



Escaping the Central Bind

*An Exploration of Affordable Housing and Municipal Financing Constraints
in the City of Boston*

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April 9, 2021

Table of Contents

Disclaimer.....	3
Acknowledgments.....	4
Executive Summary.....	5
Client Overview.....	6
Introduction.....	7
Problem Statement.....	7
Background.....	8
Consequences.....	10
Exploration of Existing Solutions.....	12
Alternatives.....	16
Criteria.....	19
Analysis and Recommendation.....	20
Implementation.....	28
Conclusion.....	29
Exhibit 1: Hypothetical Returns of the Municipal Endowment Model.....	30
Works Cited and Consulted.....	31

Disclaimer

The author conducted this study as part of the program of professional education at the Frank Batten School of Leadership and Public Policy, University of Virginia. This paper is submitted in partial fulfillment of the course requirements for the Master of Public Policy degree. The judgments and conclusions are solely those of the author, and are not necessarily endorsed by the Batten School, by the University of Virginia, or by any other agency.

Acknowledgments

This project would not have been possible without the support of a whole host of people that supported me throughout. I would like to thank Lucy Bassett for helping me get started on this journey, and Andy Pennock for helping me take it over the finish line. Amar Pradhan, Steve Hellman, and Andrew Flett are each partially responsible for the origin of the ideas herein, and Amar in particular served as a periodic sounding board throughout the evolution of this project. Megan Rohrer was an excellent client and friend, offering invaluable support and feedback from start to finish. My fellow dual degree students, Tatenda Mabikacheche and Emma Finkelstein, walked by my side through the journey, and our classmate Zach Diamond paved the way for us. And finally, as always, my greatest thanks go to my family and to my partner, Kate Luther, for always being by my side. I own an enormous debt of gratitude to each one of you. Thank you.

Executive Summary

The lack of affordable housing in Boston (and in many cities across the country) has become a crisis. In Boston, some 18.9 percent of the population lives in poverty and nearly 6 percent of households lack access to affordable housing. Perhaps more striking, some 38 percent of extremely low-income (ELI) families lack affordable housing. While numerous solutions to address this gap have been tried, both in Boston and elsewhere, the problem persists. The failure of these efforts to address the issue are not due to a lack of creativity or functional models. Rather, they almost all suffer from the same problem – a lack of municipal funding.

With the policy alternatives I discuss in this paper, I focus on that funding gap. Specifically, I address what I refer to as the central bind of municipal finance. Namely, to spend an additional dollar on any given service, a city must typically either raise an additional dollar in revenue from its populace or spend one less dollar on services elsewhere. To escape this gap, I explore four potential creative financing solutions that municipal governments can explore. I ultimately recommend that the city of Boston develop a municipal endowment, financed by a low-coupon municipal bond issuance, to provide the city with a stable source of revenue to help close the funding gap and provide additional housing for its citizens.

Client Overview

In my efforts to help address this policy problem, I am working with the Boston Planning and Development Agency (BPDA). BPDA is a quasi-governmental agency that focuses on physical and economic development of Boston. These efforts include growing Boston's tax base, planning and moderating housing and real estate development, advocating for improvements in transportation systems, and engaging in a variety of other initiatives aimed at improving the lives of Boston's citizens. Perhaps most relevant to this project are BPDA's clear mandates regarding housing development and economic opportunity in the city of Boston. Any major affordable housing initiatives in the city would run through the BPDA. As a quasi-governmental agency, the BPDA also has more flexibility to pursue non-traditional solutions to policy problems than governmental agencies might.

BPDA provides an excellent backdrop for my research. The purpose of this project is to explore creative financing structures that would enable Boston to address its affordable housing shortage within the bounds of the city's existing structures and laws. The housing and economic expertise of BPDA, combined with its financial expertise and creative mandate, offer a uniquely productive client partnership to take on this seemingly intractable policy problem.

Introduction

In this document, I will discuss the affordable housing shortage in Boston (and nationwide), explore some existing efforts to address the solution, outline some possible policy alternatives to bridge the gaps in the existing efforts, analyze those alternatives, and lay out a recommendation for where Boston should go from here to solve this problem.

The Background and Consequences sections aim to outline the issue and demonstrate its severity, both for those facing a lack of housing access and to the city of Boston. The Background section also introduces the central bind of municipal finance – the idea that to spend an additional dollar on any given service, a city must typically either raise an additional dollar in revenue from its populace or spend one less dollar on services elsewhere. The Exploration of Existing Solutions looks at past and ongoing efforts to address the housing crisis, and ultimately concludes that many of these efforts are not fundamentally flawed but rather suffer from a funding gap, created in part by the central bind. The Alternatives section lays out four potential solutions to address this funding gap and escape the central bind. The Criteria section lays out the criteria across which I will analyze each alternative. The Analysis section runs each alternative through those criteria, and the Recommendation section presents the policy alternative that I argue offers Boston the greatest potential to escape the central bind and more effectively address affordable housing: namely, the creation of a municipal endowment. In the Implementation section I will lay out how best to go about setting up the endowment. The Conclusion summarizes the findings here in and lays out some final thoughts.

Problem Statement

Housing is widely considered a basic human right. Globally, the United Nations' Universal Declaration of Human Rights protects housing as a basic human right. Locally, the city of Boston has explicitly affirmed its status as such. However, homelessness and housing insecurity continue to be major issues in Boston. Cities have tried several potential solutions to this issue, focused on both public efforts and private markets. Unfortunately, these efforts have revealed a critical market failure. Private developers are unable to achieve adequate investment returns to incentivize them to enhance housing supply, and governments have failed to bridge that gap with either funding or direct development.

Today, Boston relies on a combination of public funding efforts and private development to provide affordable housing to Bostonians. However, due to insufficient financial returns and limited public funding, housing supply has failed to meet demand, meaning **there is not enough affordable housing in Boston to house the city's residents.**

Background on the Affordable Housing Crisis

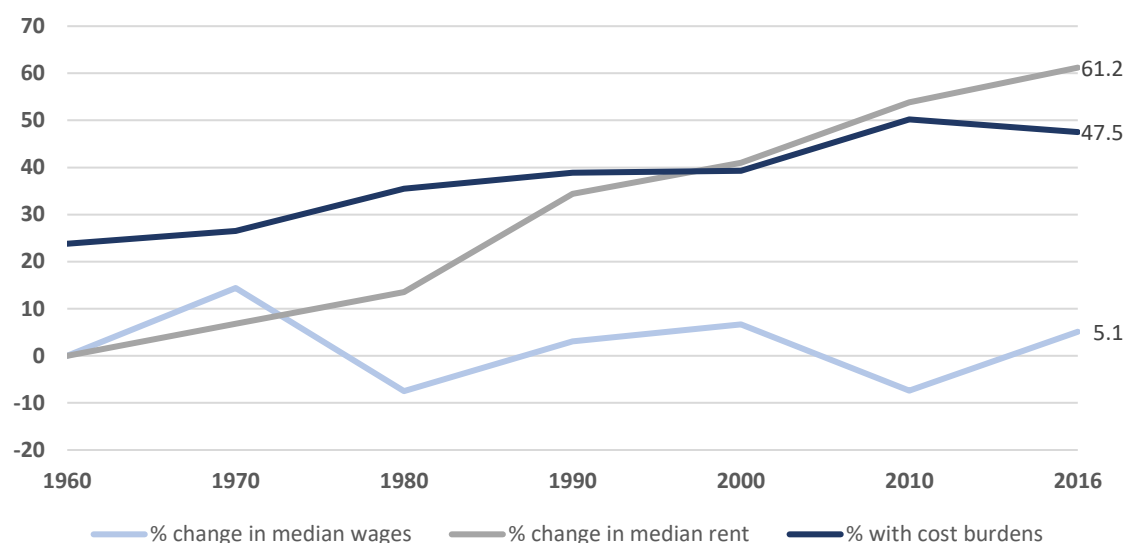
Affordable housing is an issue everywhere in the world. Although I consider policies and ideas from abroad while exploring possible solutions, I will focus my discussion of the problem on the United States. This project, of course, focuses primarily on Boston, but much of the terminology is standardized across the country, and many relevant policies and responses are federal. Thus, I will introduce the background of this issue by looking through a national lens.

In general, a family is considered rent-burdened in the United States if it spends more than 30 percent of its annual income on rent (Chiumenti, 2019) and severely rent-burdened if it spends more than 50 percent of its annual income on rent (Watson et al., 2020). A family is considered “very low-income” (VLI) if its annual income is no more than 50 percent of area median income (AMI), and “extremely low-income” (ELI) if its annual income is no more than 30 percent of AMI (Watson et al., 2020). Currently in the United States there are 7.72 million households that the United States Department of Housing and Urban Development (HUD) classify as having “worst case needs” (WCN). WCN households are VLI families with severe rent burdens that do not receive housing assistance.¹ These households comprise over six percent of US households, and do not even include VLI and ELI families that are rent-burdened but not severely rent burdened. In a modestly positive trend, the number of WCN households has seen moderate declines in recent years largely due to slight increases in incomes. However, that income increase is largely offset by a similar increase in rents, meaning that even as families earn more, they must continue to spend the same or a similar portion of their rent on housing. In the chart below, we see that this recent improvement is not nearly enough to offset decades of rent growth outpacing income growth. Indexed to 1960, we see that wage growth has been nearly stagnant while rents have increased by over 60 percent, bringing the share of rent-burdened families from just over 20 percent to nearly 50 percent (see Figure 1). The result is a clear nationwide crisis leaving millions of American households without access to adequate and affordable housing.

The data in Boston shows a situation even more acute than that facing the country as a whole. There are 51,652 ELI renter households in the city. For every 100 of these households, there are only 62 affordable housing units available. So, there is a shortage of 38 housing units for every 100 ELI families, or 15,496 units (Chiumenti, 2019). According to data from the US Census Bureau, this accounts for just under six percent of the households in Boston. This means that the proportion of households in Boston that are *ELI* and lack affordable housing is comparable to the proportion of households nationwide that are *VLI* and lack affordable housing. Given that ELI households represent less than two-thirds of VLI households nationwide, this indicates that the housing crisis in Boston is meaningfully more acute than in the nation at large. The lack of affordable housing is further exacerbated by Boston’s notably high rent in general. Estimated to be the third most expensive rental market in the United States in 2019, behind only New York and San Francisco, rental homes that are not explicitly designated as affordable housing are far beyond the reach of low-income families (Woods, 2019).

¹ This group also includes households that live in severely inadequate conditions, but this subset accounts for only 2.5 percent of households with worst-case needs (Watson et al., 2020).

Figure 1: Change in median rent and wages from 1960 to 2016



Source: Harvard Joint Center for Housing Studies

The problem in Boston is even worse for certain subpopulations. Specifically, the shortage of affordable housing disproportionately impacts communities of color. One recent study found “minor reductions in segregation in recent decades, but these have done little to diminish disparities in access to opportunity for black and Latino households or reduce economic inequality at the municipal level” (Modestino, 2019). These disparities are striking. The household median net worth for white households in Boston was \$247,500 in 2015; for black households, it was a mere \$8 (Johnson, 2017). White families are three times as likely to have key liquid assets, like retirement outcomes, compared to nonwhite families. Nonwhite households are far less likely to own homes, but among those that do they are far more likely to have mortgage debt. Nonwhite households are far more likely to have student loans and medical debt. The result of these disparities in wealth and assets is that nonwhite families are far less able to withstand short-term financial disruptions, and far more likely to get caught in long-term cycles of inadequate housing and economic hardship (Munoz et al., 2015). In coming years, the bulk of Boston’s population growth is likely to be within its nonwhite populations. Thus, the impacts of these racial disparities will only grow, making the shortages in economic opportunity and affordable housing progressively more problematic (Johnson, 2017).

Given the acuteness of the issue facing Boston, and the severity and inequity of its impact, it is easy to wonder why the municipal government has not yet taken stronger steps to solve the problem. A major piece of the answer to this question lies in the financing trap that most municipal governments find themselves in. Cities essentially operate entirely on revenue from taxes and fees. In Boston, 87 percent of revenue comes from property tax and other local receipts, with the remainder coming from state aid, most of which is in turn derived from state-level taxes (City of Boston FY21 Operating Budget, 2020).² This revenue funds the city’s operating budget, paying for

² “Local receipts” includes revenue from sources such as excise taxes, license fees, and permit fees.

all expenditures, including public education, health care costs, infrastructure, public pension funds, and public safety.

This structure puts the city in what I call the central bind of municipal finance. To spend an additional dollar on affordable housing, the city of Boston has only two choices. It can either raise taxes, or reduce spending elsewhere. Both are difficult propositions for the city. A large majority of Boston's revenue comes from property taxes. To raise these taxes would increase the burden on an already heavily taxed property base. Much of this increased tax burden would be passed on to tenants in the form of increased rent, which could hurt the very population the policy was intended to help. Tax increases could also drive lower-income homeowners back into the rental market, driving up rents, or push businesses out of the city, reducing economic opportunity. If the city instead sought to increase other taxes, like sales tax or excises, it would disproportionately impact low-income residents, as these taxes are regressive. This is only a brief summary, but it is clear how difficult it is for the city to fund affordable housing by increasing taxes.

If the city instead sought to carve out funding for affordable housing by reducing expenditures elsewhere, we see similar problems. Reducing funding for education, health care, or transportation can have severe impacts on economic opportunity, many of which would disproportionately impact low-income residents and communities of color. The debate around the trade-offs of reducing specific expenditures is beyond the scope of this project, but it will suffice to say that any such decision is complex and carries significant costs.

It is also worth noting that the city would have to make deep cuts to cover the costs of meeting affordable housing demand. To supply the 15,496 units mentioned above, at an average development cost of \$150,000 each (Tilsley, 2016), would cost the city \$2.3 billion upfront, or nearly two-thirds of the city's annual operating budget. To sustain affordability going forward would also be deeply expensive. The average ELI family of four in Boston makes \$3,196 per month (City of Boston, 2016). Some 74 percent of ELI households are rent-burdened, with most paying over 50 percent of their income in rent (Chiumenti, 2019). If we conservatively estimate that these households pay 50 percent of their income in rent on average,³ making housing affordable would mean covering 20 percent of average income for these 38,295 households. This represents an additional cost of \$639 per month for each family, or \$294 million per year for the city. This would be an additional eight percent of the city's budget.

So the city finds itself in the central bind of municipal finance, where it has identified a funding need but can neither increase revenues nor decrease expenditures to pay for it

Consequences of the Crisis

Boston has faced this increasingly acute housing crisis for decades and has yet to find a sustainable path out of it. To this point, we have focused on the scope of the crisis and the source of

³ At present, 23 percent of ELI households are paying between 30 percent and 50 percent of their income in rent, and an additional 51 percent are paying over 50 percent.

the city's inaction. In this section, we turn to understanding what the costs of that crisis and inaction have been to the city and its residents.

Determining the costs of Boston's affordable housing crisis is an enormous task, and in some sense impossible. The shortage of affordable housing in the city has spillover effects on health outcomes, educational outcomes, and economic outcomes.

In determining the costs, we could look at any one of these areas and only scratch the surface. We could also explore the downstream effects of the inequity discussed in the previous section. For instance, the lack of access to affordable housing is a major issue for formerly incarcerated individuals (Alexander, 2010). As these individuals seek to resume their lives outside of prison, the burden of unaffordable rent builds on accrued debts and obstacles to employment and leads to an increase in poverty and recidivism. Given the structural racism in the criminal justice system and disproportionate rates of arrest, conviction, and incarceration, this cycle further stretches the racial gap in Boston's housing (Bishop et al., 2020).

The same stark racial disparities exist in healthcare. The reasons for these disparities include differential access to Boston's hospitals, the existence of comorbidities, and community attitudes toward the health care system, but the housing market and economic burdens it introduces are a contributing factor (Kowalczyk, 2017).

Education outcomes follow the same patterns. Housing burdens continue to force nonwhite communities into less expensive neighborhoods with a smaller tax base and thus weaker public schools. Financial burdens also make private school largely inaccessible. The result is disparate educational outcomes in the city.

So we see that there are health, educational, and equity costs to the affordable housing shortage. What is the scope of these costs? Consider one simple calculation. For this estimate, we will ignore all these downstream costs and focus solely on the direct economic opportunity costs. For most rent-burdened families, the need to work is consuming. Because rent alone is so high, the consequences of losing a job are untenable. Thus, earners in these households often find themselves trapped in low-wage jobs, unable to afford to take time to look for a new job or to spend time or money to develop new skills that could increase earnings. If the rent burden were lifted or alleviated, many of these individuals would be free to pursue higher-paying opportunities. These VLI and ELI families are making no more than 50 percent and 30 percent of the AMI, respectively. Let's focus solely on ELI households, and assume conservatively that they are all making the maximum to qualify for ELI status, or 30 percent of AMI. For a family of four, this is \$35,700 per year (Income, Asset, and Price Limits, 2020). If each of these families were freed to pursue higher-earning roles and increased their income just up to 50 percent of AMI (still retaining VLI status), they would now be earning \$59,500, for an increase of \$23,800 per family. Multiplied by the 15,496 ELI renter households in Boston, this represents a total of \$368.8 million. This total is the cost to the city of lost productivity resulting from a lack of affordable housing. It is also worth noting that, while assuming this would apply to every ELI family seems like a generous assumption, it bakes in several conservative assumptions. Specifically, it:

- Assumes that every ELI family is making 30 percent of the AMI, when this is the maximum they could be making, and the average family is making significantly less than this

- Only assumes they move from 30 percent to 50 percent of AMI, meaning all these households remain very low-income households
- Assumes that only the ELI families that lack affordable housing see this increase; if you include all ELI families, this figure will jump to over \$1.2 billion annually
- Includes no VLI families; if we include VLI families that lack affordable housing and estimate their lost earnings, the figure will again increase dramatically
- Does not include any of the additional downstream costs pertaining to health care, education, criminal justice, or other areas, or include the savings from eliminating current expenditures on affordable housing; including these would dramatically increase the cost of this issue to the city of Boston

Finally, it is worth noting that this figure is an annual economic opportunity cost. Even at this conservative estimate of \$368.8 million, the issue is costing the city nearly one percent of its GDP every year. Layering in the less conservative and very real additional costs mentioned above would increase this number significantly. All together, these estimates and additional costs demonstrate that the lack of affordable housing creates a distressing drag on Boston's economy, in addition to the human costs it poses.

Exploration of Existing Solutions

There are three largely independent ways to think about solving this problem. The first is to address the problem narrowly and from the supply side, with solutions focused on increasing the provision of affordable housing. The second is to address the problem narrowly and from the demand side, with solutions focused on reducing need for affordable housing by targeting the underlying causes of that demand (such as joblessness or mass incarceration). The third is to address the problem broadly from a financial perspective, with the goal of increasing access to funds that could be funneled toward both supply and demand initiatives. While the bulk of existing solutions fall into the first two categories, a combination of insights from each would likely be helpful in addressing the issue. In this section, I offer a summary of my research into existing evidence that may cast light on possible solutions to Boston's challenge.

Supply-side Efforts

On the supply side, solutions have focused on directly increasing new supply, protecting access to existing supply, and eliminating obstacles to new supply.

At the federal level, one significant effort is the National Housing Trust Fund (HTF). HTF was established by the Housing and Economic Recovery Act of 2008 and operates under HUD. HTF is an example of the purest supply-side approach. It provides block grants to states, which may use those funds "for the production or preservation of affordable housing through the acquisition, new construction, reconstruction, and/or rehabilitation" of applicable real estate (*National Housing*,

n.d.). This approach has been effective in increasing supply, leading advocates to push for its expansion, but it does little to address the root causes of the issue (Solutions to the Affordable Housing Crisis, 2019).

The private and non-profit sectors are active on the supply-side as well, generally looking to create a variety of sustainable, market-based solutions to address housing shortages (Regan, 2018). Examples include community development financial institutions (CDFIs) and non-profit real estate investment trusts (REIT) (Regan, 2018; *Housing Partnership Equity Trust*, 2017). The goal of these investment vehicles is to bring nonprofit real estate players together in collaborations that provide increased financing for affordable housing development. These solutions blur the line between supply-side and financing efforts.

For-profit private developers are active in this space as well, with an immense range of investment strategies. These efforts can be challenging for policymakers, as they range from effective and beneficial to problematic and downright predatory, and it can be difficult to tell the difference. In general, private sector efforts have been minimally effective to date, as the need for investment returns often prices out low-income renters.

Supply-side efforts can also serve to protect renters in the homes they currently occupy. For instance, the Coronavirus Aid, Relief, and Economic Recovery (CARES) Act of 2020 provided a moratorium on evictions of any renters living in most government-subsidized or -operated housing units, covering nearly 20 million US households. Some affordable housing activists advocate for the indefinite extension of this moratorium (Acosta et al., 2020). However, a moratorium alone may be insufficient, as a moratorium does not prevent families from accruing debt as their unfunded rent burden grows. Families may face eviction and resulting long-term instability as soon as the moratorium is lifted (Acosta et al., 2020; Desmond, 2016). This outcome does not even address the additional financial, social, physical, and academic impacts that eviction can have on families and children. To address all of this, an eviction moratorium would likely have to be combined with further rental assistance and other economic relief efforts outside the scope of this work.

Other efforts to protect access target housing discrimination. For instance, Congress could expand anti-discrimination legislation to include discrimination based on source of income, gender identity, and sexual orientation. Federal, state, and local governments could increase enforcement of existing discrimination protections for renters. The federal government could provide and protect a national right to counsel for renters facing eviction (Solutions, 2019). Each of these would increase the availability of the existing housing supply, even if it did not increase the supply itself.

Hypothetically, a similar effort could include a federal effort to push local governments to eliminate restrictive zoning policies (Solutions, 2019). Relatedly, cities could reduce local exemptions to inclusionary zoning laws (Samuels, 2014). These efforts are a small piece of a broader solution, but appear effective to date.

Demand-side Efforts

Perhaps the cleanest demand-side solution is to, in some form, provide financial assistance to renters to address the affordability of housing. For instance, the Housing Choice Vouchers Program provides funds to subsidize housing costs for low-income renters. Under this program,

HUD provides funding to local public housing agencies (PHAs). Families with vouchers find a suitable home, and the PHA pays the subsidy to the landlord. Families are then responsible for the difference between their topline rent and the amount of the subsidy (*Housing Choice*, n.d.).

A similar approach would create a targeted renter's tax credit. The exact details of such a credit vary by proposal. The credit may go directly to renters, allowing them to deduct their rent expense and keep more of their income for other essentials, or to states, allowing them to use federal tax credits to subsidize housing for their residents (Solutions, 2019). This latter version is similar to the existing Low-Income Housing Tax Credit (LIHTC), which HUD calls "the most important resource for creating affordable housing in the United States today." This credit, established in 1986, gives state and local authorities some \$8 billion in annual budget authority to issue tax credits for the creation of affordable housing.

Another possibility is a proposed National Housing Stabilization Fund. This body would "provide temporary assistance to help cover rent for households experiencing unexpected economic shocks...Coupled with stability services, such as counselors and legal aid, this program would extend an emergency cushion to low-income people in crisis, helping them avert the downward spiral of housing instability and homelessness" (Solutions, 2019).

One of the most well-known demand-side efforts is rent control. Rent control is the practice of governments limiting the ability of landlords to raise rents, helping protect renters and keeping rent more affordable. Research on the efficacy of these policies is divided, but seems to lean in favor of its effectiveness. For instance, several studies in California, New York, and Massachusetts all found it to be effective in lowering rents (Autor et al., 2014; Diamond et al., 2018; Heskin et al., 2000; Sims 2007). Several others found it increase stability, as tenants stayed in the same housing longer ((Diamond et al., 2018; Glaeser and Luttmer, 2003; Gyourko and Linneman, 1989; Heskin et al., 2000; Sims, 2007). Evidence showing rent control to be ineffective is sparse, and may be influenced by other factors, such as weaker rent control policies in the studied areas (Ambrosius et al., 2015; Rajasekaran et al., 2019).

Another well-known solution is the mortgage-interest deduction (MID) which was established in 1913 (Sisson et al., 2020). This program allows homeowners to deduct mortgage interest expense on their federal income taxes. From an affordable housing perspective, this program is an abject failure. Its cost exceeds that of all rental subsidies and public housing, and it benefits almost exclusively middle- and upper-class people, as low-income families are less likely to own homes and the benefit increases with the size of a mortgage.

Looking at the private sector, policymakers could push to have employers share the burden (Lovells et al., 2014). There have been several efforts at this in the past, including proposed federal legislation to fund tax credit for employers that helped offset housing costs. No nationwide program has found sustained success, but several small programs focused on major local employers have proven a useful precedent.

Financing Efforts

Another possible approach to addressing affordable housing is to increase funding for housing initiatives. I included efforts to do this directly through legislation in the sections above. In

this section, I will focus on creative financing efforts that seek funding outside of traditional legislative levers.

Impact Investing

Perhaps the most straightforward example is place-based impact investing (PBII). PBII is a form of impact investing that focuses explicitly on one locale (Milam, 2018; Schwartz et al., 2006; Schramade, 2019). The goal of PBII is to remove risk and increase efficacy of impact investing by focusing on a single city or region that the investors know well and where they can have a “boots on the ground” presence. This strategy helps remove some of the inefficiencies that come from the concentration of investors in certain financial hubs, such as New York, Boston, or Silicon Valley (Milam, 2018). The Social Impact Fund Rotterdam (SIFR) is one example that demonstrated both the efficiencies of PBII and the increased ability to have key public and private actors in an area work together (Schramade, 2019). Another study in New York used a difference-in-difference model to demonstrate that targeted PBII generates significant and sustained external benefits to the broader community (Schwartz et al., 2006). PBII efforts broadly seek to bring together coalitions of local actors to increase the pool of capital targeting affordable housing in any given place, with both social benefit and investment returns as the driving factors.

Municipal Investing

Another compelling option is a sort of municipal endowment. A municipal endowment would operate much like a sovereign wealth fund, with the simple goal of providing investment returns that could be used to provide services without raising taxes. There are no major examples of this at the municipal level, but many countries operate such funds. However, a true endowment model or trust fund is not without risk. The country of Nauru, for instance, used its phosphate resources to establish a trust fund in the 1990s. The fund provided substantial economic value to the country for several years, but mismanagement, corruption, and a market downturn decimated the fund and left the country nearly bankrupt. Only in the past few years has Nauru begun rebuilding a fund, with strict safeguards in place (Squires, 2008; *Analysis*, n.d.).

The city of Lincoln, Nebraska has also used endowments to fund specific one-off projects. These have mostly been small, targeted, relatively short-term endowments, but they still provide an interesting precedent for other cities (Hicks, 2020).

Another potential strategy would be for a city to engage with a municipal consortium in a private equity-style investment. This could consist of a limited partnership fund with an outside general partner, a consortium of cities and institutional investors as limited partners, and a working group of municipal government representatives to determine investment theses. The fund’s investments would be focused on improving housing outcomes and the investment returns would go back to the limited partners, with a carve-out and fees paid to the general partner. Depending on the exact structure of the fund, this could ultimately be a supply-side, demand-side, and financing solution in one. As far as I know this has never been done, so evidence on its feasibility and utility is obviously nonexistent.

In general, evidence on municipal investing is sparse and anecdotal. There are select instances in which it has proven successful and instances where it has not, but there is little

thorough study of the circumstances under which it is most effective. No major investment evaluation of such endowments has been conducted, in large part because the sample size is so small.

Alternatives

In this section, I will lay out four models that Boston could pursue to escape the central bind and close the funding gap for its efforts to address affordable housing. It is important to note that each alternative falls into the *Financing Efforts* segment of the previous section. This is not because supply- and demand- side efforts cannot be effective. Rather, it is because the best ideas and models in those segments typically suffer from a lack of funding. Thus, these financing efforts aim to enable those existing efforts through increased funding. The financing efforts themselves do not address affordable housing; rather, they offer a sort of multiplier effect for any chosen solution.

The first alternative is the Social Impact Bond model, wherein a variety of (mostly private sector) investors front capital for housing initiatives but the city ultimately bears the risk of success or failure of the project. The second alternative is the Revenue Bond model, wherein a variety of investors again front the capital for a project, but the city is more limited in its risk as the interest on the bond does not vary with the success of the project. The third alternative is the Municipal Endowment model, wherein the city builds an endowment that grows over time and provides cash flow for housing initiatives, and the city bears relatively little risk. The fourth alternative is the Municipal Investment Consortium model, wherein private investors and cities invest side-by-side, the city can invest up to its risk tolerance, and the outcomes vary depending on the success of the underlying investments.

Alternative 1: The Social Impact Bond Model

The final model is a social impact bond model. Under this approach, cities would serve as intermediaries between individual projects and third-party investors. The city would issue a social impact bond that would function much like a revenue bond, backed by the cash flows of a specific project. Investors would buy this bond, providing the capital to fund the project. Critically, the return to investors would then depend on specific established criteria of effectiveness. For instance, perhaps the criterion is occupancy. If the new project is completed and fully occupied, the bondholder receives principal, interest payments, and a 100-basis point bonus. If it is 90 percent occupied, the bondholder receives principal and interest. Under that threshold, the bondholder receives a portion of principal. If it is never completed, the bondholder loses the principal.

If structured as a revenue bond with recourse only to project cash flows, this model enables cities to eliminate risk in project financing while tying costs directly to project efficacy. It also enables investors direct access to social impact investment opportunities, although the investor does bear significant risk.

Alternative 2: The Revenue Bond Model

The third model is simpler and leverages a tool already in cities' toolboxes, but could be used in several different ways. In its simplest form, this model involves a city issuing a municipal revenue bond. A revenue bond is a municipal bond that is backed by cash flows from a revenue-producing project (e.g., a stadium, a toll road). It contrasts with a GO bond, which is used for non-revenue producing projects (e.g., a public park, a school) and is backed by the taxing authority of the issuer. In other words, the city pays back revenue bond investors with revenue from the specific project, whereas it pays back GO bond investors with tax revenue.

The first way a city could use a revenue bond to address this issue would be to simply issue a bond, use the proceeds to develop affordable housing units (or subsidize rents costs in existing, underoccupied buildings), and then use the rental income to pay back bondholders. This is fairly similar to existing supply- and demand-side initiatives.

A city could also use a revenue bond to raise capital to form an endowment, combining this strategy with Alternative 3 (below). This combination raises two possibilities. First, the city could pay back bondholders with cash flows from the endowment. This creates an important tradeoff for investors that will be discussed under the "Attractiveness to Investors" criterion below. Second, the city could pay bondholders with cash flows from the underlying projects that the endowment funds. For instance, if the city issued the bond to help form the endowment and then used proceeds from the endowment to build affordable housing units, the rent income from those units could be used to pay bondholders. Bondholders would have no recourse to tax revenue, thus ensuring this model would not exacerbate the central bind.

Alternative 3: The Municipal Endowment Model

Under the third alternative, Boston would develop a municipal endowment. This endowment would operate much like, say, a university endowment, though potentially with tighter safeguards in place to protect capital.

To build the endowment, the city would raise capital. There is plenty of flexibility and room for creativity in how exactly Boston would do this. One option is through the issuance of a municipal revenue bond, as discussed above in Alternative 2. Another option would be a zero-coupon (or low-coupon) long-term bond issued explicitly to leverage Boston pride. Residents and other supporters could buy these bonds to provide a base of capital for the city to invest, and the bonds would mature in perhaps 30 years, allowing those residents who held their bonds to maturity to recollect their principal. There would be an explicit understanding that these were secure investments, but with low or even negative present value, meaning that the investment would be to support the development of the city, not for personal gain (much in the spirit of World War I Liberty Bonds). We can call this the Boston Strong bond approach. If these bonds were tax deductible (as they likely would be), this approach would also have the effect of essentially diverting tax revenue into the endowment during the fundraising process (for better or worse). A third option would take the prior option a bit further, with the city simply issuing endowment tokens for purchase. The proceeds would go toward building the endowment's principal, and the buyer would receive the token as an indication of their support for the city, but would expect no financial return. A fourth option would be an explicit tax, whether one-time or perpetual, to raise the funds for the endowment. While this would likely be the most efficient and effective, it would water down the extent to which this model would address the central bind.

Once the endowment was established, the city would invest the funds in the open market. Returns on these investments would provide an additional source of revenue for the city. This revenue could be used to provide additional services without necessitating an increase in taxes or a reduction in services elsewhere, satisfying the goal of addressing the central bind. A portion of these returns could also be recycled back into the endowment, growing the fund and thereby increasing the city's future revenue stream from its investments.

The scale of impact from this model depends on how it is executed, and will be the subject of further analysis when this model is evaluated on the criteria below. To offer some quick insight with an example, we can compare a hypothetical endowment to university endowments. University endowments, on average, target an approximate seven percent annual net return. Risk profile and target return are correlated, so if we assume that a municipal government investing taxpayer money has a lower risk tolerance than a university endowment, we will likely see a lower target return as well. For the sake of argument, let's assume the municipal endowment returns five percent annually. If Boston can raise a \$500 million endowment (in line with a mid-sized university in Boston), this target return would provide a \$25 million revenue stream annually. Based on the analysis in the Fall 2020 Synthesis Memo, this level of revenue would cover housing costs for an estimated 3,260 extremely low-income (ELI) families in Boston without raising any additional tax revenue or reducing services elsewhere.⁴

Alternative 4: The Municipal Investment Consortium Model

Under this model, Boston would partner with other cities to establish a limited partnership focused on innovation and investment in areas critical to cities' needs. This model provides a way out of the central bind, but may be more useful for some policy issues than others.

There are four general parties that would be involved in the structure of this model. The first group is the cities themselves. A consortium of cities would form a working group consisting of 'ambassadors' from each municipal government.⁵ These ambassadors would share pain points and ideate to establish focuses and investment theses for the funds (e.g., better sensors for autonomous public transit, improved prefab home technology for use in affordable housing development, etc.). The working group would then pass these ideas along to the second key party to the consortium, the general partner ("GP").

The general partner would manage the consortium and be responsible for all investments, including sourcing, due diligence, acquisition, investment management, and disposition. The manager would run the day-to-day operations of the consortium, but would report to the working group. The manager's primary responsibility would be finding investments that would (a) provide solutions to the challenges established by the working group while (b) providing profitable returns.

Those investments comprise the third party to the consortium – the portfolio companies. While the portfolio companies would not technically be a part of the consortium, they play a critical role in the ecosystem. As the equity investments from the fund supported portfolio company operations, these companies could enter into partnerships with individual cities to provide improved

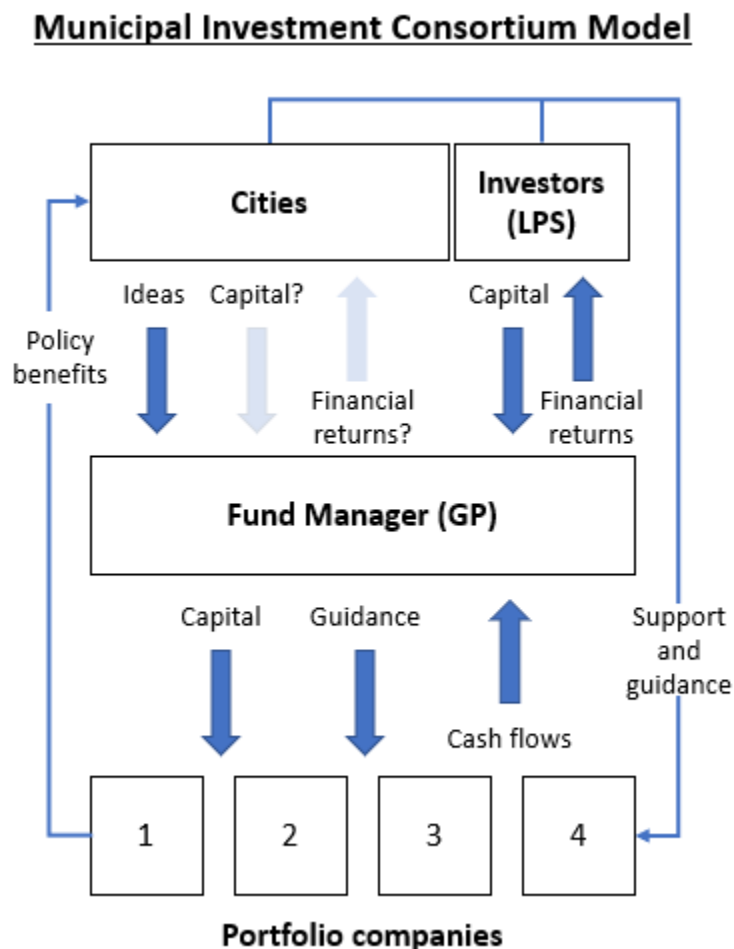
⁴ This uses the \$639 monthly figure in the Synthesis Memo. Multiplied by 12, this offers an annual cost to the city of \$7.668 per ELI family to subsidize housing.

⁵ A similar model was pioneered by Mobility Impact Partners, LP to enable strategic investors to have a larger role in growth equity investment partnerships. This model builds off that model and applies it to the public sector.

services. These improvements (without any necessary change in capital outlays from the cities) would be the first of two manners in which this model could enable cities to escape the central bind.

The final party to the consortium consists of the limited partners (“LPs”). The LPs provide the capital that enables the consortium (or more specifically, the GP) to make investments. The LPs would primarily be institutional investors looking for a social impact investment for their portfolios. These investors could be endowments, foundations, pension funds, high-net-worth individuals, etc. Additionally, cities could co-invest as LPs, adding financial returns to the benefits of participation in the consortium. This is the second way this model enables cities to escape the central bind.

Figure 2: The Municipal Investment Consortium Model



Criteria

In evaluating these alternatives to address the affordable housing shortage and the central bind, this paper will focus on four key criteria. For each criterion, I outline the goal for the city vis-à-vis the criterion as well as the metric by which each alternative will be measured. The criteria are:

- (1) Direct cost to the city
 - a. Goal: (i) minimize direct costs to the city and (ii) maximize the portion of costs coming from streams other than taxation
 - b. Metric: Explicit dollar cost of establishing each model. For some models, costs must be indexed or normalized. For instance, a city could issue functionally any value of municipal bonds. I will try to control for this to facilitate cleaner comparison.
- (2) Effectiveness of the model (tie in equity)
 - a. Goal: (i) maximize the increase in affordable housing for residents of Boston and (ii) maximize provision of services outside of the central bind
 - b. Metric: (i) holding assumptions for development costs constant, the number of families that each alternative can provide housing for and (ii) the expected value of revenue from a given model per dollar of increased tax revenue (or total expected value if no increase in taxation is necessary)
 - c. Equity consideration: I plan to discuss equity implications within effectiveness. Given the massive equity concerns of the problem itself, effectiveness and equity are closely linked. Maximizing equity will come primarily from the use of resources, whereas these alternatives are primarily aimed at the production of resources.
- (3) Feasibility of establishing the model
 - a. Goal: (i) propose a solution that can reasonably garner enough governmental and public support to be operationalized
 - b. Metric: (i) likelihood of passage within the government and (ii) public support. These may be measured via proxy (e.g., public support for muni bonds vs. private equity).
- (4) Attractiveness to investors
 - a. Goal: (i) ensure that any solution pursued would prove sufficiently attractive to investors to successfully raise capital
 - b. Metric: (i) objective risk-return financial analysis of alternatives, as well as a qualitative discussion of tradeoffs. For instance, raising an endowment via a revenue bond issuance would create a tradeoff for investors. On one hand, they are potentially investing with an equity (higher) risk profile to generate fixed income (lower) returns. On the other hand, they are gaining equity exposure (higher potential returns) in a tax-advantaged vehicle (municipal bonds). Measuring this tradeoff will be critical to understanding the attractiveness of the model.

Analysis and Recommendation

Analysis

In this section, I will analyze and assess each alternative along the four criteria offered above.

Alternative 1: The Social Impact Bond Model

- Direct cost
 - Social impact bonds (SIBs) are possibly the most expensive of the four alternatives, due to the performance linkage.
 - As a starting point, the social impact bond would have to pay a variable coupon payment and issuance fees.
 - The issuance fees include the underwriter's discount, municipal advisor fees, legal fees and expenses (bond, disclosure, and underwriter's counsel fees), rating agency fees, potential bond insurance premiums, verification agent costs, trustee costs, printing costs, and CUSIP fees, among others (Joffe 2015). Given the size of the issuance and Boston's characteristics as an issuer, these fees would likely be no more than 1 percent of the issuance. In this case, that amounts to \$5 million for a \$500 million issuance.
 - The coupon for this bond would likely start around 2 percent. Critically, this coupon would not be fixed – rather, it would have a floor and then increase based on the success of the project. The floor would likely be around 2 percent, essentially meaning that a shorter-term bond could have the same nominal yield as a longer-term bond, and thus a much lower yield to maturity. However, this downside would be offset from the investor's perspective by the upside potential of the project, and a corresponding higher yield. To attract investors, that upside would likely have to equal or outstrip the yields on a standard GO bond. The cost of those higher returns would generally fall to the government (McHugh, et al. 2013). It is unclear where the revenue to pay those excess returns would come from, if not from taxation. The city could put a greater portion of the development toward higher-yielding asset classes, like commercial real estate or luxury residential, but then the government is not addressing the issue.
- Effectiveness
 - Picking up on where the cost conversation leaves off, the scaled cost of SIBs leaves the municipal government in a tight spot. It either has an inexpensive bond that has failed to successfully provide housing, an expensive bond that requires increased taxation and thus fails to escape the central bind, or an expensive bond that requires increased project revenue and thus also fails to successfully provide housing. This is the crux of the challenge with social impact bonds – they can be effective, but they expose the municipal government to increased costs (Fraser, et al. 2016).
- Feasibility
 - SIBs are a mixed bag from a feasibility standpoint. They play well politically, but the upside costs need to be allocated, and that allocation can be politically tricky. Because it is closer to standard channels, SIBs are more feasible than Alternatives 3 or 4, but more challenging than Alternative 2.
- Attractiveness to investors
 - SIBs are attractive to investors who are willing to accept the lower return. The tax advantage, regular income, and project-specific upside are all broadly appealing. The low-coupon downside is tolerable to many investors focused on the first three benefits. The social impact component is attractive to a lot of

institutional investors and high net worth individuals who want to diversify investments with social impact options.

Alternative 2: The Revenue Bond Model

- Direct cost
 - For the cost estimate, the math of the actual payments would run similarly to Alternative 1. The city would issue a revenue bond with maturities ranging from five to twenty years. At the upper end of that, we would see those minimal 2 percent coupons. At the lower end, coupons would likely be closer to 5 percent. The city would again have to pay the bond issuance fees, likely around 1 percent (Joffe 2015).
 - A key difference here is that the bond issuance is going directly to a project, without the creation of an endowment. Thus, to provide the same impact level as the endowment in a given year, the city would only need to issue \$25 million in bonds, costing the city \$250 thousand in fees. The difference, of course, is the lack of funding in perpetuity. Under this model, to achieve that level of impact, the city would have to issue a bond and pay the fees each year, whereas Alternative 3 would eventually phase out costs as it became purely revenue-generating.
 - This model also relies on the assumption that the city could cover its obligations to bondholders via rent payments for an underlying affordable housing project. BPDA challenges that assumption, as the inability to do that is essentially why Boston has the housing shortage it does.
 - If this model were used to fund an endowment, it would shift into Alternative 3. The relevant costs for that use are covered above under Alternative 3.
- Effectiveness
 - This model would likely be the least effective. For many of the reasons covered in the Synthesis Memo, municipal efforts to fund affordable housing have frequently failed. While funding with a bond would alleviate the direct tax burden, if the project cannot cover the financing costs of the bond, the city must again come up with funds to cover the difference. This market failure is a large part of the reason this paper set about addressing the issue of the central bind and the failure of affordable housing.
 - Additionally, for this to have a good chance of working, the housing would likely have to be mixed income. This introduces a host of issues, and limits the effectiveness of the strategy.
- Feasibility
 - This model is perhaps the most feasible. This would be a simple bond, much like Boston issues on a regular basis. The only major difference is that it is a revenue bond, rather than a GO bond. In the right political environment, this sort of municipal issuance could likely pass seamlessly.
- Attractiveness to investors

- This security would be a straightforward municipal bond, attractive to high net worth individuals and institutional investors looking for tax advantages. Unlike in Alternative 3, there would be neither concern about the equity exposure nor excitement about potential equity upside. Compared to Alternative 1, there is less upside potential for investors and perhaps less of an ability to cast the investment as impact investing.

Alternative 3: The Municipal Endowment Model

- Direct cost
 - The direct cost of this alternative to the city varies significantly depending on a number of factors, principal among which are (a) the manner of funding, (b) the cost of funding, (c) the endowment manager, and (d) the size of the endowment. To minimize the cost to the city, I propose that the city (a) fund the endowment using municipal revenue bonds backed by endowment cash flows,⁶ (b) issue long term bonds to reduce the coupon and allow the city to capture the time-value of deferred payment, and (c) consider allowing a non-governmental or quasi-governmental agency to actually control and manage the endowment. The cost to the city varies proportionately with the size of the endowment, so I will consider cost on a normalized basis targeting a \$100 increase in annual non-tax income to the city.
 - Assuming the city follows these guidelines, and assuming the five percent annual return on investment described above, the city would need to achieve a \$2000 endowment to gain \$100 in annual non-tax income. To build a \$2000 endowment immediately, the city would need to issue \$2000 in revenue bonds. If these bonds had the same rate of return as the city's most recent long-term issuance, the coupon rate would be 2%. Thus, the city would need to pay \$40 in interest annually to achieve an additional \$100 in normalized non-tax income. It is worth noting that this cost would drop to zero in twenty years, at the expiration of the bonds, and that while the cost would remain constant through the life of the bond, it would also decrease as a percentage of the non-tax income annually as the endowment principal grew (on average).
 - Finally, the city would owe back the \$2000 principal on the bond in twenty years. So, over the course of those twenty years, the city would owe a total of \$800 in interest and \$2000 in principal to build the \$2000 endowment necessary to achieve the additional \$100 in normalized non-tax income. Critically, all these cash flows would come from the endowment, so not a single dollar of tax revenue would go toward the creation of this endowment. If the city let a non-governmental agency manage the endowment, **this model would be theoretically costless to the city.**

⁶ These bonds would be backed first by investment income from the endowment and, in years in which the endowment's investment returns were less than the obligations to bondholders, second by endowment principal. If the risk of paying down principal was viewed as less tenable than taxing to pay, the city could instead issue GO bonds, but this makes the strategy less effective in terms of evading the central bind.

- Of course, while theoretically costless, there would still be issuance fees that the city might bear. In this case those would likely again be 1 percent, or \$20 in the normalized model.
- Effectiveness
 - Like the costs, the effectiveness also depends on several critical assumptions and decisions. However, since this is a financing model, the effectiveness really just depends on how large of an endowment the city were to build, how successful its investments were, and how effectively the city were to convert these funds into housing. As mentioned above, a \$500 million endowment would cover the costs of some 3,260 ELI families in Boston without raising additional tax revenue or reducing services elsewhere. A larger endowment could fund more; a smaller one would fund less. Creating an endowment would not make any fundamental changes to the city's effectiveness with regard to building affordable housing other than by making it better funded (which is obviously a substantial contribution).
 - The equity of this alternative is similar dependent on how the funds are used. Ultimately, this policy intervention is a funding mechanism; how the city chooses to use those funds would ultimately determine the equity implications of the decision. So in that sense, this is fairly equity neutral. This alternative could not be said to improve or worsen equity in Boston, except by providing more funding for housing (again, not an insignificant contribution). I would again note that by earmarking funds specifically for issues like affordable housing, the equity benefits of an endowment could be protected. The best way to do this might be by allowing a non-governmental or quasi-governmental organization to oversee and manage the endowment.
- Feasibility
 - Feasibility is the major obstacle to this alternative. At first glance, there are elements that seem to offer an obvious win for elected officials (i.e., a substantial increase in revenue with no long-term cost to the city). Unfortunately, political realities interfere with this rosy picture. Specifically, there are two intertwining issues that combine to form a significant obstacle. First, the endowment would have to be sufficiently large to make a dent in affordable housing and count as a political 'win.' Second, the bond issuance to make the endowment that large would be far larger than a typical year's issuance and the payoff would primarily come down the road.
 - On the first issue, consider the hypothetical \$500 million endowment we've been discussing. That is the size necessary to produce \$25 million in additional non-tax revenue (given our return assumptions), and \$10 million of that would go toward interest payments on the bond. Thus, the city would have to raise \$500 million in a bond raise to spend \$15 million extra on affordable housing in the following year.
 - Relatedly, a bond issuance that does not go toward the establishment of an endowment could be spent entirely on services more or less immediately. This is especially true of GO bonds, since they are backed by taxation authority and

largely paid back by separate funds later, unlike the project-specific cash flows of a revenue bond. So, if the city raised \$500 million for this endowment, it could spend some \$15 million on housing the following year. If the city raised \$500 million for housing with a GO bond, they could spend \$500 million the following year. With an endowment, it would take decades to spend the same amount if the fund manager prioritized safety of principal and existence in perpetuity. Election cycles make it difficult for officials to think decades ahead.

- Attractiveness to investors
 - There are ways to structure this security to make it more or less attractive to investors, but a summary analysis would view this as a standard low-coupon, long-term municipal bond. It would likely attract high-net-worth investors interested in the tax protection that municipal securities offer, and be similarly attractive to a Boston 2020 Series A GO bond with a 2039 maturity.
 - Some critics might say that this security offers the same return as a municipal GO bond with higher risk, since the returns are linked to the performance of an endowment that could invest in securities with a higher risk profile than municipal debt. However, by pledging endowment principal as backing as well as investment returns, the city could mitigate this risk effectively. The city could also institute safeguards around asset allocation and portfolio management for the endowment to ensure that the endowment was not unreasonably risky.
 - The city could also go another direction and provide some possibility of upside for investors. If the city offered, say, a 2 percent coupon plus pro rata gains on any returns beyond 10 percent in a calendar year offered as a potential dividend, the security could become more attractive. This could then function more like an equity-linked note than a standard municipal bond, and offer investors tax protection, municipal creditworthiness, and limited equity upside, which could be highly attractive to investors.

Alternative 4: The Municipal Investment Consortium Model

- Direct cost
 - The direct cost for the investment consortium depends entirely on implementation, ranging from close to zero to many millions. This depends largely on two factors: first, if the city decides to engage solely as a working group member or as a limited partner, and if the latter then how much the city chooses to invest.
 - Engagement as a working group member is inexpensive. It would consist primarily of travel costs for an ambassador attending working group sessions and related consortium costs, but would be unlikely to exceed \$10,000 per year.
 - Investment as a limited partner could be far more costly. If the consortium were to raise the same \$500 million as the hypothetical endowment discussed in Alternative 3, the city would likely be expected to contribute a minimum of \$1 million but could invest up to \$100 million or more as an anchor LP. As with any

- investment, that decision would carry risk, and in this model the city could lose the entirety of that investment.
- Finally, depending on the success of the consortium's investments, the city could invest further in the individual portfolio companies or in pilot programs, procurement, or other partnerships with those portfolio companies. These investments would incur additional costs.
- Effectiveness
 - The effectiveness also depends on the degree of engagement, as well as the success of the consortium (both from a financial perspective and an innovation perspective).
 - If the city chooses to engage solely as a working group member, the benefits would be limited to sharing in the ideation of the working group and the innovation of the consortium's portfolio companies. For instance, if the consortium came up with an excellent new development model for affordable housing and successfully invested in a portfolio company that was able to bring that model to life, Boston could reap the rewards of that innovation with no additional spending. This would be another way to escape the central bind – providing better service (thus, additional services) without reducing service elsewhere or raising taxes. However, if the fund failed to find helpful innovation and the city were only involved as a working group member, there could potentially be no value to the city.
 - Should the city choose to invest as a limited partner, it would share the innovation upside but also potentially benefit from financial returns. Partnerships of this sort often have higher returns than endowments, but this is largely due to the greater degree of risk. Thus, for that same normalized \$100 of additional income, the city might have to invest (and thus risk) \$1000. This is less than the \$2000 in Alternative 3, but it is also likely to come from the city's funds, as financing this investment by borrowing would likely be at best infeasible and at worst illegal.
 - In sum, the short-term upside is higher, with the possibility of useful innovations, meaningful investment income, and strong industry partnerships. However, the city could also walk away having gained no true benefit from the consortium.
 - Feasibility
 - At a small level, this is far more feasible than Alternative 3. As an investment, however, it is far less feasible.
 - To simply join a working group is nearly costless and would allow Boston to collaborate with other cities and share in private innovation. Some cities are already signing agreements to engage in very similar projects (e.g., Pittsburgh, Phoenix, Singapore, Oslo, Denver).
 - To actually invest would be far more difficult. The city would run into the same issues with payoff timelines as in Alternative 3. On top of that challenge, the city would have to contend with the fact that this model is essentially a private equity investment, and private equity is not terribly popular. Finally, cities may run into

procurement policy and procurement law issues. Cities may not be able to benefit directly from the development of the portfolio companies, as partnering with those companies after incubating (or investing directly in) them may foster the appearance of conflicts of interest and run afoul of procurement laws mandating impartial selection processes and competitive bidding.

- Attractiveness to investors
 - The investment consortium would likely be attractive to many institutional investors. While cities might run into trouble investing, this fund could generally be marketed as a social impact fund with private equity-like features. This creates the possibility of reasonably marketing this fund as a higher-return social impact investment than many alternatives currently available to investors. One can never guarantee that a fund will be able to get off the ground, but if the consortium could come together to form a working group, there would likely be plenty of investor interest to begin making investments.

Evaluation Matrix

Criteria → Alternatives ↓	Cost	Effectiveness	Feasibility	Attractiveness to Investors
Alternative 1: Social Impact Bond Score: 6	High (1) – if the project is successful, the city would have to fund higher bond yields, potentially with recourse to taxation	Low (1) – a status quo policy with limited efficacy for developing housing	Medium (2) – a known tool, but slightly more challenging due to risk of higher costs	Medium (2) – a standard municipal bond with upside risk and social impact features, offset by lower base coupon
Alternative 2: Revenue Bond Score: 9	Low (3) – largely just issuance fees	Low (1) – essentially the same as Alternative 1	High (3) – fairly common tool for municipal governments	Medium (2) – a standard municipal bond
Alternative 3: Municipal Endowment Model Score: 9	Low (3) – negligible in time, except for issuance fees	High (3) – substantial tax-free revenue in perpetuity	Low (1) – long time horizon and opportunity costs makes for political challenge	Medium (2) – similar to a standard municipal bond, with upside potential tempered by increased risk
Alternative 4: Municipal Investment Consortium Score: 7	Medium (2) – while potentially negligible for working group membership, to evade the central bind would require substantial investment	Medium (2) – perhaps with the greatest upside, the effectiveness is tempered by the possibility of failed investments and no innovation	Low (1) – long time horizon and association with private equity makes for political challenge	Medium (2) – higher risk, but a potential high-return vehicle with social impact characteristics

Recommendation

Based on the analysis above, I recommend that Boston pursue Alternative 3, the creation of a municipal endowment. Specifically, I recommend that the city fund the initial principal for the endowment with a revenue bond issuance, but that a non-governmental (or quasi-governmental) agency run the endowment.

In conversation with Boston officials, the alternatives were divided as those where “the politics work but the math doesn’t” (namely Alternatives 1 and 2) and those where “the math works but the politics don’t” (namely 3 and 4). While I recognize the political obstacles in pursuing Alternative 3, I maintain that they are surmountable, and the opportunities the endowment creates for the city are too significant to not pursue. Over time the endowment will only grow, and once the initial bond is paid off the endowment will provide a consistent source of non-tax revenue to the city, at essentially no cost. These funds could make a significant difference for families in need of affordable housing, meaning that this alternative has the potential to directly tackle Boston’s housing crisis while escaping the central bind.

Implementation

Many details of the implementation of a municipal endowment are discussed in the Analysis section above. To summarize, I recommend the following specific steps of implementation:

- 1) A quasi-governmental agency in Boston (perhaps BPDA) establishes an endowment fund. Initially, this fund would be a shell with no seed capital.
- 2) The city council votes on a resolution of support for the endowment and a bond issuance to fund it.
- 3) The city of Boston issues a one-time, \$500 million revenue bond issuance at a 2 percent coupon, backed by the investment returns of the municipal endowment.
- 4) To build electoral support and avoid some criticism, this effort can reasonably be heralded as Boston raising an additional \$500 million to spend on affordable housing over a 20-year timeframe (see Exhibit 1).
- 5) The proceeds from the bond issuance, net of issuance fees and other costs, are deposited in the endowment.
- 6) Every year, if the investment income was positive, the coupon payments should be paid and the remaining proceeds should be distributed between housing initiatives and recycled capital to help build the principal of the endowment, at the discretion of the endowment manager. If investment income was negative, the coupon payments should be paid and no other funds should come out of the endowment.

- 7) Periodically, the city can issue additional bonds to provide further capital and help build the endowment.
- 8) The city should also establish an easy way for residents and other supporters to donate to the endowment.
- 9) Eventually, once the city has invested as much as it pledged into affordable housing initiatives, the investment income from the endowment could become part of the standard municipal budgeting process.

Conclusion

The shortage of affordable housing in Boston is enormously damaging to the city and its residents. It weighs on the area's economy, and has enormous downstream impacts on education outcomes, health outcomes, incarceration, and any number of other social issues. Housing also represents an enormous equity issue, as both the lack of affordable housing itself and all its downstream impacts disproportionately harm communities of color.

An enormous body of research exists on efforts to address the housing crisis, and in truth many of these models work. However, they have failed to solve the problem due largely to a funding gap. On the municipal side, this gap is due in large part to the central bind of municipal finance. If Boston were able to close (or at least narrow) this gap, it could provide more funding for successful affordable housing solutions, reduce the number of residents without access to adequate housing, and strengthen the city's economy and communities.

The best way to close this gap and escape the central bind is to create a municipal endowment. While there are of course obstacles to establishing an endowment, they can be overcome – and the benefits of doing so are worth it. With the creation of an endowment, Boston could gain a steady source of income to help address the housing shortage without having to reduce spending in other critical areas or raise more revenue from its citizens.

It is also worth noting that this model is not limited to Boston, nor to affordable housing. Depending on how it is implemented, this is a structure that could provide any city a reliable source of income for any issue, or just for general funds. The widespread growth of municipal endowments would enable cities to provide more public goods at a lower cost to their populace, potentially providing substantial improvements in social outcomes in cities across the country.

Exhibit 1: Hypothetical Returns on the Municipal Endowment Model (Alternative 3)

Year	Starting balance	Bond income	Investment Income	Interest payment	Principal payment	Housing Expenditures	Ending balance
0	\$0.00	\$500.00	\$0.00	\$0.00	\$0.00	\$0.00	\$500.00
1	\$500.00	\$0.00	\$30.00	(\$10.00)	\$0.00	(\$10.00)	\$510.00
2	\$510.00	\$0.00	\$30.60	(\$10.00)	\$0.00	(\$10.00)	\$520.60
3	\$520.60	\$0.00	\$31.24	(\$10.00)	\$0.00	(\$10.00)	\$531.84
4	\$531.84	\$0.00	\$31.91	(\$10.00)	\$0.00	(\$10.00)	\$543.75
5	\$543.75	\$0.00	\$32.62	(\$10.00)	\$0.00	(\$10.00)	\$556.37
6	\$556.37	\$0.00	\$33.38	(\$10.00)	\$0.00	(\$10.00)	\$569.75
7	\$569.75	\$0.00	\$34.19	(\$10.00)	\$0.00	(\$10.00)	\$583.94
8	\$583.94	\$0.00	\$35.04	(\$10.00)	\$0.00	(\$10.00)	\$598.97
9	\$598.97	\$0.00	\$35.94	(\$10.00)	\$0.00	(\$10.00)	\$614.91
10	\$614.91	\$0.00	\$36.89	(\$10.00)	\$0.00	(\$10.00)	\$631.81
11	\$631.81	\$0.00	\$37.91	(\$10.00)	\$0.00	(\$10.00)	\$649.72
12	\$649.72	\$0.00	\$38.98	(\$10.00)	\$0.00	(\$10.00)	\$668.70
13	\$668.70	\$0.00	\$40.12	(\$10.00)	\$0.00	(\$10.00)	\$688.82
14	\$688.82	\$0.00	\$41.33	(\$10.00)	\$0.00	(\$10.00)	\$710.15
15	\$710.15	\$0.00	\$42.61	(\$10.00)	\$0.00	(\$10.00)	\$732.76
16	\$732.76	\$0.00	\$43.97	(\$10.00)	\$0.00	(\$10.00)	\$756.73
17	\$756.73	\$0.00	\$45.40	(\$10.00)	\$0.00	(\$10.00)	\$782.13
18	\$782.13	\$0.00	\$46.93	(\$10.00)	\$0.00	(\$10.00)	\$809.06
19	\$809.06	\$0.00	\$48.54	(\$10.00)	\$0.00	(\$10.00)	\$837.60
20	\$837.60	\$0.00	\$50.26	(\$10.00)	(\$500.00)	(\$10.00)	\$367.86
21	\$367.86	\$0.00	\$22.07	\$0.00	\$0.00	(\$10.00)	\$379.93
22	\$379.93	\$0.00	\$22.80	\$0.00	\$0.00	(\$10.00)	\$392.72
23	\$392.72	\$0.00	\$23.56	\$0.00	\$0.00	(\$10.00)	\$406.29
24	\$406.29	\$0.00	\$24.38	\$0.00	\$0.00	(\$10.00)	\$420.66
25	\$420.66	\$0.00	\$25.24	\$0.00	\$0.00	(\$10.00)	\$435.90
26	\$435.90	\$0.00	\$26.15	\$0.00	\$0.00	(\$10.00)	\$452.06
27	\$452.06	\$0.00	\$27.12	\$0.00	\$0.00	(\$10.00)	\$469.18
28	\$469.18	\$0.00	\$28.15	\$0.00	\$0.00	(\$10.00)	\$487.33
29	\$487.33	\$0.00	\$29.24	\$0.00	\$0.00	(\$10.00)	\$506.57

Assumptions:

\$\$ in MM USD

Investment return	6%
Coupon rate	2%
Bond	\$500
Housing Expenditures	\$10

Under these assumptions, the city would have a \$379.9 million endowment after 20 years, no remaining debt obligation, and would have spent \$200 million on housing.

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