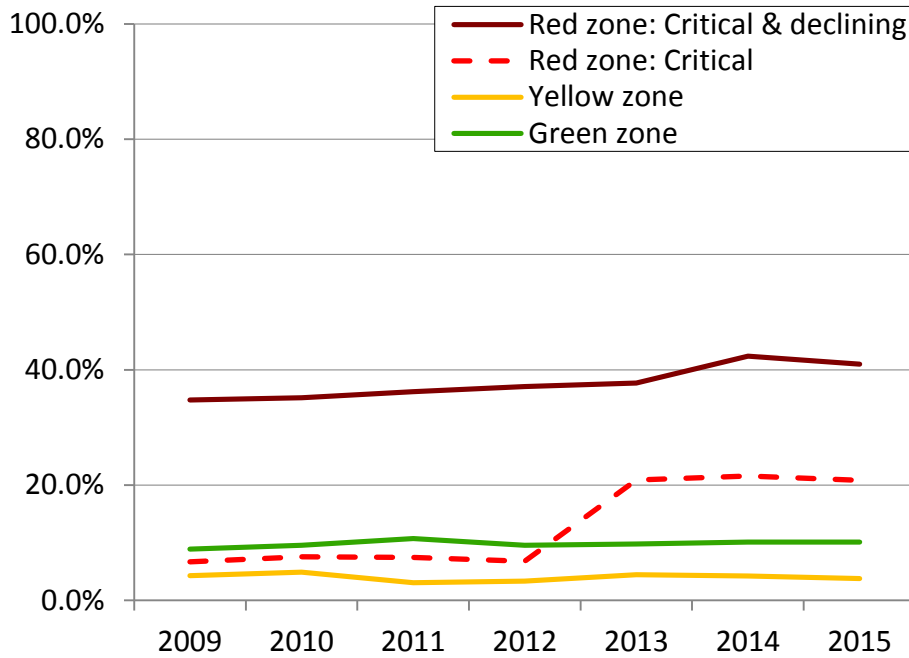
Notes: Estimates assume a 15-year amortization using level-dollar payments of unfunded liabilities at market value.

“Red zone: critical” does not include the “critical-and-declining” plans.

Sources: Authors’ calculations from U.S. Department of Labor, *Form 5500* (1990–2015); and U.S. Department of Labor (2017).

Exhibit 38 shows orphans as a percentage of total members by 2016 zone status (data are available only since 2009). The difference in level is significant, with critical-and-declining plans having at least twice the share of orphans as plans in other zones. The relationship among the various zones, however, remains roughly unchanged over the five-year period.

**Exhibit 38. Orphans as a Percentage of Total Members by 2016 Risk Status, 2009–2015**



Note: “Red zone: critical” does not include the “critical-and-declining” plans.

Sources: Authors’ calculations from U.S. Department of Labor, *Form 5500* (2009–2015); and U.S. Department of Labor (2017).

*Regression Analysis.* To further explore the relationship between the key variables and the probability in 2015 – the last year for which full information is available – of being classified as “critical-and-declining”, the next step is to estimate a regression relating 2016 status to the variables discussed above. Their average values are shown in Exhibit 39.

**Exhibit 39. 2015 Average Plan Characteristics by 2016 Risk Status**

Plan Characteristics	Red		Yellow	Green	All
	Critical and Declining	Critical			
Percent inactive	83.8%	65.2%	59.0%	56.0%	61.5%
Cash flow	-11.0	-3.9	-1.2	-1.6	-2.7
Percent ARC paid	31.4	81.4	126.7	138.0	104.7
Funded ratio	35.3	38.7	41.4	53.3	46.4
Percent orphans	41.0	20.8	3.8	10.1	15.0

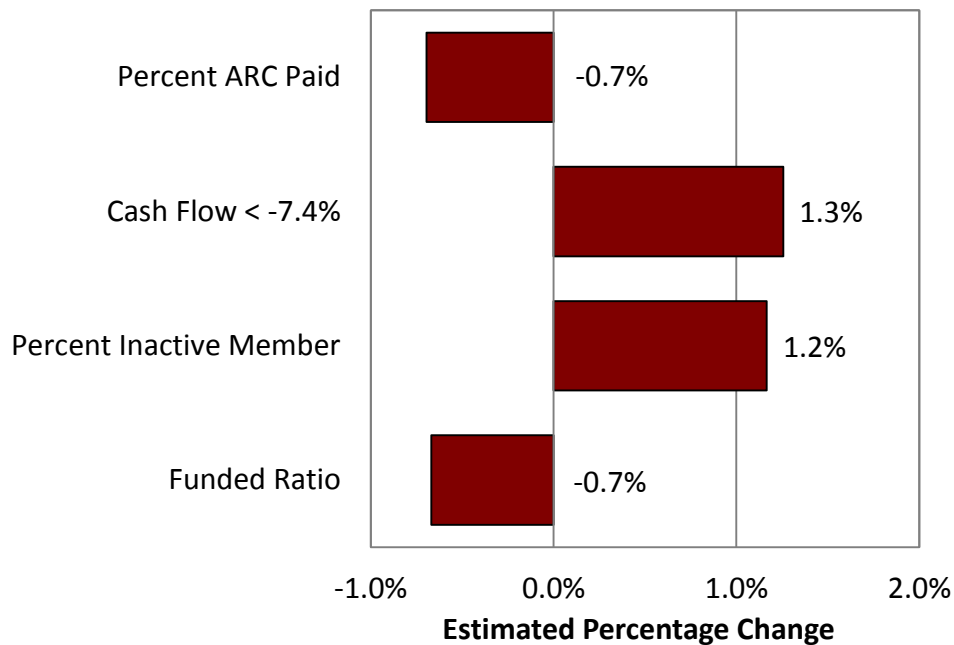
Sources: Authors’ calculations from U.S. Department of Labor, *Form 5500* (2010); and U.S. Department of Labor (2017).

Because of the close correlation between the percentage of inactives and cash flows, the cash-flow term is entered as a binary variable set equal to 1 if the negative cash-flow rate exceeds -7.4 percent (the average assumed return for multiemployer plans in 2015) and zero otherwise. The orphan variable is not included because it is so closely correlated with the inactive variable.



The results of the regression are shown in Exhibit 40. Full results are presented in Appendix A Exhibit A2. All the variables have the predictable relationship with being "critical-and-declining", and the coefficients are all statistically significant. The results presented in Exhibit 40 represent a change from 0 to 1 for dichotomous variables and the impact of a one-standard-deviation change for the continuous variables. Given that only 8 percent of plans fall in the "critical-and-declining" category, the magnitudes of the coefficients are large.

**Exhibit 40. Estimated Relationship of Variables with Probability of Being in "Critical-and-Declining" Status, 2015**



Note: Cash flow is statistically significant at the 10-percent level, percent ARC paid and funded ratio are statistically significant at the 5-percent level, and percent inactive members is statistically significant at the 1-percent level. Values represent the impact of a one-standard-deviation change in each variable. *Sources:* Authors' calculations from U.S. Department of Labor, *Form 5500* (2015); and U.S. Department of Labor (2017).

#### 4.7 Identifying Possible Future "Critical-and-Declining" Plans

The correlates shown in the previous analysis can be used to identify plans with problems comparable to those plans currently in "critical-and-declining" status. The following discussion uses three approaches. The first approach screens all multiemployer plans to identify those with high rates of negative cash flow. The second uses the CRR's cash-flow model to identify any other plans with a high likelihood of insolvency within the next 20 years. The third looks at the characteristics of the 20 largest plans.

## Plans with High Negative Cash Flows

Exhibit 41 presents a summary of plans that are not “critical-and-declining” and were identified as having negative cash flow of -10 percent or more. Of course, a lower threshold – say -7.4 percent – would yield more plans.

**Exhibit 41. Summary of Plans with Negative Cash Flow of -10 Percent or More, 2015**

Plan Status	Number of Plans	Total Members	Unfunded Liability (billions)	
			Current	Actuarial
Red Zone: Critical	23	89,799	\$4.4	\$2.2
Yellow Zone	4	8,861	0.8	0.3
Green Zone	5	3,950	0.3	0.1
Total	32	102,610	\$5.5	\$2.6

Sources: Authors' calculations from U.S. Department of Labor, *Form 5500* (2015); and U.S. Department of Labor (2017).

Not surprisingly, the bulk of vulnerable plans fall within the red zone, and most of these plans have fewer than 5,000 participants. Two plans, however, have more than 20,000 members – Graphic Communications Teamsters and Western Pennsylvania Teamsters. These large plans not only have a high rate of negative cash flow but also are seriously underfunded.

For the most part, on an actuarial basis, the plans in the yellow and green zones with high rates of negative cash flow tend to be better funded than plans in the red zone, but they may merit scrutiny as well.

This exercise is not presented as definitive but only to point out that looking at correlates of critical-and-declining plans suggests that other plans – particularly those in the red zone – could soon become "critical-and-declining".

## Results from a Simple Cash-Flow Model

The CRR's simple cash-flow model projects the number of years before each plan exhausts its assets. This model, based on data from the Form 5500, assumes no increase in contributions and estimates that benefits grow at about 2 to 3 percent – depending on the specifics of the plan.<sup>79</sup> About 550 plans provide benefit projections for at least 10 years forward. For plans that do not provide their own benefit projections, the analysis estimates projections based on the projections provided by plans with similar characteristics. Assets are projected to grow at the plan's assumed rate of return, a generous assumption. The overall results for this exercise

<sup>79</sup> Some data corrections are made on the contribution side, such as removing withdrawal liability contributions and using only regular employer contributions for the projections. The simple projection method does not explicitly take into account any benefit cuts or scheduled contribution increases under rehabilitation plans.

confirm the expected pattern by zone but also suggest that the model is somewhat optimistic in terms of insolvency dates, since it shows only about 80 percent of “critical-and-declining” plans (90 percent of participants in “critical-and-declining” plans) become insolvent within the 20-year window (see Exhibit 42).

**Exhibit 42. Estimated Distribution of Multiemployer Plan Exhaustion Dates by Risk Status, 2015**

Risk Status	Estimated Years until Exhaustion			
	0-10	11-20	21-30	Never
Red Zone: Critical and Declining	34.3%	47.1%	5.9%	12.8%
Red Zone: Critical	6.0	12.0	14.4	67.6
Yellow Zone	0.5	2.0	9.9	87.6
Green Zone	0.4	1.1	4.9	93.6

Note: “Red zone: critical” does not include the “critical-and-declining” plans.  
 Source: Authors’ calculations from U.S. Department of Labor, *Form 5500* (2015).

Despite this sanguine bias, the cash-flow model picks up a number of plans – in addition to those already identified above through the -10-percent-cash-flow filter – that are projected to become insolvent within 20 years. Exhibit 43 presents a summary of plans that are projected to become insolvent within 20 years, despite cash flows of greater than -10 percent of assets.

**Exhibit 43. Summary of Additional Plans Projected to Become Insolvent within 20 Years, 2015**

Plan Status	Number of Plans	Total Members	Unfunded Liability (billions)	
			Current	Actuarial
Red Zone: Critical	19	183,691	\$18.6	\$6.8
Yellow Zone	2	1,671	0.1	0.0
Green Zone	6	13,703	0.9	0.1
Total	27	199,065	\$19.6	\$7.0

Sources: Authors’ calculations from U.S. Department of Labor, *Form 5500* (2015); and U.S. Department of Labor (2017).

The plans projected to become insolvent in the next 20 years generally have negative cash-flow rates in excess of -6 percent, and most fall in the red zone, where high rates of negative cash flow are matched by significant underfunding. Approximately one-fifth of these red-zone plans are quite large, with 23,000 to 72,000 participants. Three plans in the green zone have rates of negative cash flow of 8 percent or more. But these plans are relatively well funded on an actuarial basis, so if they achieve their assumed rate of return they should be able to honor their benefit commitments.

### The 20 Largest Plans

To ensure that the simple screening methods applied above are not missing the next looming problem, we took a closer look at the 20 largest multiemployer plans. Exhibit 44 lists the 20

largest multiemployer plans, their zone status, and key correlates of trouble – funded ratio, inactives as a percentage of total members, cash-flow rate, and orphans as a percentage of total members. The truly troubled plans on this list – Central States Teamsters, Bakery & Confectionery Fund, and United Mine Workers – have already been designated as “critical-and-declining”.

**Exhibit 44. Overview of the 20 Largest Multiemployer Plans by Total Members, 2015**

Plan Name	Plan Status	Funded Ratio	Percent Inactive	Cash Flow	Orphans / Total Members	Total Members
Western Conference of Teamsters	Green	57.6%	65.6 %	-2.6%	21.2%	591,619
National Electrical Benefit Fund	Green	46.0	52.3	-3.8	16.5	555,981
National Retirement Fund Plan	Red: Critical	37.4	79.5	-5.3	76.5	407,404
Central States, Southeast & Southwest	Red: Critical & declining	33.0	83.8	-12.5	52.6	397,492
IAM National Pension Fund	Green	55.2	62.4	-2.2	38.8	283,622
UFCW Consolidated Pension Fund	Green	52.9	48.5	-0.4	17.0	259,962
1199 Health Care Employees Fund	Green	47.0	54.7	-1.7	4.4	257,296
Central Pension Fund of The IUOE	Green	49.1	53.6	-1.1	0.4	233,857
United Food & Commercial Workers Industry	Green	59.6	58.6	-3.6	4.3	227,748
S. California UFCW/Food Employers	Red: Critical	41.0	67.4	-4.7	0.0	177,585
Plumbers & Pipefitters National Fund	Yellow	40.1	49.6	-3.3	0.0	158,408
Sound Retirement Trust	Red: Critical	46.2	38.4	-4.0	2.1	144,407
Sheet Metal Workers' National Fund	Yellow	34.1	59.2	-0.1	0.0	136,848
UFCW N. California Employers Joint Pension	Red: Critical	36.4	61.0	-5.5	0.0	130,955
Steelworkers Pension Trust	Green	49.8	51.9	0.0	27.6	114,920
S.E.I.U. National Industry Pension Fund	Red: Critical	45.9	55.4	-1.7	0.3	113,080
Bakery & Confectionery Pension Fund	Red: Critical & declining	42.6	79.9	-8.8	33.9	113,040
United Mine Workers of America 1974 Plan	Red: Critical & declining	39.8	92.1	-14.9	43.7	104,258
Building Service 32BJ Pension Fund	Red: Critical	33.5	47.9	0.5	0.1	103,983
Southern Nevada Culinary/Bartenders Plan	Green	55.9	44.8	-1.3	0.0	100,430

Sources: Authors' calculations from U.S. Department of Labor, *Form 5500* (2015); and U.S. Department of Labor (2017).

In summary, a historical look at the characteristics of plans that end up as “critical-and-declining” confirms that the factors identified earlier – a declining number of participants, a low funded ratio, a high percentage of inactives to total members, and high rates of negative cash flow – make it impossible for some plans to pay their ARC in the wake of a financial crisis that decimates assets. These factors can also be used to identify potential problems going forward. A cash-flow filter of -10 percent shows a number of additional red-zone plans in a precarious situation. Applying the CRR’s simple cash-flow model produces several more plans that merit attention. Finally, among the nation’s 20 largest plans, three have already been classified as “critical-and-declining” and another six are categorized as “critical”. These results suggest that it is important to look beyond the most acute cases when considering solutions.

## 5. CONCLUSION

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Multiemployer plans are a significant component of the employer-sponsored retirement system and, like other employer plans, they have been challenged by the two financial crises since 2000. While the majority of multiemployer plans are returning to financial health, a substantial minority face serious funding problems that are exacerbated by unique structural challenges facing the multiemployer sector. These challenges include a high ratio of inactive to total participants, high rates of negative cash flows, and withdrawal penalties for exiting companies that are insufficient to cover the costs they leave behind.

Multiemployer plans that are in difficult financial shape can receive assistance from the PBGC. However, the PBGC's guarantees for multiemployer plans are very low compared to those for single-employer plans. Moreover, estimates of the PBGC's potential loss exposure from troubled multiemployer plans have soared in recent years. And the PBGC's multiemployer program is more likely than not to be insolvent in ten years, which means that benefits paid to participants – already modest – could be reduced dramatically.

The “hole” for critical-and-declining plans is \$76 billion, based on the current view of funding that uses the market value of assets and values liabilities using a four-year average yield on 30-year Treasuries for the discount rate. Of this amount, about \$45 billion is for plans that have already applied to the Treasury requesting the ability to cut accrued benefits for plan participants (\$36 billion for Central States alone). For all plans in the red zone, both “critical” and “critical-and-declining”, the hole is \$187 billion. And, for all multiemployer plans, the hole is \$553 billion. Most multiemployer plans have taken remedial action and have put themselves on a sustainable path. However, the “critical-and-declining” plans face large negative cash flows and a potential death spiral.

MPRA represented a last-ditch effort to save a small, but significant, number of multiemployer plans from insolvency. It was based on the understanding that the federal government was not going to rescue the plans directly or provide the PBGC with the funds to partition out orphaned workers or help in other ways. Based on those assumptions, MPRA tried to balance competing interests: maintaining the support of active workers; keeping employers from exiting the plans (and attracting new employers); and ensuring that benefits exceed what participants would get under insolvency.

MPRA has not turned out to be a cure-all. The Treasury has rejected the application of Central States Teamsters and four other plans; it has approved the applications of Iron Workers Local 17, New York State Teamsters, and United Furniture Workers. Four other applications are currently under review, and three have been withdrawn. To date, none of the rejected MPRA applications have been resubmitted, suggesting that cutting benefits alone is not sufficient to restore solvency for some of the most troubled plans.

This report has analyzed two policy options that could be implemented at this stage to try to address the problems facing critical-and-declining plans. They include alleviating the burden of orphans and providing low-rate or government loans. Either option costs money, and a case can be made for approaches that involve contributions from employers (that are tailored not to sink already fragile plans), from plan participants, and from taxpayers.

If a concerted effort is to be made to solve the multiemployer-plan crisis, it is important to understand how plans found themselves in this desperate plight. Early action might be able to stabilize other plans in the red zone heading for trouble. Indeed, a significant number have negative cash-flow rates in excess of -10 percent. Any strategy designed to solve the multiemployer-plan problem must be comprehensive and forward-looking – helping not only those in serious trouble today but also staving off future problems.

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## APPENDIX A. DETAILED TABLES

**Exhibit A1. Key Factors Reported in MPRA Application for the Decline of Plans**

Plan Name	Description of Factors
<b>Alaska Ironworkers</b>	Poor market performance in 2000 and 2008, paired with a recent downturn in the local economy and ironworking in Alaska, contributed to the plan's critical status. Specifically, the State of Alaska has entered a recession due to a dramatic decline in the price of oil, resulting in a loss of 1,500 private sector jobs between 2014 and 2016. In addition, due to the plan's rapid maturation, employee contributions became insufficient, as the assumed number of contributory hours decreased from 290,000 hours per year in 2009 to 184,000 in 2016. The magnitude of the employer contributions needed to revive the plan was projected to result in the withdrawal or bankruptcy of most participating employers. Further, these steep employer contribution rates made it difficult to attract new employers to the plan.
<b>Automotive Industries</b>	Decline in automotive industry businesses in the San Francisco Bay Area as a result of both the decline over the last 10 years in the U.S. automotive industry and economic recessions over the last 15 years. Plan employers engaged in a fragmented, competitive industry and have higher labor costs. Only 4 of the 149 original employers still exist. In 2000, 16 Ford and 10 Chrysler dealerships contributed to the plans. As of 2015, only 3 of those 26 dealerships remain in the plan.
<b>Bricklayers Local 5 New York</b>	Poor investment returns in 2008 forced the plan into "critical" status. Poor investment returns in 2011 and continued decline in contribution hours forced the plan to take steps to avoid insolvency. Plan provides generous benefits compared to non-plan bricklayers. Little to no growth in the local construction market.
<b>Bricklayers Local 7</b>	Plan provides generous benefits compared to non-union bricklayers. Experiencing increased member attrition to nearby unions, which maintain plans that are better funded. Decline in hours worked and number of employers in the area. Decline in number of union members in the area.
<b>Central States Teamsters</b>	Deregulation of trucking in the 1980s and the economic and financial crises since 2001 forced many major trucking companies out of business. Of the 50 largest contributing employers that participated in 1980, almost all are out of business and only 3 contribute today.
<b>Intl Assoc. of Machinists Motor City</b>	Between 2006 and 2016, the number of active employees decreased by over 60 percent, from 392 to 141 active members. The major shocks to the plan include the successive withdrawal of major employers beginning in 2007, a portion of whose withdrawal liability was deemed uncollectable. Since 2008, the plan has shrunk from 19 to 5 participating employers. The remaining employers threatened withdrawal if contribution rates were raised any further.

Plan Name	Description of Factors
<b>Ironworkers Local 17</b>	Decline in active work population. Asset losses in 2002, 2008, and 2009.
<b>Ironworkers Local 16</b>	Economic decline of Baltimore, MD. Loss of qualified workers due to declining working opportunities, stagnant wages. Dramatic drop in employers from 125 to 60 over the past six years, including the loss of some original participating employers in the plan. Bankruptcy of Sparrows Point, in Baltimore County, MD, which housed steel mills and related facilities and generated between 13 percent and 22 percent of work hours for members of the plan.
<b>Local 805</b>	The number of contributing employers steadily declined due to the stagnation of the local trucking market and the emergence of online retailers. Additionally, significant taxes imposed on tobacco, candy, and other related products limited the employers' ability to pass on some of the increased costs to customers. The plan ceased any further increases to employer contributions to prevent more contributing employers from leaving the plan, due to either business failure or withdrawal.
<b>New York State Teamsters</b>	Deregulation of trucking in the 1980s and the economic and financial crises since 2001 forced many trucking companies out of business. Decline in the Less-than-load (LTL) sector of trucking industry, especially those in the smaller freight businesses in New York State and its unionized workforce have suffered a rapid decline. More acutely, the plan lost several major employers from 2009 to 2015.
<b>Road Carriers Local 707</b>	Financial decline of largest employer – YRC – which resulted in a negotiated 75-percent reduction in pension contributions to stave off employer bankruptcy. Deregulation of trucking in the 1980s and the economic and financial crises since 2001 forced many LTL trucking companies out of business. Specifically, decline in LTL sector of trucking industry in the New York region and its unionized workforce have suffered a more rapid decline.
<b>Southwest Ohio Regional Council of Carpenters</b>	Since 2000 the plan's cash flow has consistently declined. In 2008, the plan suffered a negative 26 percent return on assets, from which the plan has never recovered. Despite steadily increasing the hourly contribution rate, the plan's funded status did not improve. Throughout this period, the number of participating employers decreased from 256 to 182.
<b>Teamsters Local 469</b>	Deregulation of trucking in the 1980s and the economic and financial crises since 2001 forced thousands of trucking, concrete, material deliveries, and other industries out of business. Specifically, these industries within the New Jersey region and its unionized workforce have suffered a rapid decline.
<b>United Furniture Workers</b>	The rapid increase in U.S. furniture imports since the 1970s put increasing pressure on U.S. furniture manufacturers and, thus, the pension plan. From 1981 to 2009, 35 contributing employers filed for bankruptcy. Since 2008, 29 of the 53 contributing employers have withdrawn from the plan, and active participants have dropped from about 2,500 to 1,000.

Plan Name	Description of Factors
Western States Office & Professional Employees	The 2002 bankruptcy of a significant contributing employer (Consolidated Freightways) resulted in a substantial decrease in employer contributions. In 2005, the plan added a new significant employer (Northwest Natural Gas) at a low contribution rate, with the intention of gradually increasing the rate over time. Yet the employer's contribution rate was never increased, in part due to the 2008 financial crisis, and the employer withdrew from the plan in 2013. Additionally, a significant portion of the plan's participants are office staff working for local unions, a sector that is consistently declining.

Sources: U.S. Department of the Treasury, "Applications for Benefit Suspension" (2017).

**Exhibit A2. Estimated Effect on the Probability of “Critical-and-Declining” Status, 2015**

	Coefficients		Standard deviation	Effect of one-standard-deviation change
Percentage ARC paid	-0.01	**	0.79	-0.007
	(0.00)			
Cash flow < -7.4%	0.04	*	0.30	0.013
	(0.03)			
Percent inactive members	0.08	***	0.15	0.012
	(0.03)			
Funded ratio	-0.05	**	0.14	-0.007
	(0.02)			
Sample size	1,222			
R-squared	0.59			

Note: Statistically significant at 10-percent (\*), 5-percent (\*\*), or 1-percent level (\*\*\*).

Sources: Authors' calculations from U.S. Department of Labor, *Form 5500* (2015); and U.S. Department of Labor (2017).

## APPENDIX B. DISCUSSION OF CONTAGION ANALYSIS

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The multiemployer universe is quite interconnected. Many of the largest employers participate in multiple multiemployer plans. As such, accurately mapping the interconnectedness – and potential contagion if an employer or plan fails – of the multiemployer system is an important task. It is also, given the data available, an extremely labor-intensive task. The Form 5500 Schedule R provides the necessary information to perform such a task by providing – for each multiemployer plan – a list of the employers who contribute more than 5 percent of the plan’s total contributions. Conceptually, the task is simple – manually map employers across multiemployer plans. However, in practice, the 5500 data are difficult to manage because plans often report either the employer’s names or employer’s identification numbers (EIN) inconsistently or incorrectly. This introduces two problems. First, it is difficult to map an employer to different plans because the same employer may be called by a different name or have a different EIN across plans. Second, to understand the financial status of participating employers and the risk that may pose to plans, accurate names and EINs are needed to locate the correct information on each employer’s financials. Often plans enter the EIN for a subsidiary of a larger parent company. Or, the firm may enter the EIN for an employer that has since merged with or been acquired by another firm. Even in a case where the EINs are correct, the employer may not be publicly traded and, therefore, may provide no openly available data on their financial status.

Due to these problems, using the raw EIN data provided in the 5500 to track employers across plans and add their basic financials, resulted in limited success. In fact, using a large database such as the COMPUSTAT to merge in employer financials resulted in under 25 matches. It is difficult to know if the low match-rate was because most employers are private firms or if the EIN data in the 5500 is simply incorrect. A manual review of some of the largest multiemployer plans in the 5500 – those most likely to have relatively large well-known employers – suggests that both problems may be equally present. For example, the United Mineworkers reports eight different employers that contribute at least five percent of the plan’s total contributions. However, all of the listed employers are actually subsidiaries of a larger firm with a different EIN than the listed employer (EIN error). Once the parent companies were identified, the search for financial data revealed that five of the employers were subsidiaries of a private company – meaning that financial data was hard to come by. For the remaining employers that were part of a larger public company, accurate financial data at the subsidiary level could only be obtained by manually extracting the subsidiary’s financial data from the financial statement of their parent company because most databases like COMPUSTAT provide data for the parent company only.

The process of reviewing each of the major employers for each plan requires the concentrated effort of a team of knowledgeable researchers. Even then, it may be that private companies make up the majority of employers that participate in multiemployer plans, limiting the ability to use employer financials to identify points of potential stress in the system. Were this effort to be undertaken, an incremental approach might be the most appropriate. For example, as a test case of the feasibility of this exercise, the analysis could begin by mapping the interconnectedness of multiemployer plans that serve a certain industry.