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Troubled ontologies: an economisation approach to climate risk and its politics

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ABSTRACT

Whether as economisation or performativity, scholars in market studies have problematised various entanglements between financial markets and climate change. Studies have identified, for instance, how notions of climate change were subjugated to the concepts and needs of financial actors in the form of climate risk. While some scholars have cast doubt on whether such an approach to govern climate change can succeed, these doubts rest on an implicit assumption of ontological stability in existing market arrangements. By contrast, and drawing on the economisation framework, we provide a theorisation of climate risk as a performative project in-the-making shaped by marketizing framing processes, highlighting its potential to successfully transform relations, identities and ontologies. Nevertheless, we also identify misfires and counterperformative moments, as well as instances where this transformative drive reinforces the unequal relations of financialised capitalism. Thus, our paper contributes to market studies by demonstrating the value of an economisation approach to climate risk. Furthermore, it advances a nascent post-performativity scholarship by proposing a novel conceptualisation of the politics of economisation.

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The unfolding effects of a rapidly changing planetary climate are becoming ever more visible, including in financial markets, where insurance and reinsurance companies warn that 'climate change is showing its claws' (Munich Re 2025). Indeed, an increasing number of financial actors perceive climate change as 'climate risk,' i.e. as the risk to financial assets posed by climate-related natural events, policies, or technological developments, while others have recast themselves as an ally in efforts to mitigate global heating through the creation of industry alliances or 'green' or 'sustainable' financial products. These developments, which point to the increasingly interdependent relationship between finance and climate, have prompted a growing market studies literature on the entanglements between finance and climate. This includes studies of carbon markets and other environmental intangibles (e.g. Chiapello and Engels 2021), insurance markets (e.g. Collier, Elliott, and Lehtonen 2021), and green bond markets (Bracking 2024). Building on these, Engen and Asdal's (2024) have more recently presented climate risk as the reframing of climate change through the deployment of risk models, insurance products, and financial indices (see also Taeger 2022). Taken together, these studies have emphasised the calculative and contingent nature of the entanglements between climate and finance, accounting for how they are achieved through market devices.

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Such an approach stands in clear tension with some political economy critiques of climate risk as an ineffective neoliberal project (Ameli et al. 2020; Christophers 2017, 2019; Langley and Morris 2020). These rest on three propositions: some political economists have fundamentally questioned the ability of markets and market actors to accurately translate climate-related uncertainties accurately into calculable climate risks, due to the very nature of climate-related uncertainty, i.e. radical uncertainty (Chenet, Ryan-Collins, and van Lerven 2021; Christophers 2017). Others have voiced doubts regarding the self-regulatory capacity of markets to appropriately price such risks, given the markets' reliance on existing conventions and tools of established financial risk management (Christophers 2019). Finally, some have questioned the political willingness of market actors to depart from dominant paradigmatic path dependencies and challenge existing relations between financial capital and a supervisory community largely protective of the former's wealth and interests (Langley and Morris 2020). In sum, whether because of its incalculability, the limits of risk management, or lack of political willingness, the aforementioned scholars remain deeply sceptical of the climate risk programme. Christophers (2017, 1124) eloquently captures this scepticism, concluding that, 'as the manifold financial risks relating to climate change become more and more real by the day, it (…) becomes ever harder to foresee a future in which the financial system responds safely and smoothly to the materialisation of those risks.'

An underlying commonality of these critiques is a conceptualisation of markets as exchange of goods and services between ontologically fixed entities, i.e. buyers and sellers, pre-constituted outside of the market and immutable in their identities and tools. Climate risk appears in this schema as a pre-determined quantity that can or cannot be known (Ameli et al. 2020; Christophers 2017, 2019; Langley and Morris 2020); practices and devices of risk management are presented as unalterable (Christophers 2019); and relations between financial supervisors and financial elites in private financial institutions are seen as set in stone (Langley and Morris 2020). Such conception of markets contrasts with a sociotechnical perspective that views them as entities in-the-making, that is, not pre-existing but transformed through the evolving web of frames and relationships that constitute the market (Callon 2021; Çalışkan and Callon 2010).

Understanding the climate risk programme as Callonian act of market reconfiguration allows for a different kind of evaluation, critique, and research agenda. Indeed, a criticism of the market's ability to govern climate change that is based on current arrangements, as the aforementioned political economists level, overlooks the possibility for such configurations to evolve and change, obscuring the potential for climate risk to reconfigure ontologies and exert fundamental transformation in market actors, goods, and value. Similarly, foregrounding these reconfigurations enables the identification of dysfunctional mechanisms and dynamics through which the climate risk programme may reproduce the logics and inequalities of financial capitalism. As Callon writes, 'markets are not things but processes, always in the making and open to reconfiguration.' (Callon 2021, p. 40) When markets are thus understood, a different kind of climate risk politics becomes visible.

This paper develops the first comprehensive theorisation of climate risk by building on findings from the market studies and related literature. As such, it contributes to an emerging literature on climate risk within market studies (Engen and Asdal 2024; Taeger 2022), which has so far been limited to empirical case studies. In doing so, it challenges political economy studies for assuming a stable neoliberal market regime (Christophers 2019, 2017; Langley and Morris 2020; Morris and Collins 2023), highlighting instead moments of ontological instability in markets while acknowledging the potential for their reproduction. Attending to such instabilities and the contingent and fluid character of markets also allows for a more granular understanding of the politics that produce and are produced by economizing processes. Hence, we further contribute to market studies by proposing a taxonomy of politics of economisation.[1] Such a taxonomy, we argue, offers a better identification of where and how the sphere of the economic and the sphere of the political intersect or are separated (Butler, 2010), while responding to recent calls for greater engagement with the performative struggles through which specific market arrangements are achieved (Pollock 2024).

In doing so, our paper lays the ground for future market studies scholars to further examine the entanglements between finance and the planet's climate.

In sum, through these contributions the paper speaks to a multidisciplinary debate on the merits and modalities of ordering socioecological relationships according to (financial) market mechanisms, paradigms, and arrangements. It does so by demonstrating how an economisation approach provides a framework to identify and conceptualise mechanisms, conditions, and locations of (potential) mutual transformations of nature and markets where other disciplines assume overly rigid and immutable structures of markets and of capitalism more broadly (Arsel and Büscher 2012; Christophers 2017; Muradian et al. 2013).

Market studies and finance-climate relations

Building on the scholarly success of the performativity programme (Callon 1998b), Çalışkan and Callon's (2009; 2010) research programme on economisation shifted researchers' attention away from studying 'the economy' as a static entity toward examining the dynamic processes through which economic realities are produced. This novel approach is clear in Callon's (2021) challenge to orthodox economics and its ontological attachment to prefigured products, actors, and exchange contexts (McFall 2025). Instead, economisation scholars have advanced a view in which market creation rests on framing processes that reshape the ontology of the objects, subjects, contexts, and outcomes of market exchange (Caliskan, MacKenzie, & Callon, 2025; Callon, Caliskan, and MacKenzie 2025a; 2025b). In the process, a flourishing literature on market studies has emerged (Roscoe, 2021), extending and advancing Callonian ideas about the relationship between performativity, economics, and politics (Cochoy, Giradeau, & McFall, 2010; Butler, 2010; Callon, 2010). Even more recently, Geiger et al. (2024) have extended these debates as far the idea of post-performativity (Pollock 2024).

One of the emerging insights from this literature is the need for a more integrated understanding of politics within the economisation framework (Butler, 2010; Hardin, 2017; Pollock 2024). In this regard, perhaps the most fundamental challenge remains the critique formulated by Butler (2010), who raised questions about the politics of theorising itself, and about how, as a theorising researcher, to adjudicate which version of markets one seeks to perform (see also Roscoe 2016). Regarding the conceptual framework of Callonian performativity itself, Butler highlights the danger of understanding performativity as a vehicle to realise any imaginable market configuration, stressing instead the omnipresence of failures and misfires in performative attempts. As she points out, 'if we can say that at best financial theories tend to establish patterns of pricing, then they do not function as sovereign powers' (Butler, 2010, p.152).

In this regard, voices from within the market studies community have more recently called for a closer examination of how specific market arrangements are achieved in non-linear ways through 'performative struggles' (Pollock 2024, 98). For instance, Reverdey (2024) shows that such struggles can lead to decoupling between the economic theory that inspired a calculative instrument and its enactment. Fourcade (2011) speaks to the relevance of such struggles as well: in her investigation of the performativity of contingent valuation surveys deployed to gauge the environmental costs of the Exxon Valdez oil spill, she notes – but does not further conceptualise – the central role of 'Realpolitik' (i.e. pragmatic politics) in mediating the performative effects of economic concepts. In sum, these authors point to the need to specify how different types of politics, be it performative struggles, Realpolitik moves, or the conditions of performative failure, relate to the conceptual scaffolding that underpins the performativity programme.

Beyond this gap, there is a need for theoretical advancement in the realm of finance-climate relations. Appropriately, the economisation programme has engaged the increasing entanglement between finance and climate. Blok (2011), for instance, extended this approach into the realm of environmental concerns with an analysis of carbon markets as an experimental form of climate governance (see also Callon 2009; MacKenzie 2009). In their conceptualisation of 'environmental

intangibles,' Chiapello and Engels (2021) critiqued the attachment and detachment processes involved in commodifying environmental harm and impact as permits and credits. Others have turned the economisation lens on insurance markets (Collier, Elliott, and Lehtonen 2021). Among them, Elliott (2021b) documented how flood maps became contested in the context of US flood insurance as they create rather than merely help manage risks for local residents. Angeli Aguiton (2021) described how Senegalese crop insurance failed due to costly measurement infrastructure, while Aitken (2022) warned that remote sensing in climate risk indices introduces uncertainties for vulnerable groups.

But as much as the intermingling of financial and climate concerns has been explored in contexts such as carbon markets, environmental intangibles, and insurance, climate risk itself remains a research lacuna, with notable exceptions such as Engen and Asdal (2024) and Taeger (2022). These authors have helpfully established climate risk as a research object in need of closer attention. According to them, climate risk denotes the potential future impacts on financial asset values by both climate-related physical processes such as droughts, floods, and sea-level rise, and societal reactions to climate change such as climate mitigation policies, technological innovation, and changes in consumption patterns (Engen and Asdal 2024; Taeger 2022). At the same time, these authors have focused on empirical case studies rather than attempting to theorise the phenomenon of climate risk as an intervention in markets within the conceptual canon of market studies.

Following a marked acceleration as recently as 2015, a coalition of central banks, financial supervisors, and supportive individuals and private organisations effectively framed climate change as financial climate risk. In doing so, climate risk calls for a new governance of the relationship between finance and the planet's climate, one that is characterised by an emphasis on macro-prudential norms and supervisory intervention rather than price-discovery and voluntary market initiatives (Deyris 2023; DiLeo 2023; Helleiner, DiLeo, and van 't Klooster 2024; NGFS 2018; Quorning 2023; Siderius 2022; Taeger 2022). Such attempt at governing the finance-climate nexus (Engen and Asdal 2024) is more novel and profound than it appears, for unlike related programmes, ideas, and concepts such as 'green finance,' 'ESG,' or 'responsible investing,' climate risk is not primarily tied to new markets and voluntary market initiatives, but rests on its relation to the foundational logic of balancing risk and return in existing financial markets, and hence regulatory and supervisory action and attention to it (Taeger 2022). It thus also differs from the commodification of nature in the form of payments for ecosystem services or nature conservation bonds – which has been widely debated across disciplines including environmental economics (Arsel and Büscher 2012; Muradian et al. 2013) – as it does not beget new markets but rather requalifies existing ones by rendering climate not a new commodity or asset but by infusing the valuation of all existing commodities and assets with climate-related concerns.

As noted, these efforts at understanding climate *change* as climate *risk* have been dismissed as yet another market-based attempt to pursue policy goals that is doomed to reproduce the pathologies of financialised capitalism (Chenet, Ryan-Collins, and van Lerven 2021; Christophers 2017; Christophers 2019; Langley and Morris 2020). However, such critique overlooks the reframing exercise that lies at the heart of the climate risk programme, and more broadly the dynamic and evolving nature of markets (Callon 2021). Indeed, developments in climate risk have gone beyond prefigured securities, actors and exchange contexts, reshaping instead the ontology of the objects, subjects, contexts, and outcomes of market exchange. The following section documents the depth of the ontological transformation.

An economisation approach to climate risk

Drawing on academic literature and technical reports, this section examines the construction of climate risk through five key developments, documenting the profound transformation of market arrangements it has produced. It begins with the Carbon Tracker Initiative's 2011 'carbon bubble'

thesis, which reframed climate change in financial terms. It then follows with the institutionalisation of this frame in 2015 by the TCFD, operationalising climate risk through disclosure guidelines, though critics highlight its narrow financial orientation. The creation of the NGFS in 2018 marked a shift toward active central bank governance using climate scenarios. The section then explores how, starting in 2020, new climate risk devices – especially complex modelling cascades – emerged to quantify transition and physical risks, while also reinforcing inequalities. Finally, it analyzes the potential performative and counterperformative effects of climate risk models.

2011: Carbon Tracker and early reframing efforts

Early efforts to integrate climate change into financial markets sought to alter the basis on which prices were determined. Prices, Çalışkan and Callon (2010, 16) remind us, are 'the outcome of a struggle between agencies trying to impose their modes for measuring a good's value and qualities,' and altering a market to introduce climate risk entailed engaging in such struggle. In 2011, a non-profit think tank called the Carbon Tracker Initiative developed a now-famous articulation of the climate risk frame in a set of reports denouncing the presence of a dangerous 'carbon bubble.' The think tank, founded by former asset manager Mark Campanale and located at the heart of a wider coalition, argued that the stock market value of fossil fuel companies was largely based on reserves that could *not* be burnt if global warming were to stay within the 2-degree limit agreed at the 2009 Copenhagen climate conference (Carbon Tracker Initiative 2011; Carbon Tracker Initiative and Grantham Research Institute on Climate Change and the Environment 2013). Notably, the novelty of Carbon Tracker's argument rested on its ability to speak the language of financial actors, as it was based on modelled financial associations between a two-degree agreed limit to global warming, a carbon 'budget' of 565 Gt of CO2 that limited how much carbon could be released into the atmosphere, and proven reserves of coal, oil, and gas of 2795 Gt of CO2 with a stock market value of $27 trillion. Because four fifths of these reserves could not be burnt, they were worthless or 'stranded' (McKibben 2016). The outcome was a 'carbon bubble' of four fifths of the total stock market value of existing fossil fuel reserves, amounting to $20 trillion.

Carbon Tracker's 2011 and 2013 reports eventually proved impactful to the point of altering the vocabulary used by investors and regulators to allude to the climate crisis. They were extensively covered by financial media (e.g. McKibben 2016). In 2013, ethical investment group Ceres announcing an engagement campaign to examine how fossil fuel companies addressed 'carbon asset risk,' and British fund manager Storebrand pulled coal and tar companies from its portfolio, citing a 'carbon-bubble risk' (Wills 2014). A year later, the UK Government's Green Finance report alluded to Carbon Tracker's references to 'the risks of carbon exposure' (House of Commons 2014), and in 2015, Bank of England governor Mark Carney echoed Carbon Tracker's warning about 'stranded assets' in a renowned speech at Lloyds of London (Carney 2015). These and other developments led Reuters to conclude that Carbon Tracker's had changed 'the climate change lexicon' (Chestney and Wallace 2015).

While such impact on language is in line with prior marketizing and performative processes (MacKenzie and Millo 2003; MacKenzie and Spears 2014), Carbon Tracker cannot be said to have altered the *material* basis for how securities prices were actually calculated, as the reports were not immediately accompanied by new calculative tools or devices. In this sense, Carbon Tracker's work did not amount to a price-setting struggle to impose its own calculative tools and algorithms (Çalışkan and Callon 2010). While price setting was not directly altered, Carbon Tracker did mobilise an imagined future (Beckert 2016) in which prices would be altered significantly, and this arguably began to unsettle relationships between financial market actors and the planet's climate: climate change was not simply presented as relevant to spheres like ethical investment and other niche markets, but as a matter of concern for finance as a whole (Helleiner, DiLeo, and van 't Kloosster 2024; Quorning 2023; Siderius 2022; Taeger 2022). Furthermore, framing it in terms of bubbles and their sudden re-pricing tied it to the mandates of financial market supervisors, sowing the seeds

for transforming them into climate-concerned actors, even imagined them as 'climate governors of last resort' (Langley and Morris 2020).

This enrolment (Callon, 1986; Latour 2005) of central bankers and financial supervisors was not accidental but central to the aims of Carbon Tracker, as evidenced by the recommendations formulated in its initial report (Carbon Tracker Initiative 2011, 28). By enrolment, we refer to the inclusion of an actor into an agencement by means of attaching the actor's own interests to it (Callon, 1986). To ensure the climate risk frame would prevail, Carbon Tracker's reports were articulated to be steered into the realms of responsibility of those institutions that had taken on the governance of financial systems amid the Global Financial Crisis: central banks and financial supervisors. This attachment of climate risk to central banks not only elevated the frame to the level of global financial supervision, but it also positioned central bankers as key figures in shaping further moves.

2015: The TCFD and the institutionalisation of climate risk disclosure

Over the past ten years, the framing and definition of climate risk has undergone another notable transformation, from internationally diverse and fragmented to a more consensual and harmonised frame. This is largely thanks to two key actors, the Bank of England and the Task Force on Climate-related Financial Disclosures (TCFD), alongside supportive forces from civil society as well as other governments and central banks from France or the Netherlands (DiLeo 2023; Quorning 2023; Siderius 2022; Taeger 2022). As a consequence, climate risk has become more concrete and more clearly delimited in jurisdictional terms, making it more amenable to calculation by investors.

The significance of this can be understood in relation to the concept of *pacifying*, or the framing processes entailed in defining, standardising, and harmonising goods or assets (Çalışkan and Callon 2010). Just as science studies documented how laboratory scientists turn living entities into bounded and immobile objects (keeping them in a cage, tagged, classified, etc.) in order to study them (Latour 1987; Winner 2020), market scholars have established that the objects of market transactions have to be rendered inactive to 'enable agencies to form expectations, make plans, stabilise their preferences, and undertake calculations' (Çalışkan and Callon 2010, 5). Notably, these processes unfold amidst legal, ethical, scientific or economic debates, giving rise to overflows, or instances when a frame's shortcomings become visible and thus render framing apparent (Callon 1998a, 2007). By tracing these controversies and overflows, the boundaries, limitations, and possibilities of the climate risk programme become apparent.

As with any process of institutionalisation, this move entailed specific political dynamics. The transformation of climate change into climate risk arose from a political decision to define the latter as the expected costs that climate change posed *to the financial sector*, rather than to humans or nature in general. In Mark Carney's Lloyds of London speech of 2015, climate change was presented as a source of systemic risk, that is, a source of disorderly adjustment in asset prices that put the stability of the financial system (not just that of a single bank) at risk, and one that fell within the jurisdiction of international regulators such as the Financial Stability Board (Carney 2015). Carney's definition thus tied climate change to an accepted macroprudential interpretation of central bankers' mandates which was re-legitimised, if not made fully operational, after the financial crisis of 2008 (DiLeo 2023; Thiemann 2024). Fully subordinating the climate risk frame to the logic of central bank mandates implied that a desired transition towards low-carbon economies, as envisaged in intergovernmental negotiations culminating in the Paris Climate Agreement in 2015, was no longer the sole focus of the climate risk frame. Instead, *any* climate-related matter, most notably unmitigated climate change, i.e. the absence of a 'green transition,' entered the frame. In other words, the range of possible future development paths no longer exclusively pertained to climate change mitigation but now also encompassed the lack of it, i.e. accelerated global heating. As part of this shift, the climate change risk frame was expanded to include physical risks and liability risks, with the carbon bubble being reformulated as transition risk (Taeger 2022).

The altered climate risk frame proposed by the Bank of England (Prudential Regulation Authority 2015) was institutionalised in the form of the Taskforce for Climate-related Financial Disclosure (TCFD), established in 2015 by the Financial Stability Board as an industry-led body tasked with drafting global standards for climate risk disclosure. In effect, the TCFD called on companies to disclose their climate risks to investors to enable climate-sensitive re-pricing of assets, market discipline, and the avoidance of climate risk accumulation. The TCFD's recommendations were widely adopted, and as of October 2023, 15 states and the EU had announced the translation of the TCFDs recommendations into national law, including Japan, the UK, and Brazil (TCFD 2023).

Despite such wide diffusion, concerns have been voiced about the efficacy of the TCFDs disclosure-based approach to climate risk management (see e.g. Ameli, Kothari, and Grubb 2021; Christophers 2017), focusing in particular on the belief that disinvestment is driven by disclosure; and that investment 'switches' from high to low carbon assets. 'We warn,' the former note, 'about the risk of disappointment from inflated expectations about what transparency can really deliver' (Ameli, Kothari, and Grubb 2021, 917).

Such concerns were indeed not unfounded. For instance, the isomorphic design of the TCFD and its recommendations, which imitate financial disclosure principles and structures, overlook the nature of both climate change and its calculative representations. Closely modelled after the Enhanced Disclosure Task Force (EDTF) on banking disclosures, the TCFD adopted the EDTF's disclosure principles, which cannot reasonably be assumed to be met in the context of climate-related disclosure given the lack of models with company-level resolution (see e.g. Fiedler et al. 2021). Furthermore, the feasibility of reliable climate-related disclosures was questioned both within and outside the TCFD due to uncertainty about the effects of climatic changes and policies, the potential creation of liability risk from disclosing forward-looking information, and the challenges in identifying sectors at risk (Taeger 2022). Thus, while the climate risk frame as specified by the TCFD attended to the need of central banks and financial supervisors to gain greater visibility of climate risks within financial markets, other concerns appeared elsewhere. After all, as Callon (1998) observed, all acts of framing inevitably produce overflows – unanticipated effects, omissions, or resistances that exceed the boundaries of the initial problematization.

In part, such issues were overridden by the high-level endorsement of the TCFD recommendations by the G20, which was primarily focused on securing overall support for systemic risk management rather than its technical details. This endorsement effectively equated to the enrolment of state and non-state regulatory actors that subsequently mandated TCFD-aligned disclosure. Notably, the TCFD handed over its work to the International Sustainability Standards Board (ISSB), a global organisation created in 2021 by the IFRS Foundation which is the de-facto accounting standard setter for more than 100 jurisdictions (see e.g. Botzem 2012). Nevertheless, with this move, new questions around worth and value or the problem of 'what counts' (Stark 2009) emerged and were left for established financial accounting institutions and dominant actors to answer. The most prominent of such questions pertains to the definition of financial materiality, i.e. of what information is decision-useful for financial practitioners. As of 2025, the ISSB's understanding of materiality includes only information on the effects of climate change on the disclosing entity, and not vice versa; this is denoted as 'single' rather than 'double' materiality (Oman and Svartzman 2021; Taeger 2021). Given the dominant influence of the Big Four accounting firms on the IFRS Foundation, the ISSBs definition of materiality is likely to continue to be shaped by particular professional or corporate cultures of value and accounting in line with such conceptions of materiality (Botzem 2012).

Further instances of such concerns or overflows are exclusions from the climate risk frame such as the natural science framings of planetary boundaries (see e.g. Steffen et al. 2015), conceptions of climate change as national and regional security issues (Lucke, Wellmann, and Diez 2014), or understandings of climate change as climate emergency promoted by environmental movements such as Fridays for Future or Extinction Rebellion (see e.g. McHugh, Lemos, and Morrison 2021).

In sum, the standardisation and harmonisation of climate risk disclosures was achieved through regulatory power, but at a cost. For the continued survival and advancement of the climate risk

frame within established financial market structures, it was necessary to address the concerns of financial institutions, central banks, and financial supervisors – but not, for example, those of environmental movements. As outlined above, the financial concerns related to matters of precision, granularity, and reliability of disclosed information. Yet, while embedding climate risk into the institutional arrangements, norms and language of financial accounting created a sense of harmonisation and coherence of *disclosure*, it did only very partially address the issue of *calculation* of climate risk appropriately. As we show below, subsequent framing moves were aimed at creating institutions and calculative capacity to render climate risk more precise, certain, and quantified.

2018: The NGFS and the inception of a new climate risk agency

To pursue the quantification of climate risk, central banks sought avenues for collective and coordinated action, ultimately resulting in the creation of a new governance institution: The Network for Greening the Financial System (NGFS). The NGFS is a global network of central banks and financial supervisors founded to advance climate-risk related analysis, knowledge exchange, and capacity building and pooling (NGFS 2018). The consequential nature of this new arrangement is not only apparent from its growth from eight to more than 120 members since its inception (Helleiner, DiLeo, and van 't Klooster 2024) but especially from its material effects, i.e. the calculative devices it has developed.

The development of the NGFS can be read as an additional framing process giving rise to what Çalışkan and Callon (2010) denote 'marketizing agencies.' Such agencies include buyers, sellers, and 'the diversity of actors [that] compete to participate in defining goods and valuing them' (Çalışkan and Callon 2010, 9) such as banks, hedge funds, pension funds, as well as international monetary and financial institutions. In theorising the role of the diverse agencies involved in calculation, Çalışkan and Callon (2010, 9) advance the concept of socio-technical *agencements,* or heterogeneous assemblies of 'human beings (bodies), material, technical and textual devices' that 'have been adjusted to one another.' The expression not only underscores how action is distributed across people and objects, but also how different configurations and equipment give rise to different capacities, whether adaptation, deliberation, or calculation. In this manner, agencement highlights a 'key characteristic' of markets, namely, that 'a multiplicity and diversity of actors compete to participate in defining goods and valuing them' (Çalışkan and Callon 2010, 8). Implicit in the notion of agencement is Çalışkan and Callon's rejection of idea that marketisation leads to a specific, predictable outcome. This is because they see markets as definitional struggles, where different configurations of humans, tools and text yield different forms of action and valuation.

The NGFS agencement illustrates how diverse actors and tools combine to reshape financial practices. Most prominent among the elements of the NGFS agencement is the suite of so-called climate scenarios, i.e. narratives and quantitative pathways of different plausible futures of mitigated or unmitigated climate change. These scenarios have already been employed by dozens of central banks and financial supervisors to gauge climate risk exposures in their domestic financial systems (FSB and NGFS 2022) and could be essential for further risk-based prudential policy interventions such as adjusting capital requirements to climate risk (Langley and Morris 2020; Stephens and Sokol 2023). Hence, instead of exclusively relying on established processes and tools of prudential supervision, e.g. disclosure and reporting requirements, central banks and the NGFS have introduced a new analytical tool, climate scenarios, to adapt supervision to specific understandings of climate risk as long-term beyond common financial time horizons and characterised by deep uncertainties that render established probabilistic approaches less useful (NGFS 2020).

The irruption of central bankers into climate risk has drawn attention and critique among political economists. Langley and Morris (2020) warn that this development is part of a sustained but controversial broadening of their interpretation of their mandate during the past decade. Climate 'stress testing,' they argue, 'grafts climate-related concerns' onto conventional supervisory tools,

adding to central banks' 'exceptional power' (Langley and Morris 2020, 1473). The authors express concern that 'technocratic, class-privileged' and 'undemocratic' institutions such as central banks will 'prioritise the stability and growth of capitalism in its present form' (Langley and Morris 2020, 1474). Likewise, central banker control of climate governance can have 'delimiting and depoliticising consequences,' excluding radical proposals such as a climate-sensitive industrial policy, or green quantitative easing, from the public debate (Langley and Morris 2020, 1476). As central banks have depended for their expansion on the same conditions that have driven financialization (Walter and Wansleben 2020), their involvement in framing climate risk might suggest the colonisation of climate-related concerns by the logics and values of financial capital accumulation, rather than a genuine alignment of financial and climate interests.

However, while not free from its own pathologies (Taeger 2022), the NGFS and its efforts represent a reconstitution of the central banking agencement. Most notably, it signals a departure from old path dependencies such as the hegemony of orthodox economics in central banking and financial supervision (Thiemann 2024) and thus challenges a view of the NGFS as reproduction of the financialised supervisory regime. Instead, it can be seen as a distribution of supervisory agency beyond the hegemony of orthodox economists.

Agency was also redistributed with the founding of the NGFS, which was shaped by concerns over the excessive power of a global centre of financial agency, the US Federal Reserve. Officially launched in late 2017, the NGFS was a direct reaction to the election of Donald Trump as US president and the subsequent standstill of climate-related work on the G20 level (Helleiner, DiLeo, and van 't Klooster 2024). The NGFS was thus formed as 'coalition of the willing' (NGFS 2019, 4) under the exclusion of US authorities to further advance climate-related work within the central banking and financial supervisory space. The formation of the NGFS not only constitutes an international expansion of the entrepreneurial work by central bankers and thinktanks to enrol individual central banks into the climate risk endeavour. It also represents a new and explicitly political rearrangement of relationships in which what is commonly seen as a hegemon in financial markets – the US government and its agencies – was marginalised to allow for a different relational arrangement to take foot. The effects of these new arrangements can also be seen, for instance, in the transformation of central bankers, who entered the NGFS as sceptical regarding the relevance of climate change and became 'converted' proponents of even an active steering of financial flows into transition-relevant industries and activities (Deyris 2023, 723; Helleiner, DiLeo, and van 't Klooster 2024, 13).

Taken together, the formation of new a marketizing agency like the NGFS and its related shift away from the economists and the US Federal Reserve challenges political economy concerns over the irruption of central bankers in climate risk (Langley and Morris 2020) by suggesting that such formation was set up to enable, rather than hinder, political change. In this manner, the sphere of climate risk illustrates the analytical purchase of Çalışkan and Callon's (2010) conceptualisation of market agencements, in that it underscores how material and technical devices, rules and regulations, and human beings within institutions are configured to redistribute agency and develop capacity for deliberation.

An additional contribution of Çalışkan and Callon's (2010) discussion of market agencements is the warning that inequalities can result from disparate calculative capacities. As the authors note, 'the most powerful agencies are able to impose their valuations on others and consequently to impact strongly on the distribution of value' (Çalışkan and Callon 2010, 13). Thus, because of limited resources, some nation states and central banks in the Global South may end up adopting metrics and models that do not suit their specific needs. There is a growing expectation that financial regulators, supervisors, and central banks will actively engage with climate risks driving them to use available tools. However, the tools, metrics, and models developed by and for the Global North tend to be the only ones readily available and hence effectively usable by resource-constrained state agencies. One example is the absence of fully-modelled sea level rise in all current suites of the NGFS climate scenarios. While such effects might not pose existential risks to most European

countries, Small Island Nation States and Global Majority countries with long coastlines and a high concentration of their population and economic centres in coastal regions face existential risks from rising sea levels. Such calculative inequalities both exacerbate and are driven by existing economic and epistemic inequalities resembling neocolonial relational patterns (Biermann 2006; Karlsson, Srebotnjak, and Gonzales 2007; Zhang 2024), not just in the context of neglected risks as in the example above potentially resulting in diminished adaptive capacity but also in the context of the ability to challenge specific calculative constructions of risk rendering certain geographies or activities less 'investable.' Hence, in this particular instance, a markets-in-the-making approach to climate risk specifies otherwise generic concerns over power imbalances articulated by political economists.

2020 and after: climate risk devices

With the formation of new calculative agencies, predominantly in the form of the NGFS, new devices emerged to provide the quantitative, numerically concrete and repeatable form that financial actors required to weave climate risk into its practices and logics of balancing risk and return (Callon et al. 2008). Given the relative lack of climate-related knowledge within finance – at least in relation to climate-related sciences – the emergence of new devices rarely took the form of development from scratch, but relied instead on importing and adapting devices designed for academic or other non-financial purposes. In this manner, the continued development, advancement, and survival of the climate risk frame depended on its attachment to spheres and devices which could credibly claim authority on climate-related matters – a move with its own unintended consequences and costs, as this section outlines.

In the context of climate risk, calculative devices have made explicit (Muniesa 2011) the different categories of climate risk following the taxonomy developed by the TCFD, which distinguishes between transition and physical climate risk. *Transition risks* relate to the impacts resulting from a shift towards a lower-carbon economy, whether due to climate policies, technological change, or changing consumption patterns. Transition risks are often assessed using so-called Integrated Assessment Models (IAM) or models that highlight the interaction between the economy, society and the environment. These link multiple specialised models such as energy system and land use models, macro-economic, and simplified climate models to generate pathways toward a certain temperature goal, e.g. 1.5°C warming by the year 2100. However, IAMs have been designed to generate economically 'optimal' climate scenario pathways, e.g. for the assessment reports produced by the Intergovernmental Panel on Climate Change (IPCC), rather than for use in financial markets (Cointe, Cassen, and Nadaï 2019). Hence, IAMs do not provide risk figures for specific financial assets as outputs but generate instead data on GDP, energy usage, the size of certain sectors, etc. For certain sectors, more specific models and so-called decarbonisation pathways exist, e.g. in the context of the energy sector for which the International Energy Agency (IEA) and the International Renewable Energy Agency (IRENA) provide often-used scenario data. Scenario outputs are used for subsequent economic and eventually financial risk analysis producing values for metrics such as probability of default (Allen et al. 2020; Carlin et al. 2021).

Less calculation-intense devices are also employed to represent transition risk, however. The widespread use of so-called *carbon intensity* illustrates why the examination of the dynamics of market encounters constitute a vital research domain. Carbon intensity metrics are composite measures dividing absolute carbon emissions by other entity-specific indicators such as output, revenue, profit or asset value. The practical reason for their wide adoption is that they are relatively easy to compute and allow for a normalisation across companies or assets, facilitating comparability. This proves useful for scaling and automating assessment practices e.g. to screen portfolios or build financial products such as indices or ratings, making carbon intensity scores an efficient tool to expand climate risk related product and service offerings. However, the problem with these relative metrics is that they obscure the assessment of a company's decarbonisation efforts, or real contributions to the

collapse of the planet's climate (TCFD 2017, 36). This is due to the non-physical nature of the denominator, which can vary and thus alter the composite metric without any change in actual emissions (Fraser and Fiedler 2023). Nevertheless, carbon intensity metrics remain widely used, from financial indexes (S&P Dow Jones Indices 2020) to accounting frameworks (PCAF 2020; TCFD 2021) or so-called climate-alignment assessment methods (see SBTi 2021). The value of the concept of market agencement (Çalışkan and Callon 2010) in the context of climate risk is further evidenced by the pitfalls identified above: long and distributed modelling chains contain disparate and generic components, leading to the adoption of partial and potentially misleading indicators by market actors.

Physical risks, the other climate risk category within the TCFD taxonomy, refer to the biophysical impacts from climate change such as extreme weather events, sea level rise, or chronic draughts (NGFS 2020). The calculation of physical risks differs in its organisational nature in so far as parts of it, such as catastrophe modelling, have been in use for decades within the underwriting side of the insurance and reinsurance sector (Kob 2022). Put simply, the assessment of physical risks involves a sequence of models: first, climate models generate temperature pathways; second, impact models – such as hydrological models for flooding – estimate the effects at given temperature levels; and finally, damage functions are used to translate these impacts into estimates of economic loss.

These model chains typically require substantial domain expertise for their development, calibration, and application, and thus tend to remain largely confined within their respective epistemic communities. The social studies of finance literature has demonstrated the value of an economisation approach to climate risk by providing warning signs of what such fencing could mean for climate risk. Key among these studies is MacKenzie's (2011) analysis of the organisation of credit derivatives modelling ahead of the 2008 financial crisis (see also Tett 2009). Modelling within siloed organisations – such as the rating agencies that judged the creditworthiness of derivatives – led to critical oversights, as they failed to integrate relevant knowledge across organisational subunits.

The above points to a scholarly need to locate silos and other structural gaps in the organisation of climate risk modelling. Here, Fiedler et al. (2021; Pitman et al. 2022) highlight a field-level mismatch between the information needs of investors and the actual information climate models provide. While financially meaningful climate risk analysis requires information on near- and medium-term weather events with high spatial resolution to assess impacts on individual assets, the uncertainties and resolutions inherent to climate models render data outputs at this level of granularity highly unreliable. This, however, has not kept companies and financial institutions from using such downscaled data and near-term climate futures as if they were as accurate as the precision of numerical outputs suggest (Fiedler et al. 2021; Pitman et al. 2024). This disconnect underscores the danger that climate risk modelling, rather than reducing uncertainty, may introduce a false sense of precision that reinforces misplaced confidence in financial decision-making. Importantly, this danger is only visible by attending to the organisation of models and devices used in the quantification of risk, as advocated by the social studies of finance and market studies.

While devices thus play a critical and agentic role in the configuration of the climate risk agencement, we argue that this role goes beyond what Çalışkan and Callon (2010) outlined. More specifically, devices fulfil in part the function of spaces for market encounters. A central moment of framing in marketisation occurs, of course, when goods, buyers, and sellers encounter each other in the market (Çalışkan and Callon 2010). Climate risk, however, does not constitute a marketized or pacified *good* – with the rare exception of climate risk hedging instruments. It is better understood as a qualifying dimension in financial markets more generally, redefining value and reshaping valuation infrastructures in markets by infusing the fundamental financial logic of assessing, trading, and balancing risk and return with climate-related considerations (Taeger 2022). Given this qualifying nature, market participants do not primarily encounter climate risk in the moment intuitively understood as market encounter, i.e. when goods or services are being offered, bought, and sold. Instead, following the wider definition of markets by Callon (2021) as spaces of qualification, encounters occur when market participants interact with the market infrastructures set up for climate risk assessment, that is, when they meet material representations of

climate risk in the form of e.g. climate risk heat maps, or Climate Value at Risk (CVaR). In other words, numerous market encounters in climate risk takes place in calculative devices.

This perspective reveals a shared problematic feature in the calculation of both physical and transition risks. In both, a multitude of models, from climate to economic models, supply data to the next model in line – often in concert with other models of the same type – to account for model-related uncertainty. Thus, while financial risks such as corporate bond default risk are typically calculated *within* the organisational boundaries of financial institutions, the calculation of climate risk is distributed *across* multiple types of models and organisation, and often for purposes unrelated to financial risk assessment. These remain incomplete, are constantly extended and advanced, and are characterised by a degree of opacity and a lack of standardisation (Bank for International Settlements 2021). Thus, another implication of how climate risk modelling is organised is that market devices do not simply mediate one-on-one market encounters across a single degree of separation. Encounters take place instead through a cascade of calculative devices.

Unfolding performative effects

The economisation approach to climate risk outlined so far hints at a landscape of shifting objects, changing agencies, and variable assemblages. These troubled ontologies are of particular importance in connection with yet another framing move, market maintenance, and as part of it, performative processes (Çalışkan and Callon 2010). As Callon (1998c) originally hypothesised, widely-adopted theories and models can end up shaping the behaviour of market actors, at which point the theory or model no longer provides a passive representation of the market but an active intervention in it, i.e. becomes performative (MacKenzie 2004). From this standpoint, the various processes of climate risk construction described above (whether as model development or institutional buildup) can be seen as a performative project – that is, a concerted and reflexive attempt at large-scale market-driven societal change through theory and tool development (Callon 2007). At the same time, performative outcomes are rarely the same as their original intent, for there are competing performative goals, counter-performative consequences, and simply failed (misfired) performative attempts. For instance, the first performative potentials outlined in this paper, i.e. the efforts triggered by the Carbon Tracker Initiative, did not neatly align with the original intent of the sponsoring organisations, i.e. to de-value oil and gas assets. In this vein, evaluating the prospects for climate risk requires assessing the actual effects that the changes outlined so far might set in motion (See Table 1).

Within climate risk, such effects may materialise in the context of climate scenario exercises, or so-called 'climate stress tests,' conducted by central banks (Langley and Morris 2020). By providing financial institutions with a range of scenarios of varying financial desirability, central banks have created sketches of more or less favourable investment pathways that, if followed by financial institutions, contribute to bringing about those very scenarios. As with the use of Black–Scholes for risk management purposes, device-based supervisory measures by central banks or their anticipation by financial institutions could lead to price adjustments in line with the imaginations of a desirable NGFS scenario. Such performative potential could materialise under various conditions. Active discussions in the European central banking community point to several prudential policy options in which scenarios could become central to calibrate supervisory market interventions; if successful, central banks could be said to be relying on performativity to e.g. help bring about what the NGFS calls the 'orderly transition' scenario, while avoiding the occurrence of the 'disorderly' one. Equally, however, the coupling of systematic underestimation of economic damages from climate change (see e.g. Trust et al. 2023) and the systematic overestimation of the costs of transitioning to a low-carbon economy (see e.g. Mohn 2020; Stern 2016) might render high-emission pathways desirable and hence performative.

Such performative dynamics are more than theoretical speculation. A number of recent (though yet unpublished) studies have documented the rising frequency and impact of central banker

Table 1. Performative and counterperformative effects associated with climate risk.

Effect Type	Description	Possible manifestations	Related Publication
Performative	Theories or models actively shape market behaviour in their image by being used in practice.	NGFS climate scenarios, when used by central banks and investors as most likely or most desirable, orient behaviour in line with such a scenario.	Callon (1998c); MacKenzie (2004)
	Scenarios become central to investment decisions in the form of climate alignment benchmarks, shaping what is considered a 'climate-friendly' portfolio.	Use of NGFS scenarios by private firms and regulatory bodies to define climate-aligned investments.	NGFS (2024b)
	Theories trigger market restructuring even if original objectives are not met.	Carbon Tracker Initiative pushed fossil fuel re-valuation discourse, even if asset devaluation was limited.	Quorning (2023); Taeger (2022)
Counterperformative	Models increase the cost of capital for vulnerable countries, exacerbating the very risks they aim to mitigate (adaptation becomes unaffordable).	Climate risk models raise sovereign borrowing costs for Global South countries due to high physical climate exposure.	Buhr et al. (2018); Klusak et al. (2021); Volz et al. (2020)
	Scenarios used mainly for communicative/legitimizing purposes narrow market imaginaries, stifling alternatives and reinforcing hegemonic frameworks.	NGFS scenarios used to signal credibility, not explore alternatives; leads to over-standardisation.	MacKenzie and Spears (2014); Taeger (2022)
Misfire (Failed Performative)	A performative intervention does not achieve its intended effect due to competing goals or resistance.	The Carbon Tracker Initiative did not produce the expected rapid fossil fuel asset devaluation despite strong uptake of its framing.	Callon (2007); Çalışkan and Callon (2010)

speeches on climate change. For instance, Campiglio et al. (2025, 3) report that such climate communications have a significant effect on stock prices, noting that 'the returns of greener firms are positively associated with the frequency and salience of central banks' climate-related speeches.' Morvan and Régnard (2023) found a similar effect on climate-related stock indices, while Ebeling (2024) report a re-allocation of investor portfolios towards greener assets following climate speeches. While such unpublished findings need to be treated with caution (and the limitations of their event study methodology duly acknowledged), they also point to the tantalising possibility that the performative effects sought by climate risk market designers have begun taking place. Indeed, Campiglio et al. (2025) found that the growth in communication is correlated with central bank affiliation to the NGFS, which suggests that the reconfiguration of the climate risk agencement discussed in previous sections is partly behind the growth in central-banker climate communication.

However, the above is not the only possible outcome. The widespread use of scenarios for purposes other than the intended one, mirroring the use of Gaussian Copula formulas (MacKenzie and Spears 2014), could have other performative effects. Indeed, financial institutions are already employing NGFS scenarios for communicative purposes, legitimising the scenarios' central position in imagining financial climate futures, narrowing the space for conceiving alternatives, and thus ultimately streamlining expectations. Likewise, NGFS scenarios with 'ambitious' temperature goals are already being used in other market devices that assess the so-called climate alignment of assets and portfolios (see e.g. NGFS 2024b). Such transformation of single NGFS scenarios into a benchmark for what is considered investment in line with certain climate goals points to yet another pathway to performativity, beyond a risk-based used of scenarios. Since the production of scenarios with sufficient calculative sophistication to be considered legitimate within finance is highly resource-intensive and requires collaboration with actors outside of private markets, e.g. the integrated assessment modellers who supplied their IAMs to the NGFS, the NGFS scenarios are currently considered unmatched by alternatives (Taeger 2022). Their backing by a broad coalition of central banks and financial supervisors further cements

their hegemonic position. This lack of alternatives further constitutes the foundation for the scenarios' performative potential.

In addition to performative effects, the widespread adoption of models can also undermine their predictive ability, in other words, prove counterperformative (MacKenzie 2004). Consider, for instance, the use of so-called Value at Risk models to measure market risk, originally developed at Bankers Trust and JP Morgan and later incorporated into banking supervision by the Bank for International Settlement (Beunza 2019; MacKenzie 2004). As Morris (2018) has shown, the supervisory use of Value at Risk requirements increased (rather than decreased) market volatility during the 1998 collapse of the hedge fund Long Term Capital Management and the associated market downturn. In this case, the systematic use of Value at Risk models to manage and mitigate market risk can be said to have had a counterperformative effect, in that it made the risk model a less accurate prediction of actual risk (Morris 2018, 88–103).

Similar counterperformative effects may be in store for climate risk. As capital markets increasingly rely on models to integrate climate impacts into sovereign risk assessments, the cost of capital for sovereign borrowers exposed to high physical climate risk increased accordingly (Buhr et al. 2018; Volz et al. 2020). This development may have an unexpected consequence: because Global South countries tend to be more exposed to physical risks, they are more vulnerable to rating downgrades and rising capital costs (Klusak et al. 2021). Higher capital costs may end up forestalling necessary capital-intensive adaptation measures. Thus, the introduction of climate risk models to incentivize climate adaptation may paradoxically be leading to the exacerbation of said risk, making adaptation unaffordable where it is most needed.

Specifying the politics of economisation

The examples provided above bring to light the political nature of climate risk construction, particularly its distributional implications and impact on the ordering of societies. The politics of climate risk are not limited, however, to performative effects. As noted by Fourcade (2011), whether and how theories become performative in the first place is determined through the intervention of politics. Furthermore, Butler (2010) has raised concerns that the Callonian performativity programme too eagerly accepted the possibility of potentially limitless permutations of markets to be performed into existence, neglecting how the separation of the economy and politics imposes limits on the achievement of certain versions of markets. Market studies scholars have responded to such critiques by calling for closer attention to politics within the performativity programme – that is, to the 'performative struggles' involved in how specific market arrangements are produced (Pollock 2024, 98). Answering this call, we propose a taxonomy of the multiple forms of politics entailed in performative endeavours, i.e. in the struggles to realise interests, values and desires in the production of markets. Our taxonomy illuminates sphere of the economic and the sphere of politics are being (dis-) entangled in performative processes, and how inequality is thus (re-) produced.

The first of our three categories concerns the *politics of the agencement*, a term coined by Callon (2021) himself. These encompass the struggles over the framing processes outlined by Çalışkan and Callon (2010) such as contested attempts to pacify a good – for example, in the case of climate risk, concerns over the attempt by the TCFD to fit climate risk into accounting practices and standards – or struggles around attempts to configure marketizing agencies – such as, the highly political formation of the NGFS. These politics also include the contestations of what the frame includes and excludes, as well as the resulting overflows and misfires, the hierarchies arising from unequal calculative capacities, and the choices relating to device design, selection, and use. In other words, the politics of the agencement pertain to the struggles around matters of concern (Callon 2009) between the agencies that are part of the agencement (see Table 2).

Second, the *politics of performative effects* entail the re-shaping or cementing of power relations and hierarchies by virtue of performative and counter-performative processes like the construction

Table 2. The three types of politics of economisation.

Type of Politics	Definition	Related publications	Example
Politics of the Agencement	Struggles over how markets are framed, including device design, inclusion/exclusion, pacification, and the configuration of marketizing agencies.	Çalışkan and Callon (2010), Callon (2021)	TCFD attempting to align climate risk with accounting practices
Politics of Performative Effects	Focuses on the downstream consequences of framing efforts – how market outcomes reconfigure power relations, often producing unintended or counterperformative effects.	Butler (2010); MacKenzie (2004); Paprocki (2019)	Higher capital costs for Global South countries due to climate risk assessments.
Politics of Enrolment	Concerned with who gets attached to an agencement and how their participation redirects framing trajectories. Includes moments of stabilisation or fragmentation based on actor alignment.	Callon (1986); Fourcade (2011); Pollock (2024)	Enrolment of central banks transformed the carbon bubble into a broader climate risk frame

of climate risk. These effects do not exclusively pertain to the actants involved in the framing processes, but also to entities beyond the marketizing agencement that are impacted by market outcomes. The starkest example of such politics is the aforementioned increase of capital costs for private and public borrowers in the global majority world due to the measurement of their climate risk exposure. The importance of recognising and analysing the politics of performative effects separately from the politics of the agencement lies in the unwieldiness of decentralised and dynamic agencements. Neither the dominance of certain agencies or interests nor the success of specific framing efforts pre-determines the nature of the resulting performative effects. As the very concept of counter-performativity illustrates, intentions and effects of performative endeavours might even be diametrically opposed.

Finally, the *politics of enrolment* pertain to the various moves entailed in attaching new actants to an existing agencement, i.e. to new actants assuming a role in a marketizing agencement (Callon 1986). As the previous sections showed, the climate risk frame underwent multiple moments of near disintegration, from which it could only be redeemed by enrolling new actants into the agencement. The claim of a carbon bubble had to be attached to central banks and their mandates to ensure the climate risk frame advanced. Climate-related models and the IAM modelling community also had to be enrolled. These enrolments were critical, i.e. obligatory passage points (Callon 1986), for the advancement and the survival of the frame. They were also marked by significant shifts in the direction of the economisation process (see Caliskan, MacKenzie, and Callon 2025, 306), as they re-defined the trajectory of framing efforts. For instance, with the enrolment of central banks, climate risk had to morph from a single narrative about the need to devalue carbon assets to multiple narratives about the possible sources and future pathways for climate risk, including physical, transition, and liability risk. With the enrolment of accounting standards, norms of single materiality further altered the frame. In sum, with every enrolment, be it of central banks, accountants, or climate modellers, new agencies with their own interests, desires and values are attached to the agencement, re-directing the overall trajectory of the frame.

Conversely, actants and concerns whose positions were not critical to the advancement of a frame remained detached from it. Thus, the climate risk frame excluded natural science framings of planetary boundaries, conceptions of climate change as national and regional security issues, or understandings of climate change as climate emergency promoted by environmental movements such as Fridays for Future or Extinction Rebellion (see e.g. Lucke, Wellmann, and Diez 2014; McHugh, Lemos, and Morrison 2021; Steffen et al. 2015). In sum, it is during the politics of enrolment that existing constellations of agencies co-determine the direction and fate of the framing efforts, imprinting existing relations onto the formation of new agencements.

While conceptually separate, the three types of politics noted above interact, complementing and substituting each other in complex manners. For instance, in the case of federal flood insurance pricing based on flood maps in New York City (Elliott 2021a, 2021b), the choice of particular

modelling approaches (politics of the agencement) triggered a significant adjustment of insurance premia (politics of performative effects), which in turn mobilised resistance by community groups that successfully pressured local politicians to block the use of new flood maps (politics of economisation/enrolment). The implication, in the context of climate risk, is that attention needs to be paid to how potential disruption in the politics of performative effects can translate into new politics of enrolment (such as the ongoing ESG backlash in the context of sustainable finance), blocking advancements in the politics of the agencement. Conversely, when actors lack the ability for such interventions, focusing exclusively on the politics of the agencement or the politics of enrolment alone would miss phenomena such as 'anticipatory ruination.' The latter, developed by Paprocki (2019), describes how preventive risk governance can pre-emptively inflict damage before actual climate-related disasters occur, reinforcing colonial patterns and relations of subjugation (politics of performative effects). In the case of climate risk, we must not overlook the potential counterperformative effects unfolding in the Global South, as discussed above.

Our taxonomy of the politics of economisation advances performativity and economisation scholarship in two ways. First, it provides a more granular conceptualisation of politics, allowing for a more precise differentiation between the various dimensions of political contestation. We can now distinguish between Pollock's call for 'performative struggles,' Fourcade's description of 'Realpolitik,' and Butler's emphasis on the failures of performativity. The first pertains to the politics of the agencement, while the other two to the politics of enrolment. Our taxonomy also calls into question conceptualizations of power as a unidimensional dynamic in which dominant ideologies, interests, or actors overpower weaker ones within a single political forum. Instead, it highlights how political dynamics can unfold across multiple dimensions, rendering the outcomes of which market realities ultimately prevail less certain.

Finally, our taxonomy further integrates politics into the theoretical scaffolding of economisation. Our different dimensions of politics are defined by their positioning vis-à-vis economizing framing processes, and each dimension pertains to a moment in such framing efforts. In that sense, our taxonomy does not add conceptual complexity nor propose any alteration to the conceptual foundations of the economisation framework. Instead, it provides a conceptual vocabulary to capture the complexities of politics that the economisation framework is capable of illuminating.

The new climate risk agencement

In their discussion of politics and economisation, Çalışkan and Callon (2010) foreground the possibilities of change in market configuration, i.e. in the specific arrangements and relationships between actors, objects and practices that constitute a market. This raises an important question about the outcomes of these processes: What kind of new market configuration has been achieved by virtue of the framing moves and the multilayered politics described above? We argue that the current incarnation of the climate risk agencement is neither a neoliberal attempt to govern the planet's climate through market forces that is doomed to lack effects on market prices (see Christophers 2017) nor an arrangement under the control of a single interest group such as central bankers (see Langley and Morris 2020; Wansleben 2022; Wullweber 2024). Instead, what the framing processes and politics render visible is a 'performative agencement under tension' (see Taeger 2022). In the following, we unpack this characterisation, clarifying how our diagnosis differs from and advances previous assessments of the climate risk programme.

Before, however, it is helpful to briefly recapitulate how the current configuration of the climate risk agencement differs from its original shape in the early 2010s. First, the initial logic of the climate risk project, i.e. a means for planetary protection, was subsumed into the logic of financial risk management. Subsequently, the materialisation of climate risk morphed from narrative reports to model-based quantification at the intersection of macroeconomic, financial, and climate-scientific modelling. Finally, the most agentic proponents of climate risk were no longer predominantly based

at think tanks, NGOs, or other private organisations, but rather at central banks and supervisory agencies, that is, within the technocratic part of the state apparatus.

The outcome of the aforementioned changes is a new market configuration. This new configuration is *performative* in the basic sense that there are preliminary indications that it is giving rise to a new reality: while additional research is needed to shed light on the question of what kinds – or modes (Unal et al. 2025) – of performativity are manifested, there is tentative evidence of performative effects. As noted, capital costs already seem to respond to certain measures of physical risk, both for sovereign and private borrowers in the Global South. Furthermore, scholars have also found effects of central banker speeches concerned with climate risk on share prices (e.g. Campiglio et al. 2025). Thus, regardless of the desirability of said performative effects, concerns that climate risk is doomed to be disregarded within financial markets due to the incalculable uncertainty associated with it (Ameli et al. 2020; Christophers 2017) seem less plausible today than they did ten years ago, when Mark Carney delivered his speech on the Tragedy of the Horizon (see Table 3).

The resulting climate risk agencement is *under tension*, too (see Taeger 2022). As the preceding section outlines, the mutual entanglement of finance and the planet's climate – mediated by the climate risk frame – has unsettled epistemic power configurations. Specifically, the scientization of central banking, previously understood as the domain of economics (see e.g. Ibrocevic 2025), now involves a variety of climate-related sciences and their systems of value and order, as central banks' engagement with the planet's climate has led to the incursion of established science-based representations of climate into their epistemic repertoire. Furthermore, the establishment of the NGFS as new regime that competes with existing US-dominated financial governance institutions extends this unsettlement of power configurations from the epistemic into the bureaucratic domain. At the same time, however, other power relations that are constitutive of both financial and climate governance are being reproduced and reinforced such as the domination of the Global South by the Global North via calculative means and the asymmetric adjustment of capital costs.

Tensions also surface when interrogating the relationship between the climate risk agencement and mitigation efforts. On the one hand, the climate risk frame has successfully turned the planet's climate into a matter of concern for central bankers worldwide, some of which have started championing 'green' prudential and monetary operations measures (Best et al. 2025; Deyris 2023; DiLeo 2023; DiLeo et al. 2025). On the other, the dominant understanding of climate risk has been reduced

Table 3. The three key features of the current climate risk agencement.

Feature of the Climate Risk Agencement	Description	Related publications
1. Performative	The agencement is performative in that it contributes to reshaping financial realities – e.g. influencing capital costs for climate-exposed countries and affecting share prices through central bank communication. It undermines the view that climate risk is too uncertain to be priced or acted upon in markets.	Callon (2007); MacKenzie (2006); Unal et al. (2025)
2. Epistemically and Bureaucratically Tense	Different components of the agencement producing diverging effects. For instance, climate risk introduces climate science into the traditionally economics-dominated epistemic world of central banking, unsettling existing knowledge hierarchies. Meanwhile, and global inequalities (e.g. capital cost impacts on the Global South) are reproduced.	Callon (2021); Deyris (2023); DiLeo (2023); Ibrocevic (2025); Taeger (2022)
3. Contingent and Reconfigurable	The agencement is a sociotechnical configuration – not fixed or essential. Its effects depend on how calculative devices and agencies are assembled. While current models may minimise risk visibility, scenario changes (e.g. damage functions) show that other configurations with stronger effects are possible.	ACPR (2021); Bank of England (2022); Çalışkan and Callon (2010); Christophers (2019); NGFS (2024b)

to a narrow focus on financial assets as risk objects. Furthermore, the prevailing approach to ascertaining risk exposure has been limited to a quantitative model-based approach. This excludes voices, values, and concerns over what or who is of low or no financial value, and over who is initiated or not into the exclusive circles of economics or scientific modelling.

Finally, this new market configuration is a *sociotechnical* agencement, i.e. an assemblage of distributed calculative agencies that can be configured in multiple ways. The key implication is that there is nothing essential or inescapable about a market in which financial risk being requalified to include climate change. Instead, different permutations of a climate-risked market are possible. While the current configuration of calculative agencies and devices tends to render climate risk miniscule and hence negligible in financial supervision and portfolio management (ACPR 2021; Bank of England 2022; Christophers 2019; FSB and NGFS 2022), such configuration is unlikely to remain stable. In fact, changes to the most recent suite of NGFS long-term scenarios pertaining to the so-called damage function has seen a dramatic increase in projected macroeconomic losses due to climate-related physical damages (NGFS 2024a). In sum, while a diagnosis of the climate risk agencement as falling short of prompting the kind of price adjustments that Carbon Tracker was envisaging is certainly true, it must not be prematurely taken as the manifestation of some essence inherent to all climate-risked markets.

Discussion and contributions

Our study contributes, first, to the market studies literature by making visible the depth and transformative nature of finance-climate entanglements, such as framing climate change as climate risk. A small number of studies in this literature have started engaging with climate risk empirically (Engen and Asdal 2024; Taeger 2022), pointing to the crucial role of devices and calculative infrastructures. Our analysis contributes to this literature by drawing on the theoretical distinction between interface markets and agencement markets (Callon 2021), revisiting *all* five dimensions of economisation identified by Çalışkan and Callon (2010). In doing so, we challenge multiple voices in the political economy literature (Ameli, Kothari, and Grubb 2021; Christophers 2017; 2019; Langley and Morris 2020) concerning the effects of the climate risk programme. Instead of presenting such programme as predetermined by existing financial identities and relations, our approach illuminates the multiple (potential) transformations of the market agencement. In addition, it identifies the dynamics that render such transformations either meaningful deviations from current conditions, or reproductions of those conditions and their dysfunctions.

As part of this contribution, our economisation approach offers a conceptual framework for market studies scholars investigating other forms of finance-climate entanglement. Leveraging, as we do, the distinction between interface and agencement markets, and allowing for the possibility that market configurations can genuinely change, opens up new avenues for illuminating the dynamics and possibilities for transformation in the climate-finance nexus. This might include the expanding frontier of finance such as new markets for carbon credits or other environmental intangibles (Callon 2009; Chiapello and Engels 2021; MacKenzie 2009), new financial products such as green bonds (Bracking 2024; Perkins 2021), or novel climate-related insurance products (Aitken 2022; Angeli Aguiton 2021).

Our second contribution advances the literature on economisation and performativity more generally by providing a novel conceptualisation of the politics of economisation. Scholars in market studies and related literatures have called to greater attention to the negotiation of the boundary between the political and the economic (Butler 2010), as well as the politics involved in establishing specific market arrangements (Pollock 2024). Our study offers a first step in this direction by putting forth a taxonomy of the politics of economisation. This taxonomy allows for a more granular identification of political constellations and dynamics, facilitating a more precise critique of the conditions that (re-) produce capitalist inequalities. We hope this taxonomy will be of help for future scholars engaging economisation processes that are inescapably marked by political dynamics.

Note

1. Economisation can alternatively be seen as a product of neoclassical economics, as noted by Callon (1998), or a product of neoliberalism. As a number of political economists have noted, neoliberalism is a contested terrain, filled with internal debates and conflicts. For a comprehensive conceptual framework that explores the variations within neoliberalism, see Mirowski and Plehwe (2015), Mirowski (2014), Peck (2010), and Madra and Adaman (2014).

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