The costs of staying afloat

Bond markets, climate adaptation, and urban inequality

Savannah Cox

Introduction

On an unseasonably hot afternoon in June 2019, I made my way to downtown Miami, Florida, for a meeting with the Director of the city's Office of Capital Improvements. This individual had only recently joined the ranks of city government after decades of working as an engineer in the US military. Despite the shift in employer, this official viewed his work as fundamentally the same. As he told me, he was still involved in combat, but the adversary he now faced in his work was neither human nor a nation state. Instead, the adversary was climate change, and it was his task to protect the city from it. The only way to do so, he said, was through massive investments in climate adaptive infrastructure.

But these vital defenses would be hard to come by. For one thing, he recounted, adaptive infrastructure is wildly expensive. Stormwater management projects that serve just one part of a neighborhood, for example, regularly come with hundred-million-dollar price tags that do not include the cost of maintenance. Given the extreme vulnerability of cities to climate change, as well as the astronomical costs of addressing it, this official reasoned that cities would be forced into competition with one another for limited public and private adaptation resources. Such zero sum dynamics made it even more incumbent on officials like him to demonstrate that they have "inexpensive, bankable solutions" to climate change. As importantly, this official suggested that inter-urban competition would increasingly take place in a context in which those with said resources – investors, insurers, as well as state and federal government bodies, to name just a few – began to factor risks and losses attributed to climate change into their investment and valuation practices. In this context, and as I have argued elsewhere, demonstrations of urban climate "solutions" take on a significance that extends beyond the practical need of acquiring adaptation resources in the present. These demonstrations must also make those in what this official and others have called the "financial world" *feel like* climate-vulnerable cities are worthy of investment in the near- to medium-term future – or at least not too risky for investment within similar time horizons (Cox 2024; see also Paprocki 2019). "At the end of the day," this individual told me, "this is all about perception. I see one part of my job as building things and just getting stuff done. But the other part is storytelling."

Fast forward a few years and this official's reasoning – as well as the material and symbolic investments in adaptation that such reasoning has prompted – can be seen within and beyond climate vulnerable cities like Miami. For example, California cities and towns recently devastated by wildfires at least partially attributed to climate change are devising and implementing a range of adaptation measures that they hope will convince insurers to underwrite (affordable) homeowners' insurance policies again (Collier and Cox 2023). At the same time, cities in the Global South are undertaking a range of fiscal and administrative reforms with the goal of attracting private investment in much-needed adaptation projects (Bigger and Webber 2021; Gabor 2021).

Savannah Cox is an urban geographer and Assistant Professor at the School of Geography and Planning, University of Sheffield. She received her PhD in City and Regional Planning from the University of California, Berkeley in 2022. Her work explores the role of financial systems in shaping urban adaptation pathways, politics, and outcomes, and has been published in journals such as *Economy & Society, Environment and Planning A: Economy and Space; Urban Geography, Journal of Urban Affairs, City, Transactions of the Institute of British Geographers,* and *Annals of the American Association of Geographers,* among others. She is currently working on a project that explores the drivers, racialized logics, and macroeconomic effects of decentralized energy transitions taking place in South African suburbs. Savannah Cox is also a co-editor of *Territory, Politics, Governance* and C40 Cities' *Journal of City Climate Policy & Economy*. *savannah.cox@sheffield.ac.uk*

These developments are significant on their own terms. After all, they speak to the centrality of finance – or, more specifically, local government beliefs about how value and risk are or should be gauged by key financial institutions – in driving patterns of adaptation and adaptation-oriented change locally. But these developments also raise important questions for economic sociologists: What, exactly, do urban officials like the Miami Capital Improvements Director *do* to make key players in global finance feel confident about a city's future and why? Where and on what, for example, do officials direct costly, confidence-securing adaptation projects? How, for that matter, do key players in global finance go about evaluating urban demonstrations of worth under climate change (Boltanski and Thévenot 2006) and the equally difficult task of determining how emerging urban climate risks square with established indicators of risk (Espeland and Stevens 1998; Hacking 1995)? And, perhaps most importantly, what might these demonstrations of worth and evaluations of risk – as well as the patterns of (dis)investment they drive – spell for the future of cities as the climate changes, as well as the life chances of those who call them home (see Elliott 2021a, 2024a; Besbris, Robinson, and Angelo 2024)?

I take these questions up by sketching out recent developments in an empirical domain I know well: bond markets. These are the vast pools of capital into which cities and states regularly tap to pay for vital public goods and services, including long-term, large-scale public infrastructure projects to address climate change. On the one hand, I detail how and to what effect climate change is being forged as a problem for bond rating agencies, and identify some avenues for further research that are relevant to economic sociology. On the other, and drawing on my research in Miami, I show how local bond-financed investments in adaptation – spurred at least in part to address growing bond rating agency and adjacent financial sector activity on climate risk – create a terrain of struggle over urban climate futures (Cox 2025). That is, these investments raise key moral and distributional questions such as who or what should receive protection from the effects of climate change, over what period(s) of time, and the physical forms that protection should take. Answers to these and related questions are only beginning to be forged and baked into the built environment through infrastructure (dis)investment. But they point to a crucial vector of inequality and political contestation in the 21st century that warrants further inquiry among economic sociologists: adaptive infrastructure finance.

Bond markets, legitimacy struggles, and the problem of climate change

The big three rating agencies – Moody's, Standard & Poor, and Fitch – began incorporating climate risk into their evaluations of (local) sovereign credit risk in the mid 2010s. Verdicts vary on why rating agencies decided to do so. Publicly, agencies say that climate risk assessment is part and parcel of long planned efforts to integrate environmental, social, and governance (ESG) indicators into their work. Privately, multiple financial experts have told me that rating agencies' highly publicized forays into climate risk knowledge and assessment are part of a broader redemption narrative they are selling in the wake of the 2008 financial crisis, when their reputations and related claims to legitimacy fell to pieces (MacKenzie 2011; Sinclair 2010).

No matter their motivations, how rating agencies go about evaluating climate risk is of considerable consequence. After all, rating agency judgments of creditworthiness – the likelihood that a government will pay back its debt – help determine how expensive it is for governments to issue debt, which governments often do to pay for large-scale infrastructure projects such as like highways and hospitals. Climate change is slated to greatly impact (local) state economies around the world, and thus the resources governments have to make regular debt payments. In the United States, sea level rise alone is expected to result in anywhere from $5 to $7 billion in annual property tax losses in just a handful of coastal states (Climate Central 2022). Property taxes, it should be noted, are a common revenue source that states use to pay their debts. Projections are similarly dire outside the United States: Mexico's central bank has estimated that economic losses attributed to climate change could exceed 35% of the country's GDP by 2100. Associated revenue losses, particularly in its agriculture sector, translate into declining state and local tax bases, along with increased loan default risk that can easily spread and impact the broader economy (Estrada et al. 2024).

Despite the clear ramifications of climate change for bond markets and the governments that use them, it is far from obvious how rating agencies should account for climate risk in their daily practices (Cox 2022). Notably, one of the biggest challenges for analysts I have spoken with is related to crucial, pragmatic questions of legitimacy: Which climate risks can ana-

lysts justify taking into account in their evaluations, and which can they not? For example, some of the most economically significant climate risks governments face, like sea level rise, will occur decades into the future. Many of the bonds that analysts rate, however, will mature in ten years or less. Given analysts' uncertainty over the exact features of the future, and their lack of official remit to gauge risk over extended time horizons, analysts focus primarily on shorter-term climate risks – that is, those that fall within the lifespan of a typical bond – in their evaluations. For governments facing longer-term climate risks, analysts have said they are on the lookout for "some indication" that governments are acting on those risks, for example through the development and funding of resilience plans.

It is easy to see how such legitimacy concerns and the temporal frames that underpin them may, over the long term, destabilize the very markets over which rating agencies exercise considerable epistemic and symbolic authority today. It is equally easy to see how the same frames may put some governments under more risk rating scrutiny than others, rendering a (local) state's physical geography not just a site of climate vulnerability but a key driver of climate-linked inequality. These developments and their stakes therefore point to an area to which economic sociologists might devote more attention going forward: How market concerns about legitimacy – as they are shaped by temporal logics and constraints – simultaneously frame, undermine, and unevenly distribute climate risk accounting (see also Knuth et al. 2025; Elliott 2021b; Condon 2023; Morris and Collins 2024; Folkers 2024a, 2024b).

Another important legitimacy concern that has come up in my conversations with rating agency analysts is related to how much climate risk should matter compared with existing indicators of credit risk, such as the size and diversity of a government's tax base. Given many of the constraints mentioned above, rating agencies are effectively reverse engineering climate risk: that is, analysts are making existing indicators of credit risk – especially those assessed immediately before and after disasters – function as proxy indicators of climate risk. As one analyst explained, the 2023 wildfires in Hawaii did not trigger a downgrade despite their severity and financial toll. The reasoning was straightforward: Hawaii was in a strong fiscal position when the fires struck, which the analyst interpreted as a sign that the state could absorb the shock and rebound. In contrast, the analyst saw governments with weaker credit fundamentals as bearing far greater climate risk – even if the disasters they faced were of similar magnitude to their wealthier peers. To illustrate this point, the analyst pointed to the town of Paradise, California. Before the devastating 2018 wildfires, Paradise already had a shrinking population and a limited economic base. Those macroeconomic conditions – more than the fire itself – justified a downgrade, because they signaled a limited capacity for recovery.

The operating premise underlying these judgments is apparent: Climate disasters are material to credit ratings only insofar as they intersect with existing economic and fiscal vulnerabilities. In other words, it is not physical damage alone but the perceived ability to recover that determines credit risk. That said, the analyst noted that large-scale government interventions, such as the disbursal of emergency funds to disaster-stricken places, can temporarily offset these risks and the uneven climate and credit outcomes to which they lead. But, and as recent Trump administration denials of disaster aid requests lay bare, such interventions are increasingly uncertain as political priorities shift, climate losses escalate, and tacit market dependencies on stable, responsive state institutions come under significant strain (Collier 2025; Elliott 2024b). These developments, too, point to another avenue of inquiry among sociologists: How and to what effect key market players may revise their conceptions of climate risk as long-standing state norms, such as providing compensation to those affected by disaster over the near- to medium-term future, may themselves be changing.

In any case, with regard to inequality, the ramifications of these emergent problematizations of climate risk are clear – and familiar territory for economic sociologists. A rich body of work has shown that rather than being neutral, ratings and the rating process more broadly reproduce and reflect social hierarchies: Wealthy places and their economies enjoy favorable ratings and the productivity they enable, just as less wealthy places receive lower ratings and the market discipline they demand (see Fourcade 2017; Norris 2023; Norris and Martin 2021; Ponder 2021). As already discussed, climate change stands to further entrench these hierarchies, and to significant effect. Some of the world's most climate-vulnerable places may lose (affordable) access to a key source of capital for vital climate adaptation projects just when they need it most (Cox, Morris, and Taylor 2023; Klusak et al. 2023). Following recent calls for a sociology of climate projects including adaptation (Falzon and Sen 2024; Araos, Bhardwaj, and Klinenberg 2024), it is therefore worth investigating how the tools, practices, and rationalities of bond and adjacent markets help shape – and foreclose – particular public capacities to act on climate change impacts, or what we might refer to as adaptive agencies (see also Collier and Cox 2021).

Framing agencies and fomenting contestation: Market-driven adaptation in Miami

The City of Miami is a useful place to investigate how and to what effect some of these agencies are presently being formed. The metropolitan region of around 6.5 million people is both highly financialized and highly vulnerable to climate change. Massive wealth – specifically in banking and luxury real estate – sits just 3 to 5 feet above sea level. Experts estimate that the city will see over a foot of sea rise in 15 years (2040), putting approximately 10% of the region under water (Southeast Florida Regional Climate Change Compact 2019). This figure will only increase as the century wears on. The knock-on economic impacts are grim: Rising waters will sink not just land but property tax bases, which the City of Miami uses to fund about half of its annual operating budget. Property tax bases are essential for another reason. They help service the city's debt, which funds about a third of its capital investments – the very infrastructures that are essential for Miami's adaptation (City of Miami 2024). High bond ratings and ample property tax bases are therefore critical to the city's survival as the climate changes. These extremes have led many pundits to deem Miami "ground zero" for the economic impacts of climate change (Wakefield 2025) – a moniker that many officials in Miami, including the Capital Improvements Director introduced above, actively and unsurprisingly seek to change as an unofficial component of their adaptation strategy.

One of the key ways that officials are attempting to do so is through highly publicized investments in adaptive infrastructure, such as the 2017 Miami Forever Bond. Officially, the 400 million dollar general obligation bond is intended to pay for a first round of sea level rises and flood prevention infrastructures, such as stormwater management systems and sea walls, in its business district and other low-lying, already flooding parts of the city. Behind the scenes, officials have referred to the bond as a "confidence tool," an essential item in government efforts to ward off possible insurance and investment market concerns about Miami's economic viability as the climate changes. Officials have told me that they regularly cite the bond and the infrastructure projects it funds in their correspondence with rating agencies and others in the "financial world" to demonstrate that they are taking climate risk seriously and thus deserve to maintain their favorable rating and investment status. Cognizant that market valuations are made and remade beyond private correspondence, officials have also endeavored to make the Forever Bond front page news, whether through op-eds published with former UN Secretary General Ban Ki-moon or heavily promoted, first-of-their-kind "conservative climate rallies," at which the bond features as exemplary of a "free market model" of adaptation that proponents believe should be adopted nationally (Ki-moon and Suarez 2019). Beyond the sheer theatrics, what is also notable here is that officials have routinely pointed to early "financial world" responses to the bond – such as improved flood risk assessments in the National Flood Insurance Program and positive bond rating outlooks – when articulating the legitimacy and value of adaptation locally (Cox 2024). Put simply, adaptation and the specific infrastructure projects it entails are "worth" pursuing because key market actors have, at least for now, deemed them so.

I have written about the performativity of Miami's adaptation efforts and the maladaptive outcomes to which they may lead elsewhere (Cox 2022). Here, I want to focus on their local misfires: That is, how officials' constant public appeals to the market value of adaptation rendered that value questionable among key groups – and created avenues for other, non-market values to become embedded in local adaptation efforts (Callon 2007). Throughout the 20th century, Miami followed many American cities in its development of a highly racialized, and spatially segregated, accumulation strategy (Connolly 2019). But the spatial forms that Miami's strategy took differ from those of many American cities, where non-white poverty is often concentrated in low-lying, flooding areas and majority white wealth is on higher ground (Eriksen and Simon 2017). By contrast, in Miami significant amounts of wealth, and therefore property tax bases, are in flood zones – the luxurious, lilywhite beaches and azure waterways for which it is known globally – while majority Black poverty is concentrated in the more highly elevated, long-disinvested urban core. Given this context, public demonstrations of the bond's value – reduced insurance premiums, sustained property tax bases, and improved bond ratings – understandably took on racial significance and generated significant political pushback as the bond was trotted out among residents (Grove et al. 2020; Cox 2025). Was adaptation in Miami ultimately about protecting existing "infrastructural investments in whiteness" as sea levels rise (Jenkins 2021), many climate justice activists and allies in local government asked? Could adaptation, and the bond that supported initial investments in it, value anything else?

Activists ultimately believed so, and worked to counter emergent market-driven adaptive agencies with alternative interpretations of climate risk and the value of addressing it through infrastructure invest-

ment. As activists argued, for many Miamians the biggest climate risk was not flooding or the prospect of depreciated property values. Instead, the chief climate risk was displacement of low-income, majority Black communities as the city endeavored to create new property tax bases by directing more high-end development to their higher and drier neighborhoods (Taylor and Aalbers 2022). For bond critics, adaptive infrastructure therefore needed to extend beyond pipes, walls, and pumps along the coast; it also needed to include affordable housing for working-class renters living in highly elevated, rapidly gentrifying, and historically non-white neighborhoods. Moreover, activists contended, procedural reforms – such as a racially and socioeconomically diverse Citizens Oversight Board that would oversee how bond projects were selected – were necessary to ensure that already powerful individuals did not funnel public dollars into private projects. Importantly, the mechanics of the Forever Bond gave these counterframings significant value: For the bond to actually deliver on the affective and infrastructural promises it made, a majority of voters first had to approve it. After activists and the districts they mobilized were granted their desired concessions, the bond passed with a slim majority, with many advocated affordable housing projects already complete. In other words, and perhaps surprisingly, the market technologies and rationalities that spurred this particular set of actions on, and valuations of, adaptation also laid the groundwork for their critique.

Future directions

The point of exploring these developments has not been to determine whether any of what is happening, or could happen, in Miami and the bond markets on which it depends are good or bad. Instead, the point has been to use these developments to sketch out a key contemporary problem: How and to what end(s) cities acquire resources for adaptation in a context where vital sources of capital, and risk rating entities, are increasingly taking climate change into account.

While the developments traced here offer some useful initial contours of this problem, far more work is needed in this domain – and economic sociology is well suited to conduct it. For one thing, the largely (insurance, property, and bond) market-driven form of adaptive agency we can see through the Miami case is one of many possible forms. Comparative analysis of agencies being forged in other contexts – where, for example, patterns of international financial subordination or reliance on state aid dominate the development landscape (see Alami et al. 2023) – are needed to provide a fuller account of (i) how and to what effect particular forms of adaptation emerge and are foreclosed, and (ii) the specific (market) power relations that help produce uneven and inequitable climate outcomes in the first place.

Economic sociologists might also direct more attention to the various devices officials deploy to determine and demonstrate the value of adaptation. Here I have focused mainly on devices historically developed in the private sector, such as insurance premiums and bond ratings. But many devices, such as cost-benefit analysis, are explicitly public in origin and orientation. They are also being problematized and repurposed amid growing calls for climate justice and increased biodiversity in adaptive infrastructure provision (Wijsman 2025; Diezmartinez and Gianotti 2024). But how, quite literally, does one make justice or biodiversity "count" in practice? How do experts and publics reason about their relative costs, the time horizons over which either are valuable, or their value in relation to other infrastructural considerations, and with what distributional consequences? Put simply, the questions one could inquire about in this rapidly emerging problem domain are as vast and consequential as the problem domain itself. They are worth taking on.

References

Alami, Ilias, Carolina Alves, Bruno Bonizzi, Annina Kaltenbrunner, Kai Koddenbrock, Ingrid Kvangraven, and Jeff Powell. 2023. "International Financial Subordination: A Critical Research Agenda." *Review of International Political Economy* 30 (4): 1360–86.

Araos, Malcolm, Ankit Bhardwaj, and Eric Klinenberg. 2024. "The Social Life of Climate Projects." *Sociological Forum* 39 (2): 149–52.

Besbris, Max, John Robinson III, J. N., and Hillary Angelo. 2024. "A Sociology of Real Estate: Polanyi, Du Bois, and the Relational Study of Commodified Land in a Climate-Changed Future." *Annual Review of Sociology* 50: 365–83.

Bigger, Patrick, and Sophie Webber. 2021. "Green Structural Adjustment in the World Bank's Resilient City." *Annals of the American Association of Geographers* 111 (1): 36–51.

Boltanski, Luc, and Thévenot, Laurent. 2006. *On Justification: Economies of Worth*. Princeton: Princeton University Press.

Callon, Michel. 2007 . "What Does It Mean to Say that Economics is Performative?" In *How Economists Make Markets. The Performativity of Economics*, edited by Donald MacKenzie, Fabian

Muniesa, and Lucia Siu, 311–357. Princeton: Princeton University Press.
Climate Central. 2022. "Sinking Tax Base: Land & Property at Risk from Rising Seas." Last modified April 2022. https://assets.ctfassets.net/cxgxgstp8r5d/2KKeTjnqbFelWrZalnPeRR/df60ab0cf494cb342e1c28b0f58eaea7/Climate_Central_Sinking_Tax_Base_National_Report.pdf
City of Miami. 2024. *Proposed Capital Budget*. Miami, n. d.
Collier, Stephen. 2025. "The Disaster Contradiction of Contemporary Capitalism: Resilience, Vital Systems Security, and 'Post-neoliberalism'." *Geoforum* 159, 104204.
Collier, Stephen, and Savannah Cox. 2021. "Governing Urban Resilience: Insurance and the Problematization of Climate Change." *Economy and Society* 50 (2): 275–96.
Collier, Stephen, and Savannah Cox. 2023. "Riskscapes, Finance, and Urban Adaptation." Unpublished manuscript. Department of City and Regional Planning, University of California, Berkeley.
Condon, Madison. 2022. "Market Myopia's Climate Bubble." *Utah Law Review* 63 (1): 63–126.
Connolly, Nathan Daniel Beau. 2019. *A World More Concrete: Real Estate and the Remaking of Jim Crow South Florida*. Chicago: University of Chicago Press.
Cox, Savannah. 2022. "Inscriptions of Resilience: Bond Ratings and the Government of Climate Risk in Greater Miami, Florida." *Environment and Planning A: Economy and Space* 54 (2): 295–310.
Cox, Savannah. 2024. "Climate Transparency and the Affective Politics of Adaptation in Miami." *Urban Geography* 45 (10): 1736–60.
Cox, Savannah. 2025. "Bonding Out the Future: Tracing the Politics of Urban Climate Finance in Miami, Florida." *Journal of Urban Affairs* 47 (1): 70–86.
Cox, Savannah, John Morris, and Zac Taylor. 2023. "Risk-Rating and Networked Authority: A Climate Leviathan in Formation?" *Law and Political Economy Project*. June 12. https://lpeproject.org/blog/risk-rating-and-networked-authority-a-climate-leviathan-in-formation/
Diezmartínez, Claudia, and Ann G Short Gianotti. 2024. "Climate Change and Municipal Finance: Ordinary Innovations for Just Urban Transitions." *Urban Studies* 62 (7), 1375–96.
Elliott, Rebecca. 2021a. *Underwater: Loss, Flood Insurance, and the Moral Economy of Climate Change in the United States*. New York: Columbia University Press.
Elliott, Rebecca. 2021b. "Insurance and the Temporality of Climate Ethics: Accounting for Climate Change in US Flood Insurance." *Economy and Society* 50 (2): 173–95.
Elliott, Rebecca. 2024a. "The Sociology of Property Value in a Climate-Changed United States." *Social Problems*, spae074.
Elliott, Rebecca. 2024b. "The State and the State-of-the-Art: Prefiguring Private Insurance for US Flood Risk." *Socio-Economic Review* 22 (4): 1583–603.
Eriksen, Christine, and Gregory Simon. 2017. "The Affluence–Vulnerability Interface: Intersecting Scales of Risk, Privilege and Disaster." *Environment and Planning A: Economy and Space* 49 (2): 293–313.
Espeland, Wendy, and Mitchell Stevens. 1998. "Commensuration as a Social Process." *Annual Review of Sociology* 24 (1): 313–43.
Estrada, Francisco, Miguel del Carmen, Oscar Calderon-Bustamante., W.J. Wouter Botzen, Serafin Martinez-Jaramillo, and Stefano Battiston. 2024. "Assessing the Physical Risks of Climate Change for the Financial Sector: A Case Study from Mexico's Central Bank." *arXiv preprint: arXiv:2411.18834*.
Falzon, Danielle, and Raka Sen. 2024. "A Call for a Sociology of Adaptation." *Sociological Forum* 39 (2): 135–48.
Folkers, Andreas. 2024a. "Risking Carbon Capital: Reporting Infrastructures and the Making of Financial Climate Risks." *Economy and Society* 53 (3): 504–26.
Folkers, Andreas. 2024b. "Calculative Futures between Climate and Finance: A Tragedy of Multiple Horizons." *The Sociological Review* 0 (0). https://doi.org/10.1177/00380261241258832
Fourcade, Marion. 2017. "State Metrology: The Rating of Sovereigns and the Judgment on Nations." In *The Many Hands of the State: Theorizing Political Authority and Social Control*, edited by Kimberly Morgan and Ann Shola Orloff, 103–28. Cambridge: Cambridge University Press.
Gabor, Daniela. 2021. The Wall Street Consensus. *Development and Change* 52 (3): 429–59.
Grove, Kevin, Savannah Cox, and Allain Barnett. 2020. "Racializing Resilience: Assemblage, Critique, and Contested Futures in Greater Miami Resilience Planning." *Annals of the American Association of Geographers* 110 (5): 1613–30.
Hacking, Ian. 1995. *Rewriting the Soul: Multiple Personality and the Sciences of Memory*. Princeton: Princeton University Press.
Jenkins, Destin. 2021. *The Bonds of Inequality: Debt and the Making of the American City*. Chicago: University of Chicago Press.
Ki-moon, Ban, and Francis Suarez. 2019. "Miami Battles Rising Seas." *New York Times,* February 20. *https://www.nytimes.com/2019/02/20/opinion/ban-ki-moon-miami-climate-change.html*
Klusak, Patrycja, Matthew Agarwala, Matt Burke, Moritz Kraemer, and Kamiar Mohaddes. 2023. "Rising Temperatures, Falling Ratings: The Effect of Climate Change on Sovereign Creditworthiness." *Management Science* 69 (12): 7468–91.
Knuth, Sarah, Savannah Cox, Sahar Zavareh Hofman, John Morris, and Zac Taylor. 2025. "Interrupted Rhythms and Uncertain Futures: Mortgage Finance and the (Spatio-)Temporalities of Climate Breakdown." *Journal of Urban Affairs* 47 (1): 35–52.
MacKenzie, Donald. 2011. "The Credit Crisis as a Problem in the Sociology of Knowledge." *American Journal of Sociology* 116 (6): 1778–841.
Morris, John, and Hannah Collins. 2023. *(Mis)managing Macroprudential Expectations: How Central Banks Govern Financial and Climate Tail Risks*. London: Edward Elgar Publishing.
Norris, Davon. 2023. "Embedding Racism: City Government Credit Ratings and the Institutionalization of Race in Markets." *Social Problems* 70 (4): 914–34.
Norris, Davon and Elizabeth C. Martin. 2022. "Is Good Credit Good? State Credit Ratings and Economic Insecurity, 1996–2012." *Sociological Forum* 37 (1): 246–68.
Paprocki, Kasia. 2019. "All That Is Solid Melts into the Bay: Anticipatory Ruination and Climate Change Adaptation." *Antipode* 51 (1): 295–315.
Ponder, Sage. 2021. "Spatializing the Municipal Bond Market: Urban Resilience under Racial Capitalism." *Annals of the American Association of Geographers* 111 (7): 2112–29.
Sinclair, Timothy J. 2010. "Credit Rating Agencies and the Global Financial Crisis." *Economic sociology_the european electronic newsletter*, ISSN 1871-3351, Max Planck Institute for the Study of Societies, 12 (1): 4–9.
Southeast Florida Regional Climate Change Compact. 2019. "Unified Sea Level Rise Projection Southeast Florida." Last modified August 2019. Sea-Level-Rise-Projection-Guidance-Report_FINAL_02212020.pdf

Taylor, Zac, and Manuel Aalbers. 2022. "Climate Gentrification: Risk, Rent, and Restructuring in Greater Miami." *Annals of the American Association of Geographers* 112 (6): 1685–701.

Wakefield, Stephanie. 2025. *Miami in the Anthropocene: Rising Seas and Urban Resilience*. Minneapolis: University of Minnesota Press.

Wijsman, Katinka. 2025: "Accountants of Adaptation? Cost Benefit Analysis and the Politics of Resilience." *Geoforum* 162: 1–13.