

The Detroit Bankruptcy

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Table of Contents

1.____Executive Summary

9.____Introduction

11.____Assets and Liabilities

14.____City Revenues and the Great Recession

22.____City Operating Expenses

24.____City Legacy Expenses

33.____Conclusions

37.____Appendix

Executive Summary

The City of Detroit's bankruptcy was driven by a severe decline in revenues (and, importantly, not an increase in obligations to fund pensions). Depopulation and long-term unemployment caused Detroit's property and income tax revenues to plummet. The state of Michigan exacerbated the problems by slashing revenue it shared with the city. The city's overall expenses have declined over the last five years, although its financial expenses have increased. In addition, Wall Street sold risky financial instruments to the city, which now threaten the resolution of this crisis. To return Detroit to long-term fiscal health, the city must increase revenue and extract itself from the financial transactions that threaten to drain its budget even further.

THE SHORTFALL

Detroit's emergency manager, Kevyn Orr, asserts that the city is bankrupt because it has \$18 billion in long-term debt. However, that figure is irrelevant to analysis of Detroit's insolvency and bankruptcy filing, highly inflated and, in large part, simply inaccurate. In reality, the city needs to address its cash flow shortfall, which the emergency manager pegs at only \$198 million, although that number too may be inflated because it is based on extraordinarily aggressive assumptions of the contributions the city needs to make to its pension funds.

Cash flow crisis.

In a corporate bankruptcy, the judge takes stock of a company's total assets and liabilities because the company can be liquidated and all its assets sold to pay down its debts. However, municipal bankruptcies are inherently different because they do not contemplate the liquidation of a city. Municipal bankruptcies are about cash flow—a city's ability to match revenue against expenses so that it can pay its bills. Under Chapter 9 of the United States Bankruptcy Code, a municipality is eligible to file bankruptcy when it is unable to pay its debts as they come due.

This means that Detroit is bankrupt not because of its outstanding debt, but because it is no longer bringing in enough revenue to cover its immediate expenses. According to the city's bankruptcy filing, the emergency manager projects a \$198 million annual cash flow shortfall for fiscal year (FY) 2014 (though, as explained below, the portion of this amount that is related to pension fund contributions is an estimate that requires deeper analysis). To get out of bankruptcy, the city needs to

address this annual shortfall—whether it is \$198 million or a smaller number—not its total outstanding long-term debt.

Total outstanding debt.

Not only is the \$18 billion outstanding debt figure irrelevant to Detroit's bankruptcy, it is also misleading and inflated. There are several reasons, including the following examples:

- The emergency manager includes \$5.8 billion of the Water and Sewerage Department's debt as a liability of the city, even though the Water and Sewerage Department serves more than 3 million people all across southeastern Michigan, an area far larger than just the city of Detroit, which has just 714,000 residents. This debt is not a liability of the city's general fund; and, even if it were, only a fraction of it would be allocable to the city.
- The emergency manager's assertion that the city's pension funds have a \$3.5 billion shortfall is an estimate, very different from the certain liability of a financial debt, based on calculations that use extreme assumptions that depart from most cities' and states' general practice.

To pinpoint the causes of Detroit's bankruptcy, it is necessary to identify the reasons for the city's cash flow shortfall, which are best understood through an analysis of the city's revenue and expenses.

REVENUE

Detroit has been in a state of decline for several decades. The city's population has fallen from a high mark of nearly 2 million residents in 1950 to just 714,000 in 2010. This long-term decline has also taken a toll on the city's revenue base, causing both property and income tax revenues to shrink as homeowners and jobs have left the city. Altogether, Detroit's revenues have decreased by more than 20 percent since FY 2008, declining by \$257.7 million.

Tax revenue.

Because of the Great Recession, this gradual decline in revenue became a massive leak. Detroit was hit particularly hard by both the foreclosure and unemployment crises. The number of employed Detroit residents fell by 53 percent from 2000 through 2012, but half of that decline occurred in a single year, 2008, as the recession took hold.

During the recession, property values declined substantially, eating into the city's property tax base. The recession has cut deeply into key property and income tax revenue and fee revenue from utilities owned and operated by the city.

State revenue sharing.

The state of Michigan has exacerbated Detroit's revenue crisis by slashing \$67 million in state revenue sharing with the city. About \$24 million dollars of these cuts were due to revenues shared pursuant to the Michigan State Constitution, allocated among cities and towns based on population. Detroit's allocation was reduced because of population loss in the 2010 census. However, the remaining \$42.8 million (64 percent of the total state cuts) were due to statutory revenue sharing and were at the discretion of the state Legislature. By cutting revenue sharing with the city, the state effectively reduced its own budget challenges on the backs of the taxpayers of Detroit (and other cities). These cuts account for nearly a third of the city's revenue losses between FY 2011 and FY 2013, coming on the heels of the revenue losses from the Great Recession and tipping the city into the cash flow crisis that it is now experiencing. Furthermore, the Legislature placed strict limits on the city's ability to raise revenue itself to offset these losses.

Corporate subsidies.

The city has provided significant tax subsidies to a large number of enterprises as incentives to engage in development projects in downtown Detroit. In some years, the city handed out as much as \$20 million to private interests. To the extent that the development would have occurred without these tax subsidies, or with less subsidies, the program was a burden on city revenues at a time when it was particularly damaging. In any event, the subsidies that have not yet been received should be treated as obligations of the city, in the same category as debt service and funding of future employee benefits, subject to readjustment to help resolve the cash flow crisis to the extent revenue is not increased to cover the demands on cash.

EXPENSES

Contrary to widely held belief, Detroit does not have a spending problem. Since the onset of the Great Recession, the city's total expenses have actually decreased by \$356.3 million, driven by a 38 percent reduction (\$419.1 million in absolute terms) in operating expenses, although its financial expenses have gone up.

Operating expenses.

Between FY 2008 and FY 2013, the city drastically cut operating expenses by \$419.1 million. This was accomplished in large part by laying off more than 2,350 workers, cutting worker pay, and reducing future healthcare and future benefit accruals for workers. The city reduced salary expenses by 30 percent between FY 2008 and FY 2013. Total operating expenses have been reduced by nearly 38 percent during that same time.

Legacy expenses.

The city's "legacy expenses" increased by \$62.8 million between FY 2008 and FY 2013. These legacy expenses include the city's debt service and financial expenses as well estimates of its future liability for health-care and pension benefits it pays to retirees. A close look at the city's legacy expenses reveals that this \$62.8 million increase was driven heavily by the city's complex financial deals, not retiree benefits.

- The city's financial expenses increased by \$38.5 million between FY 2008 and FY 2013, accounting for more than 60 percent of the total increase in legacy expenses.
- The city's pension contribution expenses remained relatively flat, rising only \$2 million during this time. The city's contribution might have been larger if it had had more money, but increases in the actual contributions it did make did not contribute materially to the cash flow crisis.
- The city's healthcare contribution expenses increased by \$24.3 million. This constitutes an increase of 3.25 percent, per year, which is less than the nationwide annual increase in healthcare costs of 4 percent.

The city's pension contributions in particular did not play a role in pushing it into bankruptcy because they did not contribute materially to the increase in the city's legacy expenses that added to the cash flow shortfall. While the city's healthcare contributions did increase, this was largely because of rising healthcare costs nationally, not because the city's benefits were too generous. In fact, a comparative analysis of Detroit's retiree benefits shows that its pension and healthcare benefits are in line with those of other comparable cities.

Financial deals.

Detroit's financial expenses have increased significantly, and that is a direct result of the complex financial deals Wall Street banks urged on the city over the last several years, even though its precarious cash flow position meant these deals posed a great threat to the city. The biggest contributing factor to the increase in Detroit's legacy expenses is a series of complex deals it entered into in 2005 and 2006 to assume \$1.6 billion in debt. Instead of issuing plain vanilla general obligation bonds, the city financed the debt using certificates of participation (COPs), which is a financial structure that municipalities often use to get around debt restrictions. Eight hundred million dollars of these COPs carried a variable interest rate, which the city synthetically converted to a fixed rate using interest rate swaps.

These swaps carried hidden risks, and these risks increased after the Federal Reserve drove down interest rates to near zero in response to the financial crisis. The deals included provisions that would allow the banks to terminate the swaps under specified conditions and collect termination payments, which would entitle the banks to immediate payment of all projected future value of the swaps to the bank counterparties. Such conditions included a credit rating downgrade of the city to a level below "investment grade," appointment of an emergency manager to run the city and failure of the city to make timely payments. Projected future value balloons in low, short-term rate conditions. This is because the difference between the fixed swap payments made by the city and the floating swap payments projected to be paid by the banks increases. Because all of these events have occurred, the banks are now demanding upwards of \$250-350 million in swap termination payments.

These swap deals were particularly ill-suited for a city like Detroit, which had been hovering on the edge of a credit rating downgrade for years. Because the risk of a credit downgrade below "investment grade" was so great, the likelihood of a termination was imprudently high. The banks and insurance companies were in a far better position to understand the magnitude of these risks and they had at least an ethical duty to forbear from providing the swaps under such precarious circumstances. The law recognizes special duties that sophisticated financial institutions owe to special entities like cities in providing complex financial products. A strong case can be made that the banks that sold these swaps may have breached their ethical, and possibly legal, obligations to the city in executing these deals.

CONCLUSION

Detroit's bankruptcy is, at its core, a cash flow problem caused by its inability to bring in enough revenue to pay its bills. While emergency manager Kevyn Orr has focused on cutting retiree benefits and reducing the city's long-term liabilities to address the crisis, an analysis of the city's finances reveals that his efforts are inappropriate and, in important ways, not rooted in fact. Detroit's bankruptcy was primarily caused by a severe decline in revenue and exacerbated by complicated Wall Street deals that put its ability to pay its expenses at greater risk. To address the city's cash flow shortfall and get it out of bankruptcy, the emergency manager should focus on increasing revenue and extricating the city from these toxic financial deals. Here are some recommendations for doing that:

- The emergency manager, ideally in collaboration with the state, needs to increase revenue by \$198 million annually to bridge Detroit's budget gap until structural programs can be put in place and the city can benefit from increased general economic improvement. This includes enlisting state involvement on an emergency basis and restoring discretionary state revenue sharing to pre-crisis levels. The shortfall amount can be reduced as FY 2014 proceeds by factors such as improved collection of unpaid taxes (which has yielded modest results to date).
- The emergency manager should drop his proposal to move city workers to a defined contribution pension plan and abrogate vested pension benefits. The city's pension fund contributions did not cause the crisis. Reducing benefits runs counter to the long-term goal of structurally improving city services. Moreover, converting to a defined contribution plan at just the moment when new active employees will be added as services are improved (a goal of the emergency manager) would adversely affect the financial dynamics of the pension fund for existing retirees and other beneficiaries who have already vested under the defined benefit system. Over time, the new active employees will rebalance a fund that is currently top-heavy with retirees and will improve the long-term investment horizon of the plan, to the benefit of city cash flow.

- The emergency manager should drop any plans to privatize or otherwise monetize the Water and Sewerage Department, since the asserted benefits of such a plan are not likely to be realized and, even if they were, would have no net effect on the current cash flow crisis. The sale price of the system or components represents an investment by a buyer that must be repaid by system revenues, the same as bonds issued against those revenues. If the sale price is applied to retire existing bonds, the effects balance out. If they are not used to retire bonds, it is just like issuing new debt, which presumably the system could do without selling off parts of itself. The plan calls for an annual payment to the city, but this payment is from user fee revenues net of operational expenses and debt service (and return on equity investment if true privatization is used), a financial structure that is parallel to the current system.
- The emergency manager's plan to pay the swap termination fees outside of the bankruptcy process should be abandoned. The bank counterparties should be made to bear the consequences of the original swap transaction, and they should be pushed to forego their projected profit (the measure of the termination payment), given the large profits they have already earned as a result of the unusually low interest rates that resulted from the financial crash. The emergency manager should also press for prorated rebates on the premiums for insurance on the swaps. And, if necessary, the state should be enlisted to guarantee the city's swaps to avoid payment of termination fees. The termination fees will become smaller as interest rates rise over time, which they are likely to do.
- The emergency manager should negotiate directly with the holders of the pension financing certificates of participation, apart from other unsecured creditors. The circumstances of the COPs issue are unique. Unless these circumstances are shown to have benign explanations that are not currently available generally to the public, the leverage that the emergency manager has over this negotiation is high.

- The emergency manager should reclaim tax subsidies and other expenditures to incentivize investment in the downtown area. These tax subsidies should be treated similarly to the city's other financial obligations. The residents of Detroit have already suffered as a result of the crisis, as have the public employees. The recipients of tax expenditures should share in the sacrifice as well.

Once Detroit gets through this immediate crisis, the city's elected officials, hopefully working collaboratively with the state Legislature and the governor, can turn their attention to post-crisis, structural programs that would grow the city's tax base and allow it to return to prosperity over time.

Introduction

In March 2013, Michigan Governor Rick Snyder delivered a letter to the mayor and the City Council of Detroit stating that he had appointed Kevyn Orr as emergency manager of the city. The governor had, by the stroke of his pen, transferred all political authority in the city to Orr (assuming that the appointment was valid). This was the culmination of a process that found that the city's finances were untenable and that the requirements of a recent state statute providing for such takeovers had been satisfied. In June, the city, now operating under the Orr regime, ceased meeting basic cash flow obligations, and on July 18, the emergency manager, purportedly on behalf of the city of Detroit, filed for bankruptcy. The filing occurred minutes before the commencement of a court hearing that, according to the judge, would have blocked the bankruptcy action.¹

The public characterization of the bankruptcy filing and the supporting documentation make it clear that, through the bankruptcy process, the emergency manager has at least two strategic goals in filing and pursuing the petition. First, he seeks to transform the retirement and benefits systems for city employees to a defined contribution plan, transferring financial market risk to employees. It is a form of the thinking behind the proposals to privatize Social Security. Second, he seeks to organizationally and politically separate the Water and Sewerage Department's system, which serves more than 3 million people in the city and surrounding areas (roughly 40 percent of the population of Michigan), from the city government, enabling (a) the department's revenue to be monetized through privatization and/or other means and (b) system employee pension and healthcare benefits to be separated from the city's programs.²

It is unlikely that either of these actions will actually help the city recover from the cash flow crisis or even improve its long-term prospects.

The papers filed with the U.S. Bankruptcy Court for the Eastern District of Michigan, consistent with public statements to the media, detail the tragic long-term decline of the city's economy, including the loss of population and the deterioration of city services.

There is no doubt that the city has suffered from structural decline and that state and city policies have not successfully addressed that decline. *But that is not the immediate issue in a municipal insolvency.* The issue is that the cash currently available does not cover the current expenses of the city. Structural concerns must be addressed, and this can only be accomplished over time. Recounting the past can inform decisions to re-

build the economic viability of the city. But the following questions frame the immediately pertinent issues: Why is the cash shortfall that underlies the bankruptcy occurring at this moment, and what can be done to keep the city operating?

The balance of this paper will address in detail the major topics associated with the current cash flow crisis and insolvency of the city of Detroit. It will examine assets and liabilities because these have become the focus of public discussion, though they are not directly relevant to the insolvency. It will then analyze the actual causes of the cash flow crisis and the components of cash flow: revenues, operating expenses and legacy expenses.

Assets and Liabilities

Municipal assets have little relevance to a bankruptcy proceeding. The absolute amount of long-term liabilities is similarly irrelevant. This is different from corporate bankruptcies. The reason for this difference is that corporations have an enterprise value equal to the value of their assets, less the amount of their debt. Corporations can be liquidated and sold. The absolute amount of the long-term debt of a corporation directly affects its liquidation value. In contrast, a municipality cannot be liquidated or sold. The value of individual assets is generally a function of the value that they provide the public, not a commercial value. That is why municipal bankruptcy and insolvency principles do not contemplate liquidation of the municipality. The amount of long-term debt is a concern only because of its cash flow implications. The city's insolvency results from available cash being insufficient to meet cash demands, not from its liabilities exceeding its assets.

Nonetheless, the emergency manager has often recited the figure of \$18 billion in liabilities. As a result, any discussion of the bankruptcy must examine the issue of city liabilities in order to introduce rational analysis to the public discourse, even though the issue is not directly relevant to the insolvency and bankruptcy. Though the number has become symbolic of the city's cash flow shortfall, it is made up of apples and oranges, and (far worse) includes obvious conceptual errors and mischaracterizations.

A careful analysis of the city's liabilities is enlightening, demonstrating the danger of the headline phrase, "Detroit \$18 Billion in Debt." Below in Figure 1 is the list of liabilities that are constituent elements of the purported \$18 billion of city liabilities:

Figure 1. City of Detroit Emergency Manager Claimed Liabilities (\$ Million)

On Balance Sheet	
General Obligation Bonds and Notes	\$1,130
Water and Sewer Enterprise Debt	5,840
Pension COPs	1,430
Pension Swap Termination Amount	347
Other Balance Sheet Liabilities	300
Off Balance Sheet	
Unfunded Pension (Emergency Manager)	3,500
Unfunded Health Benefits	5,700
Total: \$18,244	

Source: City of Detroit Bankruptcy Filing

The \$18 billion figure is misleading when used in connection with the insolvency and bankruptcy in several ways. Foremost is the principle, long understood in the law and by financial professionals, that municipal insolvency and bankruptcy are issues of cash flow. Unlike in businesses or even nonprofit corporations, values of assets and liabilities have very little to do with municipal bankruptcy. Under the bankruptcy laws, obligations are adjusted only if and to the extent that it is necessary to allow cash flow to be positive for a reasonable period.

In addition, the components of the aggregate \$18 billion amount are not comparable. Thus, it is misleading to aggregate them, especially since the resulting amount understandably seems alarming to the less-informed public. Moreover, some of the components are simply misrepresented as liabilities of the city. An analysis of these components is included in the text box on the following page:

A more in-depth analysis of the asserted city liabilities is set forth in Appendix A—City Liabilities Asserted by the Emergency Manager.

COMPONENTS of LEGACY LIABILITIES

Asserted by the Emergency Manager

- About \$1.1 billion of the liabilities asserted by the emergency manager is clearly owed by the city as general obligation debt. This is indisputably a liability of the general budget of the city.
- An additional \$5.8 billion is debt owed from the Water and Sewerage Department, which serves in excess of 3 million people all across southeastern Michigan (roughly 40 percent of the state's population). The debt is payable from the fees charged for that service rather than from city resources. This is debt of an enterprise that reaches far beyond the city and is not a direct obligation of the city's budget. Thus, asserting that the total bond amount is a liability of the city is not appropriate.
- The city is obligated to repay \$1.4 billion of debt associated with its pension funds. The proceeds from this borrowing were deposited in a fund and invested in securities and other investments that generate a return. The excess of this return on investments (as estimated) over the interest cost of the pension debt (which was the core rationale for the pension financing) should be a net benefit to the city. While it is a debt of the general budget of the city, its relationship with the city's pension funds and with the swap transaction described below are complex.
- Another \$350 million represents termination payments on swaps that may or may not be payable and changes over time as market interest rates move. The amount of the payment is a mathematical function of short-term interest rates. Lower interest rates increase the amount. This "legacy liability" is really an obligation to pay interest and is improperly included in the list without explanation. The termination payment should also be seen as an asserted current liability, but one that may be avoidable through negotiation or sensible coordinated effort between the city and state to avoid its effects.
- An additional component relates to retirement benefits for city employees. Much of that amount was claimed because the emergency manager used a nonstandard set of assumptions to estimate what the city will have to contribute to these benefits over time. One can debate the assumptions for calculating unfunded retirement benefit obligations, but the city has used assumptions that are aggressive yet within conventional bounds and has estimated approximately \$800 million for pensions. While key components of these assumptions are omitted, those that are disclosed are clearly more conservative than even the assumptions used by the emergency manager's own consultant in studies other than the ones issued in connection with Detroit. In both cases, the amount of the unfunded liability is an estimate. The only way to know for certain what the contribution must be is to wait 30 years and see.
- Finally, \$5.7 billion relates to unfunded healthcare costs. This figure appears to come from calculations done as a part of the city's financial statements. It is large because the assumptions used by the city's finance professionals were unusually conservative. The city's healthcare benefits are far from excessive and have even been reduced in recent years.

City Revenues & the Great Recession

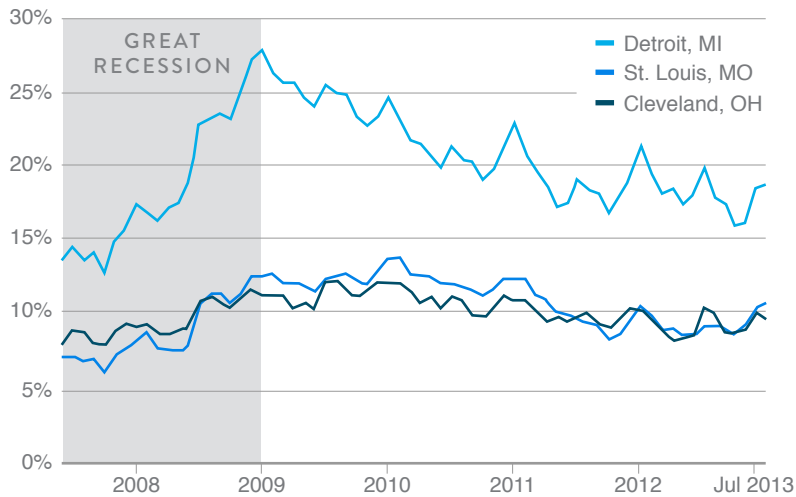
The finances of the city of Detroit, like any other city, are a function of the economic productivity of its commercial and non-profit enterprises. That is measured by the number of people employed and the aggregate income of the city's population. Everything, from consumer sales to income to be taxed to property values, is directly related to productivity and income. Other matters, such as tax collection rates, that are stressed in the bankruptcy filing are significant (approximately \$131 million in uncollected property taxes in 2011 and \$30-45 million estimated annual income tax non-filing by reverse commuters) but do not drive the overall results since a substantial amount of this has remained uncollected after recent efforts and may not be collectable in the current economic conditions.³

Detroit's population has fallen precipitously from a high of nearly 2 million residents and 14,000 people per square mile, constituting the fifth largest city in America during the post-World War II years. At its height, almost one-third of the state of Michigan's population were living within its borders.⁴ In the 2010 census, its population was reported as 714,000.

The number of employed Detroit residents fell by 53 percent from 2000 to 2012. *But half of that decline occurred in a single year, 2008, as the Great Recession took hold.*⁵ *There is one inescapable fact: The most significant proximate cause of the cash flow cliff off of which the city fell was the Great Recession.* The city's structural problems amplified the consequences of the recession for Detroit. The employment opportunities in the city were vulnerable to the economic downturn. And there is little doubt that the effect of the recession on the auto industry was particularly damaging to the city. In the short term, the effects of depopulation and the decline in employment on the city's financial health could not be avoided. These structural problems can be addressed, but the task at hand for political leaders at the state and municipal levels is to get beyond the crisis and then go to work on the structural weaknesses of the city.

The effect of the Great Recession was particularly damaging to Detroit. Comparing the city with St. Louis and Cleveland, the two cities cited as comparable by the emergency manager in the bankruptcy filing, makes this effect is especially clear. It is illustrated in Figure 2 and Figure 3.

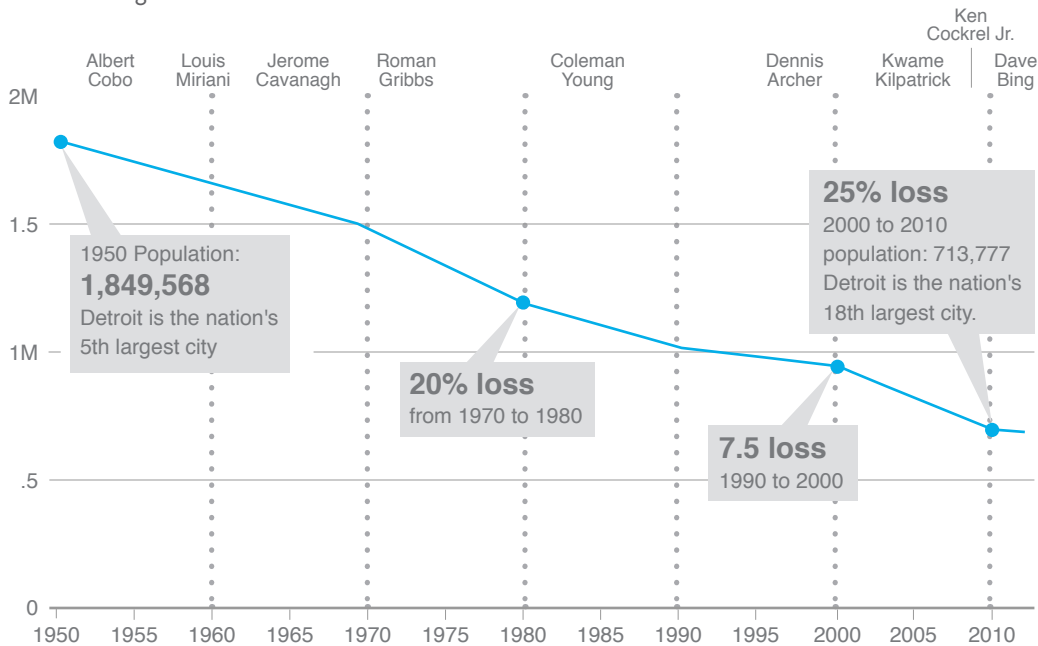
Figure 2. Non-Seasonally Adjusted Unemployment Rate 2008-2012⁶



Source: U.S. Bureau of Labor Statistics. (2013). Unemployment rate - Not Seasonally Adjusted. Retrieved September 23, 2013, from <https://www.google.com: http://tinyurl.com/q58wjbb>.

Figure 3. City of Detroit Long-term Population Decline

by 2010, Detroit's population was down 61% from its peak of 1.8 million residents in the 1950 census. Detroit has two decades with more than 20% decline, and one hopeful decade of the 1990s during which the decline slowed to 7.5%



Source: U.S. Census Bureau, Bomey, N., & Gallagher, J. (2013, September 15). How Detroit went broke: The answers may surprise you - and don't blame Coleman Young. Detroit Free Press. Retrieved September 30, 2013, from <http://www.freep.com/interactive/article/20130915/NEWS01/130801004/Detroit-Bankruptcy-history-1950-debt-pension-revenue>

The city's financial condition has been weak for many years. This has, among other things, narrowed its fiscal options. However, the Great Recession changed the city's cash flow dynamics materially, driving the current crisis. The long-term future of the city depends entirely on how it takes advantage of the general economy's cyclical recovery that appears to be beginning. The short-term cash flow shortfall is an issue that must be solved as a precondition to longer-term solutions.

City revenues since the onset of the Great Recession, as set forth in Figure 4, complete the story. The decline in revenue over the period since the onset of the Great Recession is the major driving force behind the current cash flow crisis. The enhancement of revenue is at the core of the answer to both the crisis and the long-term structural issues faced by the city.

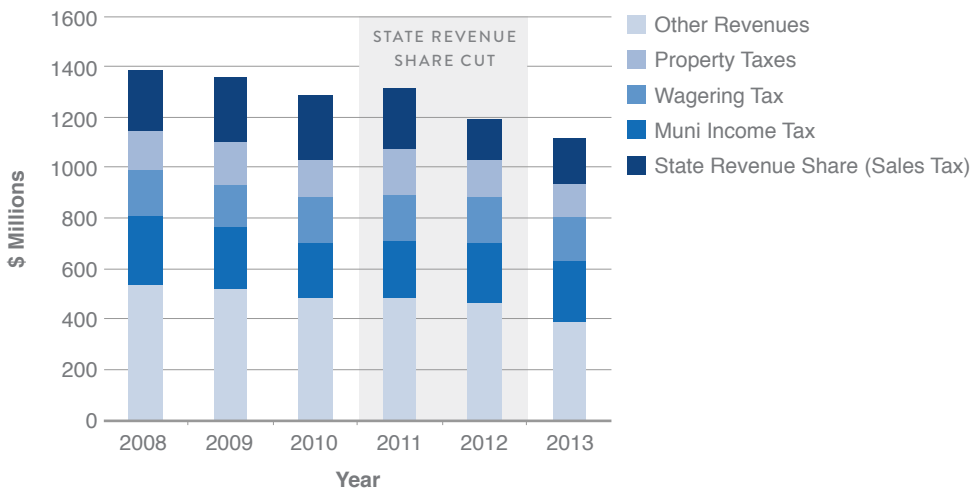
Figure 4. City of Detroit Revenues (\$ Millions)

	2008	2009	2010	2011	2012	2013
Muni Income Tax	276.5	240.8	216.5	228.3	233.0	238.7
State Revenue Sharing	249.6	266.6	263.6	239.3	173.3	182.8
Wagering Tax	180.4	173.0	183.3	176.9	181.4	173.0
Property Taxes	155.2	163.7	143.0	182.7	147.8	134.9
Sales & Service Charges	191.3	166.7	154.1	155.0	145.4	120.4
Utility Users and other taxes	73.0	71.5	64.8	64.8	57.1	54.8
Other Revenue	156.9	142.7	134.2	152.4	125.5	93.4
General Fund Reimbursement	34.7	55.7	47.6	32.3	47.6	31.2
Transfers	80.1	82.5	83.8	85.1	85.8	92.8
Total	1,397.7	1,363.2	1,290.9	1,316.8	1,196.9	1,122.0

Source: City of Detroit Bankruptcy Filing

Figure 5 illustrates the relationship between municipal taxes, state revenue sharing and other revenue over the period.

Figure 5. City of Detroit Components of Revenues (\$ Millions)



Source: City of Detroit Bankruptcy Filing

Thus, while cash flow outlays decreased by \$356.3 million (described in detail below in “City Operating Expenses”), revenue decreased by \$275.7 million. It is clear that the controllable budgetary expenditures could not be cut fast enough or deep enough to keep up with the loss in revenue.

Again, further analysis of the revenues outlined above is useful and is described in Figure 6.

Figure 6. City of Detroit Revenue Analysis (\$ Millions)

	% Decrease	Absolute Decrease	Absolute Decrease as % of Total Decrease
Muni Income Tax	14%	37.8	14%
State Revenue Sharing	27%	66.8	24%
Wagering Tax	4%	7.4	3%
Property Taxes	13%	20.3	7%
Sales & Service Charges	37%	70.9	26%
Utility Users and other taxes	25%	18.2	7%
Other Revenue	40%	63.5	23%
General Fund Reimbursement	10%	3.5	1%
Transfers	-16%	-12.7	-5%
Total	20%	275.7	100%

Source: City of Detroit Bankruptcy Filing

The detailed components included in Other Revenue are not clear from the city’s financial reports. However, it specifically includes funds from the federal government and from a number of city activities.

The other large line items are Sales and Service Charges and State Revenue Sharing. Sales and Service Charges includes utilities payments that are closely related to the economic downturn. State Revenue Sharing is another matter. It fell off precipitously commencing in 2011, dropping by almost 28 percent from 2010, which accounted for the entire decline over the period.

The critical period in terms of the bankruptcy includes fiscal years 2011 through 2013. Figure 7 provides a revenue comparison for these years.

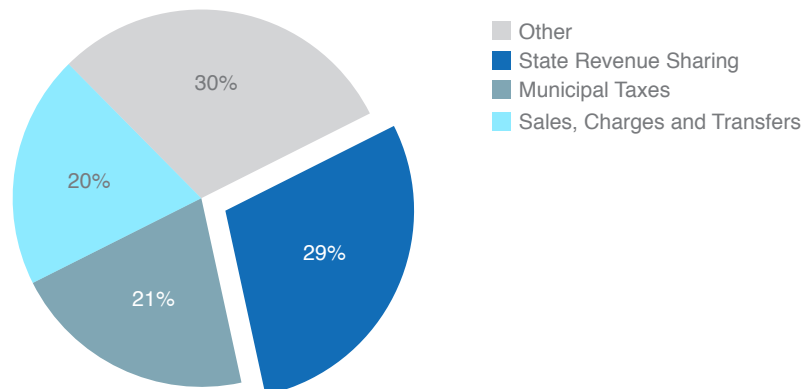
Figure 7. City of Detroit FY 2011-2013 Revenue Analysis

	% Decrease	Absolute Decrease (\$ Millions)	Absolute Decrease as % of Total Decrease
Muni Income Tax	-4%	-10.4	-5%
State Revenue Sharing	31%	56.5	29%
Wagering Tax	2%	3.9	2%
Property Taxes	35%	47.8	25%
Sales & Service Charges	29%	34.6	18%
Utility Users and other taxes	18%	10.0	5%
Other Revenue	63%	59.0	30%
General Fund Reimbursement	4%	1.1	1%
Transfers	-8%	-7.7	-4%
Total	17%	194.8	100%

Source: City of Detroit Bankruptcy Filing

Figure 8 illustrates the relationship among the components of the revenue decline during the Great Recession.

Figure 8. City of Detroit Relationship Among Components of Revenue Loss



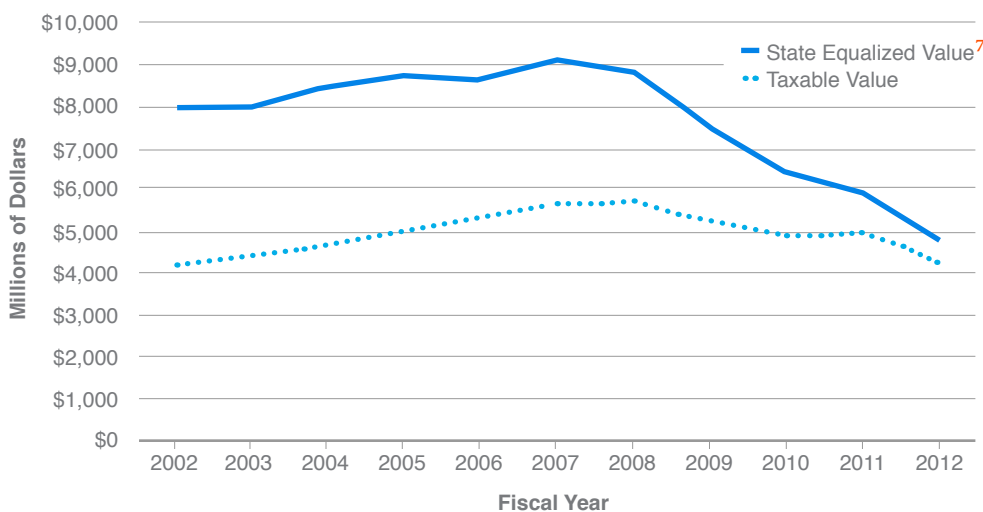
Source: City of Detroit Bankruptcy Filing

This revenue decline of almost \$200 million over an exceedingly short period proved to be devastating. Its size must be compared with the \$887.5 million of operating expenditures in FY 2011 and the \$692.0 million of operating expenditures in FY 2013 (see “City Operating Expenses,” below). These were the controllable expenditures that had to absorb the revenue loss.

Thirty percent of the decline is in Other Revenue, which includes available excess revenue from the Water and Sewerage Department, and excess revenue from running the department accrues to the city. This enterprise serves Detroit and an extensive geographical area around the city. During 2011 and 2012, the city issued more than \$1.16 billion of bonds for its water and sewer enterprise. Approximately half of this debt was issued to fund \$547 million in swap termination payments on financial deals that had been terminated by financial institutions because of a credit rating downgrade of the city. Undoubtedly, debt service increases and revenue declines due to poor economic performance contributed to this decline in “Other Revenue” for the city.

Reduced property tax revenues accounted for 25 percent of the post-2008 decline. The collapse of the housing market hit the city hard. Property tax valuations have dropped by approximately 12 percent since the collapse in 2008, as illustrated by Figure 9 (a chart reproduced from the city’s FY 2012 financial statements). In addition, the skyrocketing unemployment affected incomes dramatically, leading to a decline in collections.

Figure 9. City of Detroit Assessed and Taxable Value of Residential Property (\$ Thousands)



Source: Citizens Research Council of Michigan, *Detroit City Government Revenues* (Livonia, MI: Citizens Research Council of Michigan, 2013), accessed September 30, 2013, www.crcmich.org/PUBLICAT/2010s/2013/rpt382.pdf.

Lowered state revenue sharing represents 29 percent of the decline. This was particularly devastating to the city from a cash flow perspective since it occurred in FYs 2011 and 2012 rather than over a period of years. There are two components of state revenue sharing. One is based on a Michigan Constitution requirement that a portion of the proceeds of a 4 percent (of the 6 percent) state sales tax be made available for distribution to cities and towns. Fifteen percent of these proceeds is distributed among the cities and towns based on population. Detroit's share of this constitutionally required sum declined after the 2010 census by approximately \$24 million.

Additional state revenue sharing is mandated by statute. This statute was amended in 2011 for the period beginning in FY 2012. Because of this action of the Michigan Legislature and the governor, Detroit's state revenue sharing declined by an additional \$43 million in FY 2012. This is qualitatively different from other components of revenue decline, since, unlike revenue declines because of the Great Recession and population reduction, this loss was based on policy decisions at a time when the city was particularly vulnerable to a cash flow crisis.

Emergency revenue enhancement from the state is not part of the emergency manager's plan. The emergency manager has two primary proposals relating to revenue. The first is to address uncollected taxes owed to the city. The City of Detroit Bankruptcy Filing indicates that up to \$131 million in property taxes due to the city were unpaid in FY 2011. Efforts have been underway since 2011 to recover all or a portion of that amount. Further, income taxes owed by non-filers are estimated at \$250 million in aggregate. Approximately \$30-45 million per year is owed by reverse commuter non-filers. Efforts to collect these amounts have been underway for some time. The amount that can be recovered from unpaid taxes is unknown, but efforts to date have had modest results.

The emergency manager has also proposed to generate unrestricted revenue from the Water and Sewerage enterprise. The proposal would either privatize elements of the system, transfer the system to a new governmental entity or both. In exchange, the city would receive a stream of payments that, according to the City of Detroit Bankruptcy Filing, would be unrestricted. However, the basic enterprise structure would remain in place. Water and Sewerage usage fees would be used to make debt service payments and (in the case of privatization) pay back private investment. By creating a separate governmental entity or privatizing, the payments to the city would be free of encumbrances placed on it by the city, but it would be encumbered by the debt and other obligations of the new owner. This would change nothing. Any upfront payments to the city would simply increase the debt (and private investment) taken on to

finance the payments.

The other major change that is referenced in the proposal to monetize and/or privatize the Water and Sewerage system enterprise is a conversion of the pension plan and the health benefit plan for the employees of the system. The city would be relieved of its legacy funding obligations and they would be assumed by the new owner, which would then convert the pension plan to an unspecified new one and would consider the discontinuance of health benefits. This element of the Water and Sewerage restructuring proposal may have significant effects that may exceed the recapitalization proposal significantly.

Another important issue, not considered by the emergency manager, is the possibility that the extensive subsidies in the form of city tax expenditures to incentivize downtown development in fact caused the city to forego revenue it otherwise would have received. The total amount of these tax benefits is significant. The Detroit Economic Development Council reports in excess of \$20 million per year of tax expenditures awarded to enterprises such as the Detroit Medical Center, DTE Energy, Comerica Bank, Rock Ventures/Garbsman, the Farbman Group, Compuware, and Quicken Loans.⁸ The effectiveness of such incentive programs is an area of great controversy.⁹ Even the most effective tax incentive development programs are blunt instruments. To the extent that the development would have occurred without these tax expenditures, or with less tax expenditure, the program was a burden on city revenue at a time when it was particularly damaging.

City Operating Expenses

As shown by the following data in Figure 10, the city of Detroit's payroll is not markedly different from comparable cities, such as St. Louis and Cleveland, the two cities used by the emergency manager for comparison.

Figure 10. City of Detroit Employee and Payroll Comparables¹⁰

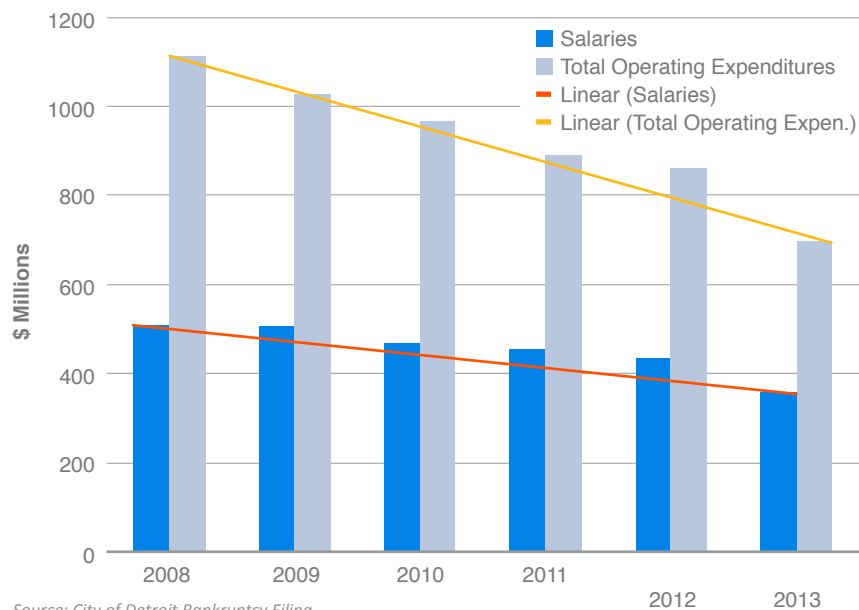
	Detroit	St. Louis	Cleveland
Payroll	\$651,437,244	\$300,266,820	\$425,029,356
Employees per Capita	1/61	1/50	1/50
Average Salary	\$56,491	\$47,566	\$54,929
Payroll per Capita	\$912.66	\$940.41	\$1,071.10

The employee and payroll comparables: Rosiak, L. (2013, July 22). EXography: 19 U.S. Cities Have Proportionately Bigger Workforces than Bankrupted Detroit. Washington Examiner. Retrieved September 22, 2013, from <http://washingtonexaminer.com/exography-19-u.s.-cities-have-proportionately-bigger-workforces-than-bankrupted-detroit/article/2533338#list2308200400>

The data clearly indicate that the city of Detroit has a significantly smaller workforce per capita than comparable cities. While the Detroit's payroll per capita is relatively small, the average salary is slightly larger. This is undoubtedly because the reduction in the number of city employees has affected lower-paid jobs slightly more.

The city responded to the effects of the Great Recession by reducing expenses. This included expenses related to salaries and operations, as shown in Figure 11.

Figure 11. City of Detroit Municipal Salaries and Operating Expenses



Source: City of Detroit Bankruptcy Filing

The city administration has obviously taken extraordinary steps to mitigate the cash flow squeeze that occurred after the onset of the Great Recession by reducing expenditures that could be readily controlled. More than 2,350 jobs have been lost, coming on the heels of large job cuts before the recession started. This explains much, though not all, of the deficiency in services currently provided by the city, which has been highlighted in the press and in the emergency manager's bankruptcy filing.

Undoubtedly, this level of operations is a long-term drag on the prosperity of the city. The city's bankruptcy proceeding documents, filed by the emergency manager, make this clear. The kinds of initiatives recently proposed by the federal government are promising remedies for these problems,¹¹ but the improvement of city services is a threshold issue for structural recovery. There is also little doubt that the reduction of the "controllable" operating budget cannot be a remedy for the cash flow crisis the city is currently experiencing.

City Legacy Expenses

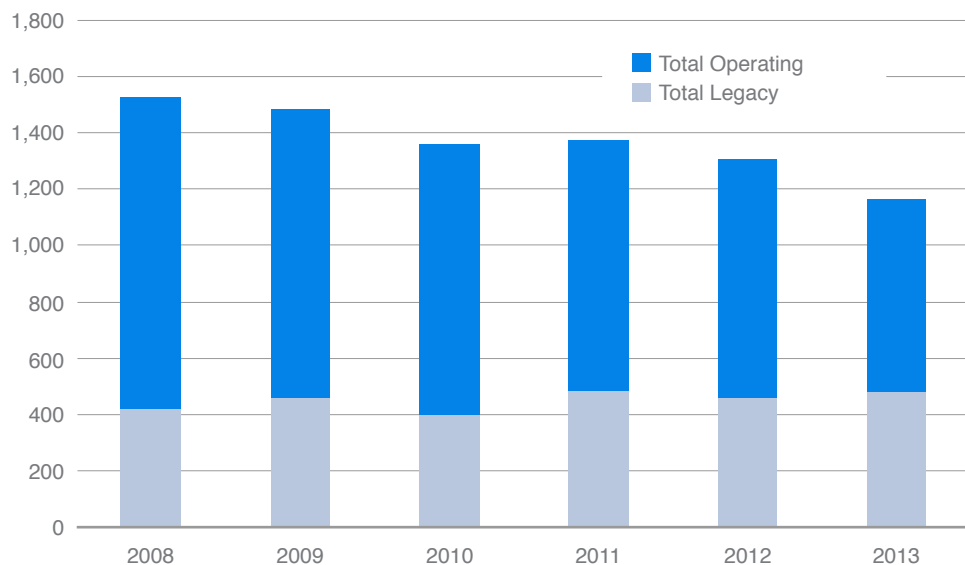
The other cash demands on the city are referred to in the bankruptcy filings as ongoing “legacy expenses.” Legacy expenses are the cash flow consequences of “legacy liabilities.” Unlike legacy liabilities, they are pertinent to the cash flow crises and its remedies. They include principal and interest payments on bonds issued by the city, payments in respect of derivatives, and future liabilities to pay pension and healthcare benefits for employees. In contrast with the city’s operating expenses, these amounts, set forth in Figures 12 and 13, have increased rather than declined since the onset of the Great Recession.

Figure 12. City of Detroit Legacy Expenses (\$ Millions)

	2008	2009	2010	2011	2012	2013
Bond Debt Service	133.8	177.6	135.9	137.3	135.6	141.4
Certificates of Participation	29.8	25.1	28.1	38.9	39.0	55.4
COP Swaps	45.3	49.9	50.7	50.7	50.7	50.6
Total Financial	208.9	252.6	214.7	226.9	225.3	247.4
Pension Contribution	76.3	65.7	50.8	119.5	86.1	78.3
Health Benefits	129.3	143.7	132.3	139.7	150.1	151.6
Total Benefits	205.6	209.4	183.1	259.2	236.2	229.9
Total Legacy	414.5	462.0	397.8	486.1	461.5	477.3

Source: City of Detroit Bankruptcy Filing

Figure 13. City of Detroit Total Expenses



Source: City of Detroit Bankruptcy Filing

Therefore, total annual expenditures, both operating and legacy, declined by \$356.3 million over the period, while legacy expenditures increased by \$62.8 million. The percentage of the increase in legacy expenditures attributable to financing costs was 61.3 percent and that the percentage related to benefits was 38.7 percent. It should be noted that, because the Water and Sewerage enterprise revenue is reported net of debt service, the increase in financing costs of those enterprises, and in particular the debt service on bonds issued to finance the half-billion dollars of termination payments on swaps, is not included in the legacy expenses. Of the increase in benefits, almost all related to healthcare, not pensions.

Of particular note is a further analysis of these legacy expenses described in Figure 14.

Figure 14. City of Detroit Legacy Expenses (\$ Million)

	% Increase 2008-113	Absolute Increase 2008-13
Debt Service	6%	7.6
COPs	86%	25.6
COP Swaps	12%	5.3
Total Financial	18%	38.5
Pension Contribution	3%	2.0
Health Benefits	17%	22.3
Total Benefits	12%	24.3

Source: City of Detroit Bankruptcy Filing

This analysis tells us that the largest increase was the cash flow demand from the Certificates of Participation (“COPs”) transaction. Further, it tells us that the increase in benefits expenses was virtually all associated with health benefits. The nationwide annual increase in healthcare costs of 4 percent per year, if compounded over the period, would indicate an increase over five years of 21 percent, less than the 17 percent increase (which is a 3.25 percent annual increase) reported for the city.¹² Future healthcare costs may be relatively lower as a result of the Affordable Care Act.

The significant increase in the cash flow demands of the COPs transactions is partly attributable to principal repayment kicking in. In addition, an increase of \$800,000 per year represents additional payments made in a 2009 settlement to avoid the consequences of the first termination event on the COPs-related swaps resulting from the credit rating downgrade of the city. The COPs financing and the related swap transaction are discussed in great detail below. (The second termination event, which was asserted based on the events of 2013 and could result in a payment of

\$350 million to terminate the swaps, has not yet been resolved and is not reflected in these figures.)

COPS TRANSACTION AND SWAP PAYMENTS

The city's current circumstances cannot be fully understood without a thorough analysis of the pension fund financing and the related derivatives transactions entered into prior to the financial crisis and the onset of the Great Recession.

The COPs.

The pension financing was designed to fund the city's pension contribution obligations, and many state and local governments have done such financings. The rationale was that the obligations on the debt would replace the city's pension funding obligation. The cash proceeds would be invested by the pension fund, and the city would make more on the investments than it would pay in interest. Half the debt was fixed rate, and half was floating but was converted synthetically to fixed via the swaps.

The pension fund debt was structured as certificates of participation or COPs, which raises significant concerns about whether they were legally authorized.¹³ Structurally, the city could have issued general obligation bonds payable from its general fund to raise the amounts borrowed in the pension financing. Instead, the city used a complex financial structure, in part to get around debt restrictions. A cash stream was generated by payments under contracts entered into by the city for no substantive reason other than to generate the payment stream. Then investors were sold participations in the cash stream.

- Special purpose nonprofit companies were formed for both the general pension funds and the police and fire funds. The nonprofits entered into a contract with the city under which they performed specified administrative duties, and the city agreed to compensate them. The compensation payments were in an amount that was equal to principal and interest on debt in the amount raised in the COPs transaction.
- The investors did not get conventional bonds. They got certificates that entitled them to a pro rata participation in the stream of cash paid by the city under the contracts with the pension fund nonprofit corporations. The share of the stream of cash representing an investor's participation was pro rata with the investor's share of the total amount paid for the COPs by all investors.

- Thus, the instruments bought by investors generated cash as if they were conventional bonds. However, the city paid under a service contract rather than straightforwardly making payments on bonds. Since its obligations were under a service contract, the city did not comply with legal requirements governing the issuance of bonds.

It appears that the COPs structure was used to avoid limitations on debt, such as voter approval of the transaction and legal limits on debt, that would have applied had the conventional general obligation bond been used.

The Swaps.

It is important to note that \$800 million of the debt carried a floating interest rate and was immediately converted synthetically to fixed interest rates using derivatives. These derivatives transactions were in the form of interest rate swaps in which the city paid counterparties a fixed amount based on the city's then-current borrowing rate on long-term debt. The city received amounts in return that were calculated based on prevailing floating rates over time on a notional (or assumed) principal amount of debt. Simultaneously, the city borrowed in the bond markets issuing floating rate debt in a principal amount equal to the notional principal amount on which the swaps were based. The floating rate payments were used to pay interest on the actual floating rate debt, leaving the city obligated to make the fixed payments under the swaps.¹⁴ The net effect was that the city's cash flow was used to make synthetic fixed rate debt payments. This was done because the city believed, based on advice, that the overall result would be better than straightforwardly issuing long-term fixed-rate debt. The city was told that the market for floating rate debt was relatively favorable.

The counterparties to the city on the swaps were banks and other financial entities. However, under the original swap documents, bond insurers guaranteed the fixed rate payments by the city to the counterparties under the pension financing swaps. On default or if there was any other termination, the insurers stepped into the shoes of the counterparties and controlled the proceedings under the documents. The pension swaps were subject to termination if the city suffered a credit rating downgrade or if an emergency manager was appointed, and if the city missed a payment, all of which happened. In that event, the counterparties were entitled to an immediate payment of projected future profits (*i.e.*, the excess of the fixed payments by the city over the reduction in floating payments by the counterparties since inception of the swap, with the floating rate

assumed to continue at the floating rate applicable at the time of the termination, “present-valued” based on a discount rate).

When the termination was claimed, this termination amount was very large. That was because (a) lower short-term interest rates mathematically increased projected profits, and (b) short-term rates had been kept extraordinarily low by the Federal Reserve to counteract the recession. The termination payment was avoided when the first termination was threatened through restructuring in 2009 by increasing city payments and providing more collateral. The second termination event in 2013, as a result of the emergency manager appointment and the insolvency, is reported to require an immediate payment of up to \$350 million under the swap documents.

Many tens of billions of dollars of taxable pension fund debt transactions tied with swaps have been entered into by states and municipalities in the last 20 years. They have been severely criticized as vehicles for price gouging by banks that underwrite the bond debt and provide the swaps.¹⁵ It has been asserted that the use of long-term floating rate debt and floating to fixed rate swaps (the structure used in Detroit and in other state and municipal pension financings) in the corporate taxable market is extremely rare.¹⁶

But even more concerning is the objective imprudence of this swap transaction. The banks and insurance companies involved in this transaction had a moral and possibly legal obligation to explain its embedded risks to the city *and to make certain that the city and the public understood those risks*. And even if they did explain the risks, they also had an overriding moral obligation to refuse to do the transaction since it was so imprudent. The circumstances of the Detroit pension swap transactions were so extreme that they clearly amounted to unconscionable behavior. A court can determine whether the moral obligation was also a legal one.

Observations on the Financing.

There are factors related to the pension financing swaps that are particularly concerning. The only reason for doing floating rate debt swapped to fixed is that it is cheaper than issuing the debt fixed rate. First, an analysis of a portion of the documentation indicates that the total cost of the floating rate COPs and the accompanying swaps that fixed the interest rate may have been as much as 0.50 percent per year more costly than the fixed rate COPs. The cash value, at the time of the issuance of the COPs, of an overpayment of 0.50 percent per year would be approximately \$14 million, a significant sum that calls for explanation. Perhaps the city was told that it needed to access the floating rate bond market in order to take on more debt. In other words, the city may have been told that the

market for fixed rate taxable debt of the city at a comparable fixed interest rate was tapped out. This would explain the decision to do half fixed and floating-swapped-to-fixed. The need to fix the floating interest rate synthetically using swaps bought the city tremendous risk that was realized when the Great Recession hit and again when the emergency manager was appointed and payments were missed.

In addition, the city's counterparty on certain of the pension swaps was a small firm from Ohio, called SBS Financial, reportedly backed by Merrill Lynch and Bank of America. This unusual arrangement calls out for further inquiry, especially as it might relate to advisers to the city on the swaps. (Locally based advisers to municipal governments often have close relationships with regional financial firms. In the past, these relationships have been shown to influence the advice provided by municipal advisors.) This is particularly concerning because Sean Werdlow, Detroit's Chief Financial Officer at the time of the initial COPs financing, reportedly assumed a position at SBS in November 2005, five months after the deal closed.¹⁷ Given the significance of the COPs and related swap transactions, this should be discussed and, if warranted, pursued.

These factors raise questions: Why was the floating COP/swap structure used, and why was it probably more expensive? It was certainly riskier than a conventional fixed rate bond issue, especially for Detroit. There are several possible explanations, but those that are superficially legitimate may or may not be true or complete. The recurrence of municipalities being ill-informed of the risks in complex swap transactions throughout the country in recent years suggests that these unusual arrangements should be examined in detail, especially given the large termination payments now claimed.

These risks may not have been self-evident to the city finance professionals and decision-makers. Superficially, assuming that the comparison of fixed rate bonds against floating rate bonds swapped to fixed was accurate, there was little risk. Cash flows for floating interest payments and floating swap receipts were roughly matched. However, the risks associated with swaps go far beyond that simple comparison. Swaps are long-term executory contracts. The outcome to the city's counterparties is uncertain. These counterparties received fixed payments and pay out floating amounts. If short-term, floating rates go down over the life of the contract, the counterparty makes more money as the difference between the payment streams increases. Swaps also include provisions that allow early termination by the financial institutions acting as counterparties. One condition in the city's case was a credit rating reduction below "investment grade," the minimum threshold that investors often use. Another was the appointment of an emergency manager and nonpayment.

In termination, the city's counterparties would be entitled to full and immediate payment of their projected profit that they would have received had the swaps remained outstanding for their stated terms. If the time remaining on the swaps was many years, and if low short-term rates caused the projected profit to be high, this termination payment could be very large indeed. However, if short-term floating rates were high, the payment might be small or even flow from the counterparty to the city. Thus, projected profits go up and down, and possibly go negative, over time.

When swap transactions go bad, it is typically because of the floating fair value of the swaps. The city remained somewhat balanced over the long run in terms of cash flow. But termination required immediate and large payments, creating a significant short-term cash flow problem.

In 2005 and 2006, the swaps transactions posed a huge risk to the city. The city's credit rating had hovered on the precipice of noninvestment grade for years. Any downgrade could trigger an immediate payment of projected profit to the counterparties. One factor that should have been considered was the possibility that a general economic downturn could lead to a downgrade, and that, in a general economic downturn, the Federal Reserve could very well drive interest rates to low levels to offset the economic contraction of a recession. If this happened, the city could be exposed to a termination payment at just the time that the projected profits were very high and consequently the termination payment was very high. Moreover, if the downgrade occurred, the city would be hard-pressed to borrow money to cover such a large termination payment.

The Great Recession precipitated such an event—one that was exceedingly powerful. While anticipating the recession would be unlikely, the city and its advisers should have considered the possibility of an event of this type. It is hard to imagine an entity for which the risk of a massive swap program would have been greater.

This is especially concerning in regard to the overall purpose of the pension fund financing. The entire concept is based on investment returns for the proceeds in excess of the cost of the financing. Figure 15 is a conceptual representation of the hoped-for results of a pension financing like the one that the city did. This involves market risk, but many state and local government pension funds have decided that the potential rewards of earning investment returns on the proceeds of a debt that was higher than the financing cost were worth it. However, Detroit's position was particularly precarious. The city and its advisers should have considered whether the increment of investment earnings over the cost of the debt, assuming that they were earned, was worth the risk of a catastrophic termination event.

Figure 15. Conceptual Model of a Pension Fund Financing

Debt	Interest Cost @ 5.75% for 15 Years	Investment Return on Proceeds @ 8% for 15 Years	Excess of Investment Returns over Interest Cost
\$1.5 billion	\$1.294 billion	\$1.746 billion	\$451.6 million

Source: Demos Analysis

The initial termination event occurred in FY 2009 as the city lost its investment grade credit rating. The termination payment would have been \$450 million at that time. However, the city was not able to issue debt to fund the termination payment for the pension swaps because of the downgrade. Instead, the city worked out a 2009 settlement in which the counterparties increased the fixed payments by \$800,000 per year and were granted additional security in the form of a lien on wagering tax revenues.

This was not an enduring solution. The appointment of the emergency manager and the cash flow crisis precipitated a second termination event, and short-term rates remained low. The current projected profit of the counterparties is in the range of \$350 million. Any payment of this amount would burden the cash flow of the city further.

Unfortunately, the pension financing swap termination payments are exceedingly large because of extraordinary interest rate policies resulting from the Great Recession. The Federal Reserve has kept short-term interest rates very low since the financial crash, attempting to stimulate economic and job growth. The termination payments, which compensate the financial institutions that are counterparties to the city for projected future profits, are tied to short-term interest rates: the lower the prevailing short-term rate, the higher the payments. Ironically, the short-term interest rates have been relatively ineffectual in creating jobs, which would have benefited the city, but instead they have been a source of tremendous profit for the financial institutions that now claim the termination payments.

The Federal Reserve has kept them low, trying to stimulate economic growth, using extraordinary and unprecedented methods. As a result, the projected profits of the counterparties and the termination payment are very high. It is highly unlikely that this condition will persist. This is a very unusual circumstance in the financial markets, in that short-term rates are being affected strongly by aggressive Federal Reserve intervention. The termination payment would be lowered by an increase in short-term interest rates. It would be zero if LIBOR (the short term interest rate index used to calculate swap payments) increased by 2.75 percentage points and would turn positive for the city if rates increased further. It

is perfectly logical to conclude that the probability of higher rates in the future is much greater than the probability of lower rates. Under these circumstances, paying the termination payment today could inflict cash flow burdens on the city that it need not experience if the swaps were kept outstanding.

In summary, reported current legacy expenses, which do not include any pension fund swap termination payments, are neither the cause of the cash shortfall nor an obvious solution. For example, the COPs' debt service, together with the pre-termination swap payments received and paid, result in relatively stable fixed rate payments. The COPs swap termination payment is a different issue. Any termination payment must be funded by a borrowing. Reportedly, the emergency manager is focused on additional debt funding of this termination payment backed by wagering tax revenues, but the net result of that would be a significant reduction in city revenues. Even in the best case, a full payment of the termination payment could reduce available cash flow if the terms of debt issued to fund the payment are harsh, a burden the city should not have to bear. Worse, the city would be exposed to floating interest payments on the floating rate COPs that would no longer be synthetically fixed by the swaps.

Conclusions

The city of Detroit is experiencing a cash flow crisis that has resulted in the appointment of an emergency manager who has assumed virtually all authority over the city's affairs. It has been the basis for the filing of the largest municipal bankruptcy proceeding in history. The city faces two major tasks, which are related but must be distinguished: It must overcome the current cash flow crisis to resume its political function, and it must address structural problems that have plagued it for years so it can once again be a vital and growing community. The second task will take years, and the current crisis must be resolved quickly.

The emergency manager has conflated the two tasks. The City of Detroit Bankruptcy Filing, among other things, calls for a conversion of the city's pension system to a defined contribution plan from a defined benefits plan; the privatization or other monetization of portions of the regional Water and Sewerage system; and several other long-term changes to the structure of the city's operations and management.

The emergency manager has focused on the expenses of the city as he seeks solutions to the crisis. In particular, he has identified the pension system for city workers. Operating expenses and employee benefits were not the causes of the current cash flow crisis. In fact, the city's operating expenses have become so low after a period of extensive cuts that they threaten viability. Pension and healthcare benefits are modest, and it would be counterproductive to cut them. As described above, especially given the modest levels of benefits and salaries, the improvement to the services provided by the city that is need for resolution of long-term structural issues (and that the emergency manager endorses in the city of Detroit Bankruptcy Filing and in other pronouncements) would be hampered by these actions. Employees would be more difficult to retain and to attract. The focus on these elements of the city's cash flow is misguided and distracts from the real problems behind the cash flow crisis.

The emergency manager has also targeted the privatization or other monetization of the regional Water and Sewerage Department. This is no more than a form of borrowing; any investment must be paid back from the Water and Sewerage revenues from user fees. The more substantive change is a transfer of functions and jobs to the private sector or to a new public owner that has a predisposition to reduce employee wages and benefits, an ideological goal that is a distraction from solving the current crisis. The privatization and/or monetization of the Water and Sewerage

Department is clearly a matter of policy. The system serves approximately 3 million people, about 40 percent of the population of Michigan. Detroit represents about one-quarter of this service population. The decision to monetize public assets is a form of financing; what is received through monetization must be paid back through fees paid by the public. But it also has implications in terms of public sector workers. The primary difference is that employee benefits will be reduced and public sector workers will be fewer because the public sector is shrunk. These are matters that will have little if any impact on the cash flow shortfall.

It is abundantly clear that the source of the cash flow crisis is a tremendous decline in revenue. The city was damaged heavily by the Great Recession, with substantial decline in employment and property values. This caused a substantial drop in tax and other revenue in the first years after the 2008 crash, which has persisted to this day.

The tipping point was reached when annual state revenue sharing was cut by \$67 million per year in two stages, in fiscal years 2011 and 2012. Much of these cuts directly resulted from the acts of the state Legislature and the governor. Thus, the state was an active player in the events leading to the cash flow crisis. The state has a moral duty to participate in the resolution of the crisis substantively, far beyond the appointment of the emergency manager and the filing for bankruptcy. The state must be a source of financial support and enhancement of revenue for the city. In effect, the state reduced pressures on its budget by cutting revenue sharing, and then put the city into bankruptcy to abrogate the consequences of its actions. To allow this to stand sets a dangerous precedent and would condone a significant moral hazard for the future.

The large cuts to the entire operating budget, and in particular the reduction in workforce, objectively indicate that the city has exhausted all significant means for cutting operating expenses. It is in the interest of the state to help increase revenue for the city over the short term and to collaborate on enhancing the city's revenue base over the long term. Immediate action should include the reversal of all or a part of the cut in state revenue sharing. A reasonable goal is to increase city revenues immediately by up to \$198 million, generating a reasonable cash flow for the current fiscal year that works on that basis. Post-crisis, structural programs to grow the city's tax base can be implemented prudently over time.

The public pronouncements of the emergency manager and the direction of the bankruptcy filing are inconsistent with these principles. The dual focus on the restructuring of public employee contracts and retirement and health benefits, and the privatization and/or monetization of the Water and Sewerage Department, given objective circumstances, (as

described above under “City Revenues and the Great Recession”) would not substantively improve the city’s cash flow or long-term financial health. The focus is, simply stated, misdirected.

THE WAY FORWARD

The emergency manager should pursue courses of action that are very different from those he is engaged in now. These include the following:

- Immediate revenue enhancement in order to address the cash flow shortfall at its source must be pursued. This means enlisting state involvement on an emergency basis. The goal should be to increase cash flow to the city by \$198 million per year to bridge the gap until structural programs can be put in place and the city can benefit from any increased general economic improvement. Restoration of state revenue sharing would be a good starting point.
- The proposed structural changes to the pension funds should be dropped. City contributions were not the cause of the crisis. Conversion of the system to a defined contribution plan or reduction of vested benefits from currently modest levels would be counterproductive as the city seeks to retain and add employees as it recovers in the years ahead. Importantly, such a conversion under the circumstances would also adversely affect the financial dynamics of a system with few active employees supporting a stable number of vested beneficiaries at a time when the city will likely be adding new active employees as the recovery progresses.
- Privatization or other monetization of the Water and Sewerage Department should be dropped. The city is only a part of this system. Moreover, the asserted benefits of such a plan are not likely to be realized.
- The emergency manager’s plan to pay the swap termination fees outside the bankruptcy process should be abandoned. The swap counterparties should be made to bear the consequences of the original swap transaction and should be pushed to forego their projected profit as a result of the unusually large profit they have already been able to make on these deals as a result of historically low interest rates caused by the financial crisis. The State should be enlisted to

guarantee the swaps to avoid termination payments, if necessary. The termination fees will become smaller as interest rates rise over time, which they are likely to do. The suggestion that the city would settle for a payment of 70-80 percent of the claimed amount is an extraordinarily poor result given the objective circumstances of the original swap transaction.

- The insurers on the COP swaps were likely paid a premium based on the projected payments to be insured over the life of the financing. If there is a termination, the period that the debt is outstanding is made shorter. It is analogous to a long-term, fixed rate bond transaction that is refunded before maturity. In that situation, the insurance premium is often rebated. The insurance premium associated with the fixed rate payments under the swaps should be prorated and rebated to the city if the swaps are terminated. This could be as high as \$14.5 million.
- The holders of the certificates of participation must be engaged directly in restructuring of obligations. The emergency manager should exert leverage over the COPs holders by suggesting that the transaction may have been unauthorized by law. The emergency manager should assert that the COPs were, *ultra vires*, beyond the authority of the city to transact and void or voidable. Even though the investors and the city must have been comfortable with the legality of the transaction at the time, circumstances are different now; a fresh look by the courts might be helpful to encourage a restructuring of the COPs transaction, if for no other reason. Their rights are arguably less sacred than those of the other obligees of the city. So far, the city's employees have borne the major share of the consequences of the massive post-2008 revenue decline because they were more vulnerable. With the filing of the bankruptcy petition, there is no longer a reason to avoid an aggressive approach to restructuring of these financial obligations.
- Tax expenditures to incentivize investment should be reclaimed. The citizens of Detroit have already suffered as a result of the crisis, as have the public employees. The recipients of tax expenditures should participate as well.

Appendix

An Analysis of City Liabilities Asserted by the Emergency Manager

FINANCIAL DEBT

The following Figure A-1. is a summary of the financial debt of the city of Detroit as of June 30, 2012. The amount of debt per capita is included to provide scale to the figures presented, which is particularly pertinent to the discussion of the Water and Sewerage Department debt that follows.

Figure A-1. City of Detroit Bonds, Notes and Loans as of FY End 2013

	Amount	Amt. per capita
Unlimited Tax General Obligation Bonds	469,100,000	685.02
Limited Tax General Obligation Bonds	540,300,000	788.99
General Obligation Notes and Loans	121,500,000	177.42
Total GO Debt	1,130,900,000	1,651.43
Sewage Disposal Revenue Bonds	2,820,000,000	4,118.00
Sewage Disposal Revenue State Loans	472,800,000	690.42
Total Sewage Revenue Debt	3,292,800,000	4,808.42
Water System Revenue Bonds	2,520,000,000	3,679.91
Water System Revenue State Loans	21,400,000	31.25
Total Water System Revenue Debt	2,541,400,000	3,711.16
Total Sewage/Water Revenue Debt	5,834,200,000	8,519.58
Parking Revenue Bonds	9,300,000	13.58
Total Revenue Debt	5,843,500,000	8,533.16
Pension Certificates of Participation	1,451,905,000	2,120.19

Source: City of Detroit Bankruptcy Filing

The emergency manager presents this debt as if it were analytically all the same type of debt. In reality, it is very different. The only debt that is accurately and completely represented is the general obligation debt, representing only \$1,651 per capita, a very manageable amount.

REVENUE DEBT

This debt, totaling approximately \$5.84 billion, is payable exclusively from the revenues generated by the enterprises for which it was raised. It is not payable from the general funds of the city. These enterprises are meant to liquidate the debt over time. This debt should be ignored for the purpose of analyzing the city's financial health.

In fact, the cash flow statements filed as part of the bankruptcy pro-

ceedings do just that. They do not include gross Water and Sewerage fees in revenues, and they do not include principal and interest payments on the Water and Sewerage revenue debt in city debt service. The Water and Sewerage enterprises appear in these cash flows as the revenues net of *both* the department's operating expenses and the principal and interest payments on the its revenue debt. Thus, including the Water and Sewerage revenue bonds as debt of the city general fund distorts the financial condition of the city.

Even if the Water and Sewerage revenue bonds were properly characterized as city debt, ignoring the central fact that they are paid from user fees, the implications of this are significant. If all these revenue bonds were allocable to the city, the amount of that debt would be \$8,529 per capita. But the Water and Sewerage Department serves more than 3 million people, only 714,000 of whom reside in the city. Allocating the debt on a population basis, it represents \$1,974 per capita, compared with the general obligation debt.

CERTIFICATES OF PARTICIPATION

The COPs represent amounts borrowed in 2005 and 2006 to raise money to be deposited into the pension fund to cover unfunded contributions. The city exchanged pension funding obligations over time for debt service on the COPs. Fundamentally, if the investment income on the cash generated by the COPs exceeds the interest cost of the COPs, this excess would mean that the obligation to repay principal, net of the excess, would be lower than the pension fund contributions.

Eight hundred million dollars of the \$1.6 billion COPs bear interest at a floating rate. Interest (both fixed and floating) was subject to federal income tax on receipt by the holders of the COPs, since raising money to fund a pension fund is not a permissible purpose for tax-exempt bonds. The city elected to enter into LIBOR-based swaps to offset the floating rate exposure. The city entered into \$800 million notional amount (*i.e.*, the assumed principal amount to which the interest rates in the swaps are applied) of swaps under which the city receives payments to offset the floating interest cost on the COPs and pays a fixed payment equal to a notional fixed interest rate on the notional amount of the swaps. Therefore, on a net basis, the city's basic COPs/swap obligation is as if the \$800 million of floating rate COPs bore interest at a fixed rate as reflected in the swaps.¹⁸

The emergency manager represents that the swaps have a "negative fair value" to the city of \$343.6 million as of May 31, 2013. The cash flow statements show a negative fair value of \$439.3 million as of June 30, 2012. The reason for this difference is that the negative fair value is

mathematically related to short-term interest rates expressed as LIBOR (the London Interbank Offered Rate, which is commonly used as a floating rate index). As LIBOR increases, the negative fair value decreases; and as LIBOR decreases, the negative fair value increases. The fair value is zero when the market value of a swap having those terms is zero, as it presumably was when the swaps were entered into.

The overall economic effect of the swaps is that the city has synthetically secured a net fixed interest rate on \$800 million of the COPs. However, the city secured this with extremely long-term swaps (maturing in 2029 and 2034). From the time the swaps were executed in 2006 until today, the value (to the banks that are counterparties to the city) of the city's *future* performance under the swaps has increased. This is because the expected difference between the fixed payments and the floating payments has grown as short-term interest rates plummeted after the financial crisis and the Federal Reserve intervention to stimulate growth. This "negative fair value" can decrease or turn into a positive value if interest rates rise. The current steepness of the LIBOR rate curve (based on one-month LIBOR, six-month LIBOR, one-year LIBOR and so on) has been increasing, indicating a market view that LIBOR is likely to increase in the immediate future.¹⁹ This means there is a general market expectation that LIBOR will increase over time, thereby reducing the negative fair value of the swaps. Regardless, the underlying fixing of the rates on the COPs will be unchanged. The only thing changing is the expected future profit that has accrued to the banks. This benefit of the bargain will only be realized if the city continues to perform by making its fixed payments on the swaps. The termination payment is equal to the banks' expected future profit as of a given date and that amount will change.

The city lost its investment grade rating in FY 2009 after the financial crisis kicked in. This credit rating downgrade constituted a termination event under the swaps that would have required the city to pay the expected future profit as of that date. Instead, the city negotiated to provide additional security for the fixed swap payment obligation in the form of a pledge of wagering tax receipts and agreed to an increase of 0.10 percent in the notional fixed interest rate used to calculate the fixed swap payments. The nonpayment in June 2013 was an additional termination event, as was the appointment of the emergency manager in March. Negotiations with the bank counterparties on these additional termination events continue, but the emergency manager reportedly seeks to settle the payment at 70-80 percent on the dollar.

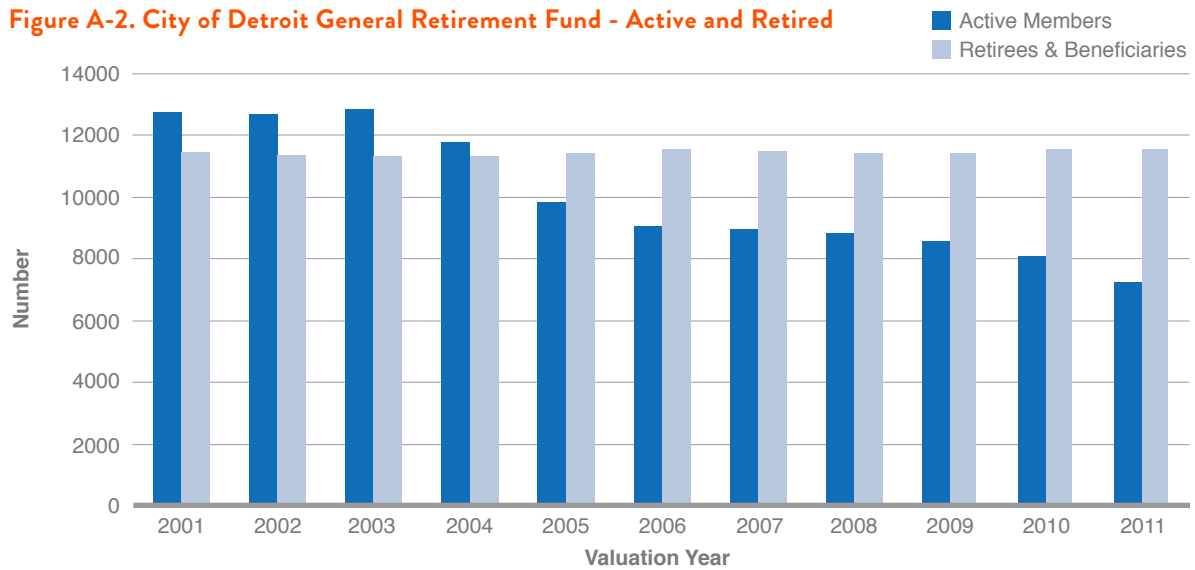
In addition, the fairness of the original pricing must be considered. It is publicly suggested that complex pension funding transactions for municipalities have often been wildly mispriced by the banks that managed them.²⁰

UNFUNDED PENSION LIABILITY

Perhaps the most controversial element of the emergency manager's legacy obligation calculation is the unfunded pension liability for the two categories of city pension funds: that the fund for general city employees and that the fund for police officers and firefighters. The aggregate amount that has been preliminary calculated, based on the assumptions historically used by the city of Detroit, is approximately \$800 million.²¹ Advisers to the emergency manager performed calculations for several scenarios, each using different assumptions.²² The scenario chosen by the emergency manager yielded an unfunded pension liability of \$3.5 billion. This result has been the basis for the emergency manager's assertion that the city's pension obligations should be restructured by the bankruptcy court and that the entire pension structure should be altered as a remedy to the city's cash flow shortfall.

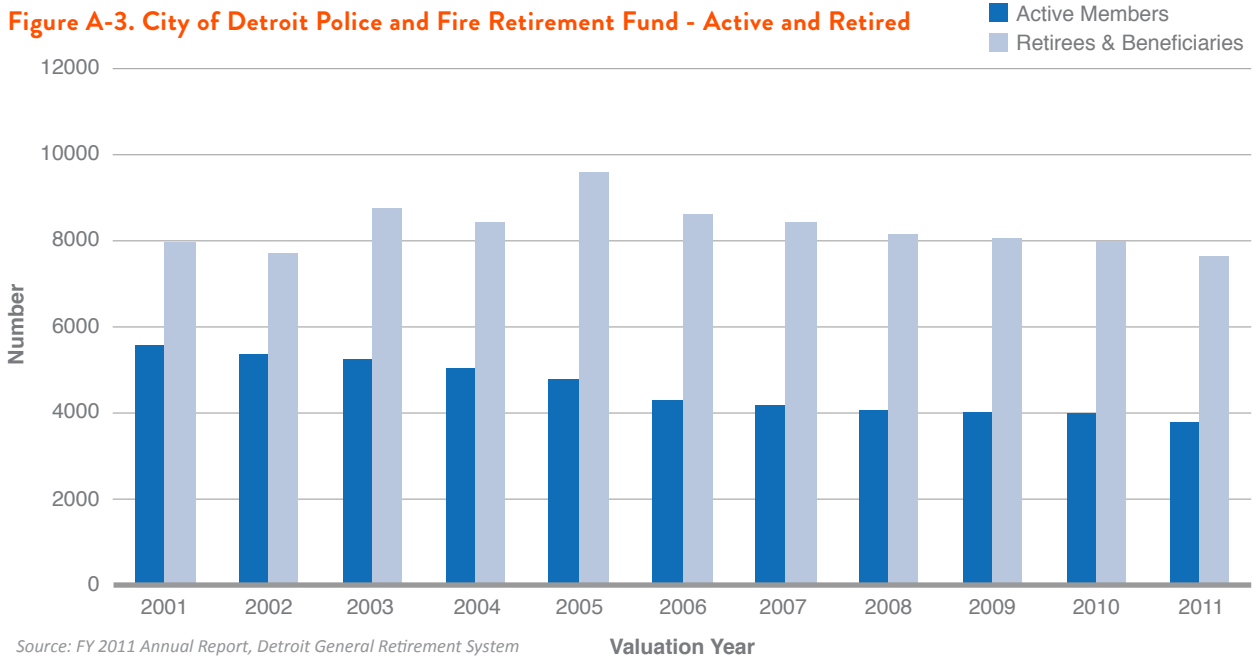
Deep structural issues are at the core of the city's obligations related to pension benefits. As discussed above, the city's population has declined over decades, from a peak of approximately 2 million to 714,000 as reported in the 2010 census. As a result, the number of active city employees has also declined, as illustrated in Figures A-2 and A-3 below. This decline has accelerated since the onset of the Great Recession, as the city has shrunk its payroll by 30 percent and its workforce by 20 percent. The ratio of population to employees has increased to 61-to-1, higher than in comparable cities in which the ratio is 50-to-1 (see "Part III—City Operating Expenses," above). During this period of time, the number of retirees and beneficiaries in the system has been almost completely unchanged. The general retirement plan retirees range from a high of 11,555 to a low of 11,311, a difference of 2.16 percent. In addition, the ratio of retired employees to current employees has increased. A recent study finds that the percentage of retired workers in the city's general retirement system has increased from 49 percent to 61 percent since 2004.²³ (By way of contrast, in the Ohio state retirement system, in which Cleveland participates, the ratio of retirees to total participants is 53%).²⁴ This trend has been a long-term phenomenon that accelerated starting in 2004.

Figure A-2. City of Detroit General Retirement Fund - Active and Retired



Source: FY 2011 Annual Report, Detroit General Retirement System

Figure A-3. City of Detroit Police and Fire Retirement Fund - Active and Retired



Source: FY 2011 Annual Report, Detroit General Retirement System

The increase in the percentage of retirees covered with pension benefits is almost 100 percent because of a reduction in the workforce.

This dynamic is very important given the clear desire by the emergency manager to convert the pension system to a defined contribution plan from a defined benefit plan. Currently, a substantial proportion of future benefits has vested. The more employees who contribute to the plan, especially newer and younger employees, the longer the investment horizon that can be applied to the plan. It is commonly understood that the demographics of active workers can be a specific and important factor in the overall economics of a defined benefits plan. One of the driving factors of a plan is its ability to hold investments over a long time horizon,

an extraordinarily valuable asset.

Even the emergency manager recognizes that the city's long-term circumstances require that services be enhanced. This means that the deficit in the number of city employees must be made up, and more employees must be added. If the defined benefit plan is maintained, the burden of the vested benefits will be spread over an increasing time horizon as the number and demographics of active employees change. This will not occur if the plan is converted now to a defined contribution plan. Therefore, even if the city prefers a defined contribution plan, now is precisely the wrong time to make the conversion.

A separate question is the calculation of the estimate of the current value of future city liabilities for contributions. As a threshold matter, the assumptions used by the city pension fund trustees are within the norms of comparable unfunded pension liability calculations. The following Figures A-4, A-5 and A-6 compare key assumptions used by Detroit with those used by St. Louis and Cleveland, cities that have been identified by the emergency manager as comparable with Detroit. The key assumptions are roughly the same.

Figure A-4. Detroit Pension Funds²⁵

Plan	Membership	Contributions*	Normal Retirement		Social Security Coverage ²⁶	COLA: Annual Amt. Maximum	Actuarial Assumptions
			Formula**	Benefits			
General Retirement System (GRS), City of Detroit	Active: ^{***} 6,519 Inactive: 11,790	Employer: \$72.2 million Employee: \$312.7 million	Sum of (a) basic pension of \$12 for each of the first 10 yrs. of service, + (b) a pension equal to first 10 yrs. of service multiplied by 1.6% of AFC, plus 1.8% of AFC for each yr. of service greater than 10 yrs. up to 20 yrs., plus 2.0% of AFC for each yr. of service greater than 20 yrs. up to 25 yrs., plus 2.2% of AFC for each yr. of service greater than 25 yrs., + (c) An annuity the actuarial equivalent of the member's accumulated contributions at retirement.	Any age with 30 yrs. of service ²⁷ Age 60 with 10 yrs. of service, or age 65 with 8 years of service	Yes	Benefit is increased annually by 2.25% of the original pension amount at retirement.	Interest: 7.9% (Net) Wage Inflation: 4% Deferred Retirement: Option Plan (DROP)
Police and Fire Retirement System	Active: 3,580 Inactive: 5,370	Employer: \$49.8 million Employee: \$9.5 million	An annuity equal to the actuarial equivalent of member's accumulated contribution + a defined benefit, which, when added to the annuity, will provide the following: Pre 1969 Members 2.0% of AFC times the first 25 yrs of service, with a maximum allowance of 15/22 of a police officer's or firefighter's annual rate of compensation. 1969 Plan Members 2.5% of AFC times the first 25 yrs. of service + 2.1% of AFC times each of the next 10 yrs. of service	25 years of service regardless of age. DPOA and their Fire equivalents - 20 yrs. of service regardless of age.	No	1.9% ²⁸	Interest: 8% (Net) Salary: 4% Deferred Retirement: Option Plan (DROP)

* General Retirement System members have the option of choosing one of four contribution amounts: (1) 0 percent; (2) 3 percent of compensation up to the Social Security wage base, plus 5 percent of compensation in excess of the Social Security wage base; (3) 5 percent of total compensation; or (4) 7 percent of total compensation of Detroit pension funds.²⁹

** For members who retired or vested their pensions after July 1, 1992, and prior to July 1, 1998: sum of (a) a basic pension of \$12 for each of the first 10 years of service, plus (b) a pension equal to the first 10 years of service multiplied by 1.5 percent of average final compensation (AFC), plus 1.7 percent of AFC for each year of service greater than 10 years up to 20 years, plus 1.9 percent of AFC for each year of service over 20 years, plus (c) an annuity that is the actuarial equivalent of the member's accumulated contributions at retirement. For members who retired prior to July 1, 1992, and members who vested their pensions prior to July 1, 1992: 1.5 percent for the first 10 years and 1.63 percent for each year greater than 10, of average final compensation, times years of service. Members who left employment after October 1, 2005, will no longer lose prior service time, regardless of time separated from city employment.

*** This number has dropped by 10.1 percent from 7,250, just since the 2011 report. There are 2,233 (34.2 percent of this number) terminated plan members entitled to but not yet receiving benefits.

Figure A-5. St. Louis Pension Funds³⁰

Plan	Membership	Contributions	Normal Retirement		Social Security Coverage	COLA: Annual Amt. Maximum	Actuarial Assumptions
			Formula	Benefits			
Employees Retirement System	Active: 5,545 Inactive: 6,370	Employer: \$27,116,763 Employee: Non-Contributory	1.3% of compensation times yrs. of service up to \$56,628, plus 2.05% of compensation times yrs. of service above \$56,628	Age 65 with 5 years of service, or Rule of 85	Yes	5%	Interest: 8% Salary: Varied Deferred Retirement: Option Plan (DROP)
Firemen Retirement System	Active: 650 Inactive: 1,068	Employer: \$17,854,546 Employee: \$2,942,373	40% of compensation for first 20 yrs. of service, plus 2% for each of the next 5 yrs. of service, plus 5% for each yr. over 25 yrs. Maximum: 30 years	20 years of service	No	5%	Interest: 7.625% Salary: 4% Deferred Retirement: Option Plan (DROP)
Police Retirement System	Active: 1,141 Inactive: 2,093	Employer: \$17,476,138 Employee: \$4,463,218	2% of compensation for first 25 years of service, plus 4% for each of the next 5 years, plus 5% for all service after 30 years	75% of compensation	No	3%	Interest: 7.75% Salary: 5% Deferred Retirement: Option Plan (DROP)

Figure A-6. Cleveland Pension Funds^{31,32}

Plan	Membership	Contributions ³³	Normal Retirement		Soc Security Coverage	COLA: Max. Annual Amt.	Actuarial Assumptions
			Formula	Benefits			
Employees Retirement System	Active: 348,235* (5,914) ³⁴ Inactive: 467,298*	Employer: 14% Employee: 10%	Annual benefit based on 2.2% of final average salary multiplied by actual years of service for first 30 yrs. of service credit and 2.5% for yrs. of service in excess of 30 yrs.	Age 55 with 32 years of service Age 67 with 5 years of service	No	3% rate tied to the annual consumer price index	Interest: 8.00% Salary: 4.25%-10.05% (Includes wage inflation at 3.75%) Deferred Retirement: Ohio Public Employees Deferred Compensation Program
Firemen Retirement System	Active: 24,314* Inactive: 11,545*	Employer: 18.1% Employee: 11.5%	Annual benefits calculated by multiplying 2.5% of final average salary actual years of service for first 25 yrs. of service and 2.1% of final average salary for yrs. of over 25 yrs.	Age 56 with 25 years of service Age 64 with 15 years of service	No	The lesser of the Consumer Price Index or 3% for those members who have less than 15 yrs. of service credit as of July 1, 2013	Interest: 8.00% Salary: 4.25%-10.05% (Includes wage inflation at 3.75%) Deferred Retirement: Ohio Public Employees Deferred Compensation Program
Police Retirement System	Active: 30,493* Inactive: 15,639*	Employer: 18.1% Employee: 12.1%	Annual benefits calculated by multiplying 2.5% of final average salary actual years of service for first 25 yrs. of service and 2.1% of final average salary for yrs. of over 25 yrs.	Age 52 with 25 years of service Age 64 with 15 years of service	No	The lesser of the Consumer Price Index or 3% for those members who have less than 15 yrs. of service credit as of July 1, 2013	Interest: 8.00% Salary: 4.25%-10.05% (Includes wage inflation at 3.75%) Deferred Retirement: Ohio Public Employees Deferred Compensation Program

* These are Ohio statewide numbers. There are 2,414 covered active employees and 2,349 covered retired employees of the city enrolled in the Ohio Police & Fire Pension Fund. Ohio Police & Fire Pension Fund, 2012 Comprehensive Annual Financial Report: Securing the Future for Ohio's Police & Firefighters (Columbus, OH: Ohio Police & Fire Pension Fund, 2013) 87, accessed October 17, 2013, www.op-f.org/Files/CAFR2012.pdf.

It is absolutely fundamental that unfunded pension liability should never be thought of as a precise calculation at any given point in time. All assumptions are extraordinarily broad estimates. The calculation is a guidepost that provides a tool to monitor future expenditures to fund a pension plan as time moves forward. It should not be thought of as a calculation that provides precise meaning on any particular date. Rather, it is an estimate that is meaningful in the context of continuous estimates over a period of years. Precise evaluation of the outcome of a given portfolio of investments compared with benefits paid can only be accomplished retrospectively and over long time frames.

The emergency manager engaged an actuarial consultant, Milliman Inc., to calculate the city's unfunded pension liabilities using alternative methodologies. The emergency manager is authorized under the emergency manager statute to assume control of a pension fund if its future liabilities are less than 80 percent funded according to actuarial calcula-

tion.³⁵ So if the emergency manager wants to gain control of the pension funds, he would have an incentive to use extreme assumptions in order to depict the unfunded liability as a high percentage of the total liability.

The alternative methodologies used by the consultant involve three significant issues:

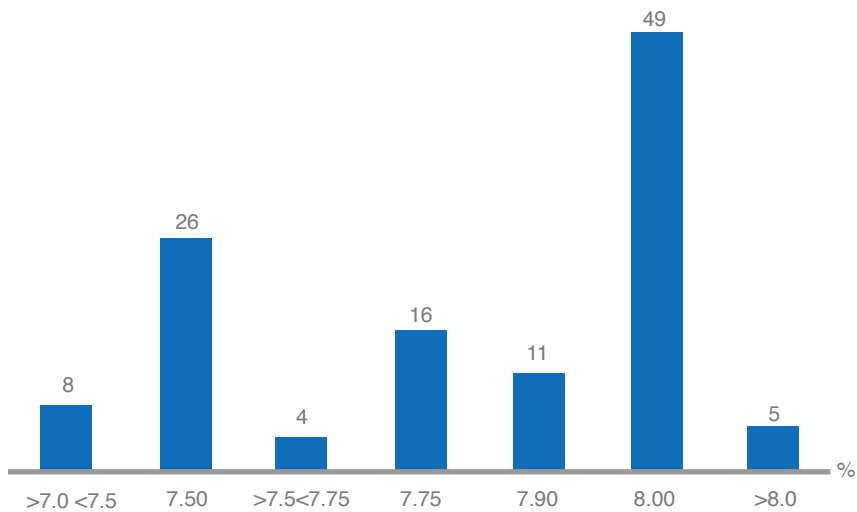
1. ASSUMED INVESTMENT RETURN

A pension plan must be analyzed based on a long-term view. Pension funds involve perhaps the longest duration liabilities and assets in finance. Traditionally, the time horizon for such plans has been 30 years.³⁶ A pension fund holds investments that earn uncertain amounts over their lives. “Underfunded” means that the liabilities (the obligations to pay pensions under defined benefit retirement plans) exceed the assets (the investment portfolio) that have accumulated for the purpose of funding those required payments. These assets are a combination of invested corporate contributions and the returns on those investments.”³⁷ In order to estimate the “unfunded” amount, one must make assumptions about the amount of these earnings over a given time horizon. Once the estimated performance of investments is calculated, this can be compared with the estimated benefits to be paid out during the period included in the time horizon, to provide the further estimate of how much must be contributed to balance estimated cash demands with the cash estimated to be available from the investments. Thus, the earnings rate is an important factor in calculating an estimated “unfunded” amount.

The pension funds themselves used 7.9 percent and 8 percent (net of investment fees and other costs), respectively, for estimating future returns on its general employee funds and its police and fire employee funds. As described above, these rates are not out of the norm for such calculations for other comparable plans. It is important to keep in mind that these investment rates are not intended to be returns in a single year or over a few years, but rather over the long term, and the norms have been developed based on historic long-term returns from, for example, stock markets.

The return assumptions used by the funds are well within accepted practices. In fact, in a survey of assumptions used by 126 pension funds recently released by the National Association of State Retirement Administrators, the most common return assumption used was 8.0 percent.³⁸ Figure A-7, from the survey, illustrates these findings.

Figure A-7. Distribution Of Investment Return Assumptions



Source: Public Fund Survey, Oct 2013

The financial crash of 2008-09 generated a good deal of discussion about assumed return levels that have been commonly used. There is no doubt that the crash was an aberration from historic stock market returns experienced over long cycles. Those who advocate lower return assumptions generally characterize their assumptions as more indicative of a “mature economy” for the United States. The problem is that no one knows what the future of the U.S. economy will be, especially given the long cycles involved.

The Milliman report, from the emergency manager’s consultant, included three return-based scenarios for each of the two classes of pension funds: for general employee funds—6.30 percent, 7.0 percent and 7.50 percent; and for police and fire employee funds—6.57 percent, 7.00 percent, and 7.50 percent. There are several concerning aspects of Milliman’s use of these assumptions.

- In contrast, Milliman used a 7.65 percent return in its survey of 100 pension plans published in October 2012.³⁹ There is no indication of why the lower assumptions were used in the reports prepared at the request of the emergency manager.
- There is no disclosure of the assumed inflation rate. Without that, it is impossible to know what the “real rate of return” is—that is, the return on investment in excess of inflation. The real rate of return is critical to evaluating the outcome of the calculations.

- Milliman serves as the official actuary for many pension funds. It routinely uses investment return assumptions that are in line with those used by the funds. For example, the state of Oregon valuation report uses 8 percent;⁴⁰ and the report for the state of Florida uses 7.75 percent.⁴¹
- The Milliman report assumes investment and administrative expenses of 0.50 percent per year. This is an extraordinarily high amount (half of that amount is common), but it is not explained.
- Moreover, the report included probabilities that the scenarios would actually occur. For example, it concludes there is a 50 percent probability that the general pension fund will achieve at least a 6.30 percent net return on investment. From a finance perspective, such a probability is completely incalculable. It is important to note that these probabilities are enormously speculative, implying a level of knowledge about future investment returns that simply does not exist.

The emergency manager has publicly announced his unfunded liability figure is based on the 7.00 percent assumption. However, it is not completely clear that the \$3.5 billion figure for the city's unfunded pension liability was calculated using this precise assumption.⁴² The effect of this single assumption on the unfunded pension liability calculation cannot be measured reliably without applying it to the actual projected benefits (to cite just one example, the annual reduction of the number of current retirees drawing benefits) and incorporating the assumed inflation rate so that "real" returns can be calculated. Milliman appears to have stopped short of a complete inquiry (for example, not tailoring the calculation to expected annual reductions in the number of the existing retirees drawing benefits). Instead, Milliman indicates it has relied on "rules of thumb" in this key calculation. It also does not disclose inflation rate assumptions. Differences in these factors can materially change the estimated unfunded pension liability that is calculated, and small percentage differences change the absolute dollar amount by significant factors.

2. SMOOTHING

The historic view of pension plans is based on a 30-year time horizon. Payment plans for unfunded pension liabilities in the context of dynamic valuations using current financial market price movements have often been modified by pension plan administrators. Payment plans are

modified so that they are less sensitive to short- and intermediate-term price movements. The modification technique is called “smoothing.” The technique distributes both losses and profits over a longer period. Most often, the period used is five years. Detroit uses a longer period of seven years, which is not unheard of but is less common. Therefore, Detroit recognizes both profits and losses in its funding calculation evenly over a seven-year period.

The smoothing policy has particular relevance in light of the financial market volatility over the last five years. At the outset of the financial crisis, stock market values plummeted. The market losses experienced by the city’s pension funds were not fully recognized immediately because of smoothing. In fact, because Detroit uses a seven-year period, a portion of those losses has not yet been recognized. However, the markets have recovered since 2008-09. For example, the Dow Jones Industrial Average peaked before the crash at 14,165 and is now more than 15,000. Smoothing deferred the fall from the pre-2009 peak, but it has also deferred the gains from the recovery. Therefore, smoothing involves countervailing effects on current valuation of assets held by the pension fund. Smoothing does have this offsetting effect, although after its effects are realized, the gains may not fully offset losses.

The Milliman report to the emergency manager estimates the current effect of smoothing on the city pension fund calculation. For the two pension fund categories, the Milliman report estimates that smoothing has caused the current fair value of the pension fund assets to be \$1.35 billion too high. In making its estimate, the report eliminates smoothing from the calculation rather than using a less aggressive form of smoothing. This is a very significant change since that would increase the apparent unfunded liability by 269 percent. However, unless there is another stock market crash, smoothing means that both deferred losses and deferred gains will be realized in future years, reducing the effects of as yet unrealized losses. While the delay in recognizing the losses in 2009 will continue until 2016 it is already being offset by the delay in recognizing gains from the stock market price increase since that time. Eventually, the effect of smoothing of recognized gains will mitigate the effect of smoothing of recognized losses.

The best way to evaluate these two approaches is to recognize that they achieve two different results. What Milliman has described is the current market value of the fund investments. Smoothing calculates a payment plan for paying unfunded pension liabilities by delaying the realization of market losses and gains. This distinction is important to understanding the meaning of the number reported.

3. AMORTIZATION OF UNFUNDED AMOUNT

The observations by Milliman regarding the amortization of the unfunded pension liability do not affect the amount of the unfunded pension liability. These are recommendations for a plan the city might consider for funding the unfunded amount in the future, regardless of its calculated amount.

In line with the long-term views of pension funds, the city, like other public pension funds, assumes that unfunded pension liabilities, as they change from year to year because of financial market price movements and changing estimates of long-term benefits payments, will be amortized over a rolling multiyear period. For example, contributions to cover the current unfunded amount are calculated to assume they will be paid over 30 years. The next year, a new unfunded amount is calculated and the contributions are recalculated to assume a new 30-year payout as well. The rationale for this assumption is based on the long-term nature of the funds and the fact that the factors for estimates of unfunded liabilities are constantly changing.

The Milliman report to the emergency manager takes a completely different approach. The rolling 30-year calculation method of payments is changed to a fixed period of 15 years. Comparing 15-year and 30-year amortization periods, this procedure would increase the annual contributions by a substantial amount, approximately 35 percent in the first year and an increasing amount each year thereafter. The rolling period would continuously increase this difference. It would not affect the current unfunded liability amount, however. Instead, it would increase the annual payments made over the next 15 years to fund the liability in full, whatever the amount of that assumed liability.

Significantly, the decision on a repayment plan can only be made by considering the prudence of funding liabilities sooner in balance with the cash available to the city and the intermediate term profile of the plan. A 15-year amortization is not “correct” by definition. It could be longer or even shorter depending on the revenues available to the city after other cash demands are met, and depending on the appropriate time horizon for the plan. Fifteen years is arbitrary and unguided by important factors that remain unknown.

These assumption changes made by the emergency manager’s consultants substantially increase the unfunded pension liability of the city to a level that is substantially higher than that made by the pension funds. However, the calculations are so opaque and the methodology so inaccurate that the resulting \$3.5 billion figure must be seen as unreliable.

At a minimum, the emergency manager should make these calculations transparent, and Milliman should properly inquiry into the circumstances of the system.

Healthcare Benefits

The emergency manager reports a future liability for healthcare benefits for city employees of \$5.7 billion. This is an extraordinarily large figure when compared with the same figures for the 61 largest cities in the United States.⁴³ It is common for cities to operate healthcare benefits systems on a pay-as-you-go basis, as Detroit does. For the 61 largest cities, the aggregate pre-funded amount is only 6 percent.⁴⁴

If the city’s liability is accurately reported, the city must either (a) have a large number of employees for the size of its population and/or (b) have an extraordinarily generous healthcare benefits scheme and/or (c) use assumptions to calculate current liability for future costs could that are extraordinarily conservative. As described above, the number of employees per capita is in line with St. Louis and Cleveland, comparable cities in the view of the emergency manager. Detroit’s healthcare benefits are also very reasonable, as set forth in Figure A-8 below.

Figure A-8. City of Detroit Summary of Health Benefits⁴⁵

Benefits	Non-Union Retirees	Pre-1994 Union Retirees	Post-1994 Union Retirees	Medicare Retirees
Office visit	\$25 Per Visit	\$10 Per Visit	\$25 Per Visit	\$10 Per Visit
Urgent care	\$25 Per Visit	\$10 Per Visit	\$25 Per Visit	\$10 Per Visit
Emergency Rm	\$100 Per Visit	\$75 Per Visit	\$100 Per Visit	\$50 Per Visit
Hospital Admission	\$100 Per Admission	N/A	\$100 Per Admission	N/A
Annual In-Network Deductible	\$250 Per Person \$500 Per Family	\$175 Per Person \$350 Per Family	\$250 Per Person \$500 Per Family	\$175 Per Person \$350 Per Family
Annual Max. In-Network	\$1,500 Per Person \$3,000 Per Family	\$825 Per Person \$1,650 Per Family	\$1,500 Per Person \$3,000 Per Family	\$825 Per Person
Prescription Drug Benefit	Three Tier Rx Drug Plan Co-Pay Generic - \$10 Preferred Brand - \$20 Non-Preferred Brand \$30	Two Tier Rx Drug Plan Co-Pay Generic - \$5 Brand Name \$15	Three Tier Rx Drug Plan Co-Pay Generic \$10 Preferred Brand - \$35 Non-Preferred Brand - \$50	Two Tier Rx Drug Plan Co-Pay Tier 1: Generic - \$5 Brand Name - \$15

The origin of the \$5.7 billion future liability cited by the emergency manager is unspecified. It was probably derived from a brief by The Pew Charitable Trusts in August 2013 called “Cities Squeezed by Pension and Retiree Health Care Shortfalls,”⁴⁶ which is a shorter update of a fuller Pew study of city pensions from January 2013 titled “*A Widening Gap in Cities: Shortfalls in Funding for Pensions and Retiree Health Care.*”⁴⁷ The earlier study of the future healthcare benefit liabilities of 61 U.S. cities cites a figure of \$ 4.97 billion for Detroit, without any explanation for its relatively large size. Similar figures were generated previously by Detroit’s finance department.

The relatively large size of the estimated unfunded future liability for Detroit appears to derive from three factors. First, as described above, the city population has been shrinking for a long time. City employment levels have been shrinking as well. This has been accelerated because of the city’s revenue decline. Stated simply, Detroit may have more retirees per capita than a city whose population and revenue base has been more stable.

The second and third factors may be more significant. Since the calculations were done, plan benefits may have substantially decreased and co-pays have increased, depending on the source data used. In addition, the city finance department has used conservative assumptions to estimate future costs related to healthcare. They are set forth in Figure A-9 below.

Figure A-9. City of Detroit Health/Life Benefit Plans⁴⁸

Valuation Date	June 30, 2011	June 30, 2011
Actuarial Cost Method	Individual Entry Age	Individual Entry Age
Amortization Method	Level Percent	Level Dollar
Amortization Period for Unfunded Accrued Liabilities	30 years, open	30 years, open
Asset Valuation Method	N/A	3 year smoothed market
Actuarial Assumptions		
Investment Rate of Return	4.0%	5.0%
Projected Salary Increases*	4.0%	N/A
Healthcare Cost Trend Line	9.0% for 2012, grading down to 4.5% in 2021 and 4% in 2022 and beyond	N/A

*Includes inflation rate of 4%

The healthcare liability assumptions for Cleveland (which uses the Ohio state system for administration) are significantly different, particularly those relating to healthcare cost trends. They are described in Figure A-10.

Figure A-10. The Ohio Public Employees Retirement System (OPERS)

Key Methods and Assumptions used in Pension and Healthcare Actuarial Valuations

Actuarial Information	Pension	Health Care
Valuation date	December 31, 2011	December, 2011
Actuarial cost method	Individual entry age	Individual entry age normal
Amortization method:		Level percentage of pay, open
Traditional Pension Plan and Combined Plan	Level percentage of pay, open	
Member-Directed Plan	Level dollar, open	
Amortization period:		30 years
Traditional Pension Plan	29 years	
Combined Plan	1 year	
Member-Directed Plan	30 years	
Asset valuation method	4-year, smoothed market—12% corridor	4-year, smoothed market—12% corridor
Actuarial assumptions:		
Investment rate of return	8.00%	5.0%
Projected salary increases	4.25%-10.05% (includes wage inflation at 3.75%)	4.25%-10.05% (includes wage inflation at 3.75%)
Health care cost trend rate	N/A	8.0% initial, 3.75% ultimate

Source: OPERS' Finance Division. (2013). *The Comprehensive Annual Financial Report*. Columbus, OH: Ohio Public Employees Retirement System. Retrieved October 5, 2013, from <https://www.opers.org/pubs-archive/investments/cafr/2012-CAFR.pdf>

It is notable that the healthcare cost trend line is substantially higher for Detroit than the one used by Cleveland. These are much higher than recent healthcare cost increase levels. A substantial portion of the calculated healthcare cost liability is attributable to this difference.

Simply stated, it appears that Detroit's estimates are higher than other cities' because they have assumed larger increases in healthcare costs and used low discount rates to calculate the present value of future liabilities. In particular, the healthcare cost trend line assumption far exceeds the current trend in healthcare cost increases, which has averaged close to 4 percent in recent years.⁴⁹ Furthermore, the figure relied on by the emergency manager may be simply out-of-date, based on the current program. This highlights the problem of aggregating estimates of future expenditures with hard debt amounts. They are apples and oranges. But this fact is obscured by the use of the \$18 billion headline number.

SUMMARY

The aggregate long-term liabilities of the city are only indirectly related to the issue of current cash flow shortfalls that have caused its insolvency and bankruptcy. Nevertheless, the \$18 billion shortfall figure asserted by the emergency manager has been reported by many news organizations and has deeply affected public opinion. This figure is misleading in several respects.

- The \$5.8 billion of Water and Sewerage Department revenue debt is payable from the revenues of a utility system enterprise that is more than four times the size of the city.
- The \$1.45 billion pension funding COPS and the related swaps are offset by investments set aside for future payment of pension fund liabilities. The interrelationship between the COPS and the estimated pension liabilities is complex and must be considered.
- The \$350 million termination payment for the pension fund financing swaps should be avoided in whole or in part.
- The \$3.5 billion unfunded amount of the pension fund liability is calculated using extreme assumptions that do not align with assumptions used widely by municipalities and states. In any case, it is an estimate, not a firm liability comparable to a debt obligation.
- The estimated \$5.7 billion future liability for healthcare benefits is, at a minimum, questionable and based on conservative assumptions. In addition, it is an estimate, not a firm liability comparable to a debt obligation.

Therefore, the accuracy and relevance of \$16.8 billion of the emergency manager's \$18 billion assertion, repeated time and again by the media, is subject to severe doubt.

Endnotes

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12. Glenn Bowen and Katherine A. Warren, "Re: DGRS Simple 10-Year Projection of Plan Freeze and No Future COLA" (June 4, 2013), accessed October 5, 2013, www.freep.com/assets/freep/pdf/C4210423816.PDF; Glenn Bowen and Katherine A. Warren, "Re: PFRS Simple 10-Year Projection of Plan Freeze and No Future COLA" (June 4, 2013), accessed October 4, 2013, www.freep.com/assets/freep/pdf/C4210424816.PDF.
13. COPs are often used in municipal finance where there is no explicit statutory authority to issue bonds. In this case, the city appears to have used the COPs structure to "create" general obligation debt. Binding the general obligation typically requires the observance of elaborate procedures to ensure that the municipality's citizens approve the debt.
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DĚmos is a public policy organization working for an America where we all have an equal say in our democracy and an equal chance in our economy. DĚmos is supported by a variety of sources including foundations, labor organizations and individual funders.

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